# Journal of International Agricultural and Extension Education

## Volume 17 Number 2 Summer 2010

**Editorial Board and Leadership Team**

**From the Managing Editor**

**Feature Articles**

Through Students’ Eyes: Perceptions and Aspirations of College of Agriculture and Life Science Students Regarding International Educational Experiences

*Gary E. Briers, Texas A&M University*
*Glen C. Shinn, Texas A&M University*
*Ahn N. Nguyen, Texas A&M University*

Professional Competencies Needed by Program Evaluation Staff of Iranian Ministry of Agriculture

*Razieyeh Namdar, Tarbiat Modares University, Iran*
*Gholamreza Pezeshki Rad, Tarbiat Modares University, Iran*
*Esmial Karamidehkordi, Tarbiat Modares University, Iran*

A Case Study of the Diffusion of Agricultural Innovations in Chimaltenango, Guatemala

*Carolina Oleas, Texas A&M University*
*Kim Dooley, Texas A&M University*
*Glen Shinn, Texas A&M University*
*Cecilia Giusti, Texas A&M University*

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“Innovative Cooperation and Collaboration”

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AIAEE Paper and Poster Presentation Winners for 2010

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From the Managing Editor

This summer edition of the Journal includes the abstracts and membership awards and JIAEE awards from the 26th annual conference held in Saskatoon, Saskatchewan, Canada on May 16-19, 2010. Congratulations to all award recipients.

As we begin our second quarter as a professional organization, we would like to sincerely thank everyone involved who has made the Journal the outstanding scholarly publication it is. Our average acceptance rate as been 13% over the last three years. Thank you to all who have submitted and plan to submit in the future. The quality of accepted articles remains high. Thank you as well to the many, many of you that have served and continue to serve as reviewers. Your comments, suggestions and feedback are imperative to maintain high scholarly standards. At the same time, it is imperative to remember that has an expert, reviews should provide positive, constructive feedback and opportunities for authors to grow, learn, and benefit from your knowledge. If you have published in the Journal in the last five years and would like to be a reviewer, please contact us and we will make sure your name is on the list.

As we look at ways to continue to better serve you and the Journal you will see some upcoming changes in the Guidelines for Submissions. New guidelines will require that all submissions be in the required format. Failure to do so will result in an automatic rejection without review. Also, beginning with Volume 18, articles will be required to follow the 6th edition APA format. Complete guidelines for submission, including all changes can be found online at the AIAEE website.

Sincerely,

Dr. Brenda Seevers, Managing Editor

Journal of International Agricultural and Extension Education
Through Students’ Eyes: Perceptions and Aspirations of College of Agriculture and Life Science Students Regarding International Educational Experiences

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Abstract

This study examined perceptions and aspirations of 956 students concerning international educational experiences. Drawn as a purposive critical case, respondents were enrolled across 29 undergraduate majors and 24 graduate majors in Texas A&M University, College of Agriculture and Life Sciences (COALS) during 2009. Sample demographics were consistent with the student population (N=6,470) of COALS. Questionnaires were administered across 13 academic departments. Respondents revealed strong interests in international educational experiences. Two-thirds of respondents held positive perceptions of international experiences and identified preferred countries. Students preferred faculty-led programs or similar campus-originated and directed experiences. Students were receptive to a variety of other international experiences. Respondents sought international experience to enhance their overall life experience, for the opportunity to live in another culture, and to increase their employability. Influencing factors included affordability, the country itself, and subject matter. Financial issues were perceived as difficulties. Pragmatically, students recognized challenges in paying for programs and added living expenses. Despite these challenges, 70% of the students believed that international experiences would improve their competitiveness. A positive relationship existed between willingness and competitiveness. The authors posit four deductive recommendations: COALS provides experiences that prepare students for their future. Consequently, a global curriculum will result in a better-prepared person. Faculty members communicate values. Consequently, faculty should provide early and consistent messages that help students actualize their plans. Learning transitions from safe environments to real-world experiences. Consequently, applying simulations within traditional courses will facilitate global engagements. Simplifying the international experience is crucial. Consequently, accessible assistance will encourage broader experiences.

Keywords: Aspirations, Curriculum Reforms, Experience and Education, Faculty Roles, International Education, Student Mobility, Student Perceptions, Study Abroad
Introduction

Perception is reality. The conventional wisdom that said “I’ll believe it when I see it” is being challenged by “I’ll see it when I believe it” (Yariv, 2002, p. 2). In today’s electronic wizardry, what we see is often our reality. Halberstadt, Winkielman, Niedenthal, and Dalle (2009) concluded that “our findings indicate that what we think has a noticeable effect on our perceptions” (para. 3). And what we think is shaped by our personal experience. Dewey (1938/1997) argued that past experiences influence present influence and that present experiences arise from the interaction between past experience and present situation. Further, Dewey posited that “the main purpose or objective [of education] is to prepare the young for future responsibilities and for success in life, by means of acquisition of the organized bodies of information and prepared forms of skill which comprehend the material of instruction” (p. 18). Further, “every genuine experience has an active side which changes in some degree the objective conditions under which experiences are had” (p. 39). Dewey argued that the educator “. . . must be aware of the potentialities for leading students into new fields which belong to experiences already had, and must use this knowledge as his criterion for selection and arrangement of the conditions that influence their present experience” (p. 76). In his closing arguments, Dewey warned that “. . . the road of the new education is not an easier one to follow . . . [rather] . . . I have confined myself to showing certain conditions which must be fulfilled if it is to have the successful career which by right belongs to it” (p. 90).

Today’s university students—often described as millennials—have unique experiences that have shaped their perceptions and thinking. This generational cohort, born after 1982, described their defining experiences as the Oklahoma City bombing (1995), the death of Princess Diana (1997), Columbine (1999), the 9/11 terrorist attack (2001), and a world at war (2003). When compared with previous generations, millennials are exposed to “terabytes” of information and are very savvy of technology and social networking (Howe & Strauss, 2000).

Another defining characteristic of today’s university students is their propensity to construct knowledge out of their experiences. This social constructivism molds a learner as an individual who is motivated, self-confident, and independent yet collaborative. They tweet using social networks and use IM as a constant connection with their peer group (Thomas, 2009).

Concurrently, there are global trends that Walker (2007) described as “Globalization 3.0” and Friedman (2005) called a flat world that are superimposed on the millennials’ world. Megatrends that influence the future of today’s university student include increasing migration-immigration, climate change, population growth, global economics, and the impact of technologies (Catlett, 2007; Friedman, 2005; Kennedy, 1994; Walker, 2007).

Largely a nation of immigrants, America has a diverse history of mobility in search of economic prosperity and quality of life. Horace Greeley’s 1864 New York Tribune editorial encouraged to “go west young man.” This culture created a melting pot society with immigrants from around the world. The Global Commission on International Migration (2005) reported that “there are nearly 200 million international migrants in 2005, counting only those who have lived outside their country for more than one year and including 9.2 million refugees” (p. 83). Further, they noted that “this is equivalent to the population of the 5th largest country – Brazil” (p. 83). During the millennials’ generation—1980 until 2000—the number of migrants living in the developed world increased from 48 million to 110 million. Migrants represent
approximately 13% of the population of North America, and the 35 million migrants living in the US in 2000 represented 20% of the world migrant population.

Today’s student lives in a challenging and changing world. To paraphrase John Dewey’s words, the university experience “provides them with experiences which will help to open up, rather than shut down, a person's access to future growth experiences, thereby expanding the person's likely contribution to society” (Neill, 2005, para. 11). This paper seeks to understand the international educational perceptions of today’s Texas A&M University students who are enrolled in the College of Agriculture and Life Sciences (COALS).

**Purpose and Objectives**

The purpose of this study was to determine perceptions and aspirations of students in the College of Agriculture and Life Sciences at Texas A&M University concerning international educational experiences during their college careers. Specific objectives were as follows:

1. Determine students’ interests in getting international educational experiences and, if so, their preferences for the kinds of experiences and the countries in which they would prefer to study;
2. Characterize students' ratings of selected factors that may motivate them to study abroad;
3. Describe students' ratings of the importance of selected factors as they consider study abroad options;
4. Determine students' ratings of factors that may pose a difficulty when preparing to study abroad or while studying abroad; and
5. Examine relationships between selected personal characteristics of the students, their perceptions, and their aspirations.

**Methods**

The researchers used survey research methods to explore and describe the perceptions and aspirations of resident undergraduate and graduate students attending Texas A&M University in fall semester 2009. An instrument was developed based on two earlier, related student questionnaires. The original instrument was an online questionnaire used to ascertain attributes of European Union students (Plompen, 2006). Then, that instrument was modified as a paper copy student questionnaire, translated into Armenian, and used to survey students at Armenian State Agrarian University (Shinn, Briers, Navarro, Peake, Duncan, Parr, & Galoyan, 2008; Shinn, Briers, Navarro, Peake, Parr, Ter-Mkrtchyan, & Duncan, 2009). Thus, the instrument used in this study was a third iteration. The instrument included items to assess motivational factors that influence students’ decisions to study abroad, factors that influence the choice of a foreign institution for study, and perceived challenges for students associated with studying abroad. The descriptors for the “motivation” scale were “Does not motivate” (1), “Motivates a little” (2), “Motivates” (3), and “Motivates a lot” (4). The descriptors for factors that influence the choice of a foreign institution for study were “Not important” (1), “Somewhat important” (2), “Important” (3), and “Very important” (4). The descriptors for the “difficulty” scale concerning the perceived challenges for students associated with studying abroad were “Not difficult” (1), “A little difficult” (2), “Difficult” (3), and “Very difficult” (4). Opportunities for open-ended responses were provided for students to indicate their desire to study abroad, and if so, the kind of study abroad programs in which they would be interested, the country (ies) in which they would prefer to study, and other future plans. In addition, students were asked to respond to demographic questions.
concerning their gender, year of birth, degree pursued, major course of study, grades, and methods of financing their education.

Thirteen of the fourteen departments in the College of Agriculture and Life Sciences at Texas A&M University agreed to assist in data collection. The associate head for academic programs in each department selected a class or classes, graduate student groups, or individual students to complete the questionnaires. As researchers, we distributed questionnaires to each academic department with an ample supply to meet the enrollment roster of the selected courses and selected student groups. Departments collected data from students in their classes; these classes were chosen by the departments—some graduate classes, some lower-level undergraduate classes, some upper-level undergraduate classes, some classes of departmental majors only, and others with a wide range of majors enrolled. So, the responding sample was a sample clustered by department or course as a purposive, critical case sample of 1,396 students. The procedure was used to get representation of departments, majors, student levels, and degrees; however, this was not a random sample. Data were collected from September 21 to October 16, 2009. Data were coded and entered as an Excel spreadsheet, imported into a PASW Statistics 18 data file, and analyzed using PASW Statistics 18. Calculations were of frequencies, percentages, means, standard deviations, cross-tabulations, and correlations.

**Findings**

The responding sample comprised 1,396 students. Undergraduate student respondents totaled 1,215; graduate students, 172. Of the sample, 956 indicated majors in COALS; 407 responded with majors outside COALS. Because the purpose of the study was to describe COALS students, the researchers selected for analysis those 956 students who identified themselves with COALS majors.

Of those students with COALS majors, 844 were undergraduates and 112 were graduate students. Fifty-five percent of the respondents were male; 45%, female. Seventy-nine percent of the respondents classified themselves as Caucasian/White; twelve percent, Hispanic; three percent, multi-ethnic; three percent, Asian; two percent, African American; and less than one percent, Native American. Eleven percent of the respondents were 19 years of age or younger; fifteen percent were 20 years old; twenty-six percent, 21; twenty-three percent, 22; ten percent, 23; eleven percent, 24–29; and four percent, 30 or older (Table 1).
### Table 1

*Demographics of COALS Student Respondents, N=956*

<table>
<thead>
<tr>
<th>Category</th>
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<th>%</th>
</tr>
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<tr>
<td><strong>Gender</strong></td>
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<tr>
<td>Male</td>
<td>521</td>
<td>55.1</td>
</tr>
<tr>
<td>Female</td>
<td>425</td>
<td>44.9</td>
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<tr>
<td><strong>Ethnicity</strong></td>
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<tr>
<td>Caucasian/White</td>
<td>741</td>
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<tr>
<td>Hispanic/Latino</td>
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<td>11.8</td>
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<tr>
<td>Multi-ethnic</td>
<td>34</td>
<td>3.6</td>
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<tr>
<td>Asian</td>
<td>24</td>
<td>2.6</td>
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<tr>
<td>African-American</td>
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<td>2.5</td>
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<td>Indian/Alaska Native</td>
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<td><strong>Age</strong></td>
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<td>19 years old or younger</td>
<td>104</td>
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<td>20 years old</td>
<td>142</td>
<td>15.0</td>
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<td>21 years old</td>
<td>246</td>
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<td>22 years old</td>
<td>215</td>
<td>22.7</td>
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<tr>
<td>23 years old</td>
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<td>9.7</td>
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<td>24 – 29 years old</td>
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<td>Graduate</td>
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<td>3.50 – 4.00</td>
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<td>3.00 – 3.49</td>
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<td>33.5</td>
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<td>2.50 – 2.99</td>
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<td>2.00 – 2.49</td>
<td>138</td>
<td>14.9</td>
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<td>Less than 2.00</td>
<td>20</td>
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<td><strong>Residence(s)</strong></td>
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<td>Lived only in Texas</td>
<td>659</td>
<td>69.8</td>
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<tr>
<td>Lived outside Texas 1 year or more</td>
<td>285</td>
<td>30.2</td>
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<td>Lived only in the U.S.</td>
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<td>87.9</td>
</tr>
<tr>
<td>Lived outside the U.S. 1 year or more</td>
<td>114</td>
<td>12.1</td>
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*Frequencies may not total 956 because of missing data.*

The 956 COALS students came from a wide range of majors—29 different undergraduate majors and 24 graduate majors. Although this was not a random sample statistically, the sample did represent a wide array of students in COALS. What did we want to learn from this sample of students in COALS? First, we were interested in their interest in study abroad. So, we asked them if they would consider an international educational experience. If they responded yes, they would consider an international experience, We asked them to indicate their preferences for six kinds of study abroad experiences. Or, if they would not consider that kind of experience, then they should not respond with a ranking for that kind of experience. Their responses are shown in Table 2.
Table 2  
*Interests and Preferences of COALS Students in International Education Experience, N=956*

<table>
<thead>
<tr>
<th>Would you consider studying abroad?</th>
<th>f</th>
<th>%</th>
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<tbody>
<tr>
<td>I would consider an international experience.</td>
<td>618</td>
<td>66.5</td>
</tr>
<tr>
<td>No, I do not want to study abroad.</td>
<td>311</td>
<td>33.5</td>
</tr>
</tbody>
</table>

Preferences of those who would consider studying abroad*:

<table>
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<tr>
<th></th>
<th>f</th>
<th>Mean Rank**</th>
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<tr>
<td>Register for a TAMU faculty-led study abroad spending 1 to 10 weeks abroad</td>
<td>577</td>
<td>2.56</td>
</tr>
<tr>
<td>Register for a TAMU study abroad course or program as an internship, directed study, research project, or similar experience</td>
<td>573</td>
<td>2.46</td>
</tr>
<tr>
<td>Register for TAMU courses at a TAMU Study Center (e.g., Costa Rica, Mexico, Italy)</td>
<td>543</td>
<td>3.02</td>
</tr>
<tr>
<td>Register for courses at a foreign university, with transfer credits back to TAMU</td>
<td>501</td>
<td>3.88</td>
</tr>
<tr>
<td>Register for courses from a study abroad program from another U.S. university, with transfer credits back to TAMU</td>
<td>490</td>
<td>3.66</td>
</tr>
<tr>
<td>Register for a program at a foreign university and complete the degree from that university</td>
<td>434</td>
<td>5.09</td>
</tr>
</tbody>
</table>

*Note: Preferences are listed in order of frequency. Frequencies represent the total number of students who ranked an experience with 1, 2, 3, 4, 5, or 6. **Mean rank is the arithmetic average of the rankings assigned by the students who ranked that experience.

We also asked the students if they had participated in a study abroad program previously. Slightly more than eight percent (84 students) had done so. Of those 84 students, 74 reported that the experience “was very satisfying.”

Students who indicated that they would consider an international experience were asked in which specific country or countries they would most like to study abroad. Respondents listed 98 countries among their four choices. Australia was named most frequently—by 255 respondents. Italy was chosen by 238 respondents, and those respondents ranked Italy on average higher than did the respondents who ranked Australia. In addition to Italy, other European countries preferred were the United Kingdom, Spain, Germany, and France. Latin American countries preferred were Costa Rica, Brazil, and Mexico (Table 3).
Table 3

*Countries in Which COALS Majors Prefer to Study Abroad*

<table>
<thead>
<tr>
<th>Country*</th>
<th>1st Choice (n=611)</th>
<th>2nd Choice (n=589)</th>
<th>3rd Choice (n=528)</th>
<th>4th Choice (n=422)</th>
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<tbody>
<tr>
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<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
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<tr>
<td>Australia</td>
<td>98</td>
<td>16.0</td>
<td>61</td>
<td>10.4</td>
</tr>
<tr>
<td>Italy</td>
<td>85</td>
<td>13.9</td>
<td>74</td>
<td>12.6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>55</td>
<td>9.0</td>
<td>42</td>
<td>7.1</td>
</tr>
<tr>
<td>Spain</td>
<td>52</td>
<td>8.5</td>
<td>55</td>
<td>9.3</td>
</tr>
<tr>
<td>Germany</td>
<td>42</td>
<td>6.9</td>
<td>34</td>
<td>5.8</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>37</td>
<td>6.1</td>
<td>32</td>
<td>5.4</td>
</tr>
<tr>
<td>Brazil</td>
<td>30</td>
<td>4.9</td>
<td>29</td>
<td>4.9</td>
</tr>
<tr>
<td>France</td>
<td>16</td>
<td>2.6</td>
<td>36</td>
<td>6.1</td>
</tr>
<tr>
<td>Mexico</td>
<td>34</td>
<td>5.6</td>
<td>26</td>
<td>4.4</td>
</tr>
</tbody>
</table>

*Note: Countries are listed in order of the number of respondents who listed the country as one of their preferred countries for studying abroad.*

What factors motivate students to study abroad? Students rated 10 factors in terms of how much each factor motivates them to study abroad. They rated the factors as “Does not motivate” (1), “Motivates a little” (2), “Motivates” (3), and “Motivates a lot” (4). Data in the table below summarize their responses. Students are motivated mostly by the international experience’s contribution to their overall life experience and by the opportunity to live in another country or culture. To a somewhat lesser extent, they are motivated by their increased employability because of studying abroad and because studying abroad looks good on their résumés (Table 4). All 10 of the factors, on average, motivate students more than “a little.”

As students begin to consider more carefully the possibility of studying abroad, there are numerous factors that may be important to them when making a choice about a specific study program or foreign university. Fourteen of those factors from the literature served as the basis for the following question: “If you were considering the possibility of studying abroad, how important would the following be when making a choice about a specific study program or foreign university? To each of the 14 factors, students indicated if the factor would be “Not important” (1), “Somewhat important” (2), “Important” (3), or “Very important” (4). See Table 5 for a summary of students’ responses.

Affordability was the most important factor that they would consider. Rated as important to very important were the country itself, the subject matter specialty of the program, and the language spoken in the country or the university. Cultural attractions and the reputation of the foreign university (if studying in a foreign university) or the specific program (if a TAMU program) were also important factors as rated by respondents. Accessibility to and from the U.S. and weather conditions/climate of the study abroad location were rated between “somewhat important” and “important.”
Table 4

Students’ Ratings of Selected Factors That May Motivate Them to Study Abroad

<table>
<thead>
<tr>
<th>Factor</th>
<th>1 Does not motivate</th>
<th>2 Motivates a little</th>
<th>3 Motivates a lot</th>
<th>4 Motivates</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>f</td>
<td>f</td>
<td>f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall life experience</td>
<td>14</td>
<td>38</td>
<td>168</td>
<td>418</td>
<td>3.55</td>
<td>.71</td>
</tr>
<tr>
<td>Opportunity to live in another country or culture</td>
<td>20</td>
<td>75</td>
<td>191</td>
<td>350</td>
<td>3.37</td>
<td>.81</td>
</tr>
<tr>
<td>Increased employability</td>
<td>31</td>
<td>118</td>
<td>211</td>
<td>276</td>
<td>3.15</td>
<td>.89</td>
</tr>
<tr>
<td>Looks good on a résumé</td>
<td>49</td>
<td>141</td>
<td>228</td>
<td>214</td>
<td>2.96</td>
<td>.93</td>
</tr>
<tr>
<td>Important stage in my personal development</td>
<td>40</td>
<td>153</td>
<td>242</td>
<td>202</td>
<td>2.95</td>
<td>.90</td>
</tr>
<tr>
<td>Learn more about my academic specialization</td>
<td>58</td>
<td>162</td>
<td>266</td>
<td>149</td>
<td>2.80</td>
<td>.90</td>
</tr>
<tr>
<td>Opportunity to work in another country after completing current degree</td>
<td>93</td>
<td>156</td>
<td>198</td>
<td>189</td>
<td>2.76</td>
<td>1.03</td>
</tr>
<tr>
<td>Learn another language</td>
<td>49</td>
<td>57</td>
<td>58</td>
<td>164</td>
<td>2.71</td>
<td>.98</td>
</tr>
<tr>
<td>Get a graduate degree</td>
<td>123</td>
<td>200</td>
<td>196</td>
<td>117</td>
<td>2.48</td>
<td>1.00</td>
</tr>
<tr>
<td>Importance placed by academic advisor/department</td>
<td>169</td>
<td>230</td>
<td>155</td>
<td>78</td>
<td>2.22</td>
<td>.98</td>
</tr>
</tbody>
</table>

Just as there may be factors that motivate students to consider studying abroad and other factors that may be important considerations as they weigh options for studying abroad, there may be still other factors that discourage or challenge them as they consider studying abroad or while they are studying abroad. The researchers identified 14 potential challenges or difficulties with studying abroad. Students were requested to indicate the degree to which they thought each of these 14 factors may be difficult when preparing to study abroad or while studying abroad; they responded using a scale of “Not difficult” (1), “A little difficult” (2), “Difficult” (3), and “Very difficult” (4). Data in the table below summarize their responses (Table 6).

Students rated “paying for the program or funding my living expenses and studies during the study abroad” as the factor that they believed would be most challenging or difficult. “Finding affordable and adequate housing” and “other financial constraints” were also rated as posing a difficulty. These three factors suggest that financial concerns are viewed as the most challenging factors. Another perceived difficulty was “dealing with the language barrier.”
Table 5

<table>
<thead>
<tr>
<th>Factor</th>
<th>1 Not important</th>
<th>2 Somewhat important</th>
<th>3 Important</th>
<th>4 Very important</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordability</td>
<td>19</td>
<td>52</td>
<td>133</td>
<td>429</td>
<td>3.54</td>
<td>.77</td>
</tr>
<tr>
<td>The country itself</td>
<td>12</td>
<td>40</td>
<td>211</td>
<td>372</td>
<td>3.49</td>
<td>.70</td>
</tr>
<tr>
<td>The subject matter specialty of the program</td>
<td>20</td>
<td>74</td>
<td>255</td>
<td>281</td>
<td>3.27</td>
<td>.79</td>
</tr>
<tr>
<td>The language spoken in the country and/or the university</td>
<td>23</td>
<td>119</td>
<td>264</td>
<td>228</td>
<td>3.10</td>
<td>.83</td>
</tr>
<tr>
<td>Information available about the country, university, and program</td>
<td>27</td>
<td>112</td>
<td>277</td>
<td>205</td>
<td>3.06</td>
<td>.83</td>
</tr>
<tr>
<td>Cultural attractions in the area</td>
<td>28</td>
<td>130</td>
<td>265</td>
<td>207</td>
<td>3.03</td>
<td>.84</td>
</tr>
<tr>
<td>For study in foreign universities, the reputation of the foreign university</td>
<td>30</td>
<td>120</td>
<td>296</td>
<td>186</td>
<td>3.01</td>
<td>.82</td>
</tr>
<tr>
<td>For TAMU programs, the reputation of the specific program</td>
<td>25</td>
<td>126</td>
<td>297</td>
<td>181</td>
<td>3.01</td>
<td>.81</td>
</tr>
<tr>
<td>For U.S. study abroad programs, the reputation of the foreign university</td>
<td>35</td>
<td>134</td>
<td>274</td>
<td>190</td>
<td>2.98</td>
<td>.86</td>
</tr>
<tr>
<td>Accessibility to and from the U.S.</td>
<td>87</td>
<td>140</td>
<td>191</td>
<td>212</td>
<td>2.84</td>
<td>1.04</td>
</tr>
<tr>
<td>Weather conditions/climate</td>
<td>92</td>
<td>185</td>
<td>217</td>
<td>137</td>
<td>2.63</td>
<td>.98</td>
</tr>
<tr>
<td>Having friends accompany me on the study abroad (for U.S. study abroad programs)</td>
<td>163</td>
<td>226</td>
<td>155</td>
<td>83</td>
<td>2.25</td>
<td>.99</td>
</tr>
<tr>
<td>Having friends who study at that university (for study in foreign universities)</td>
<td>218</td>
<td>241</td>
<td>117</td>
<td>55</td>
<td>2.01</td>
<td>.94</td>
</tr>
<tr>
<td>Having friends and family in the area or region</td>
<td>305</td>
<td>221</td>
<td>73</td>
<td>33</td>
<td>1.74</td>
<td>.86</td>
</tr>
</tbody>
</table>
Table 6
Students’ Ratings of Factors That May Pose a Difficulty When Preparing to Study Abroad or While Studying Abroad

<table>
<thead>
<tr>
<th>Factor</th>
<th>f</th>
<th>1 Not applicable</th>
<th>2 Not difficult</th>
<th>3 A little difficult</th>
<th>4 Difficult</th>
<th>5 Very difficult</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying for the program or funding my living expenses and studies during the study abroad</td>
<td>5</td>
<td>30</td>
<td>66</td>
<td>179</td>
<td>346</td>
<td></td>
<td>3.35</td>
<td>.86</td>
</tr>
<tr>
<td>Finding affordable and adequate housing</td>
<td>5</td>
<td>25</td>
<td>100</td>
<td>246</td>
<td>248</td>
<td></td>
<td>3.16</td>
<td>.84</td>
</tr>
<tr>
<td>Other financial constraints</td>
<td>7</td>
<td>38</td>
<td>97</td>
<td>232</td>
<td>246</td>
<td></td>
<td>2.94</td>
<td>.89</td>
</tr>
<tr>
<td>Dealing with the language barrier</td>
<td>7</td>
<td>27</td>
<td>158</td>
<td>263</td>
<td>175</td>
<td></td>
<td>2.94</td>
<td>.84</td>
</tr>
<tr>
<td>Graduating on time</td>
<td>17</td>
<td>102</td>
<td>171</td>
<td>170</td>
<td>165</td>
<td></td>
<td>2.65</td>
<td>.93</td>
</tr>
<tr>
<td>Time required to make all the preparations</td>
<td>5</td>
<td>68</td>
<td>217</td>
<td>244</td>
<td>92</td>
<td></td>
<td>2.58</td>
<td>.87</td>
</tr>
<tr>
<td>Gaining admission or being accepted where I want to study</td>
<td>9</td>
<td>84</td>
<td>239</td>
<td>224</td>
<td>69</td>
<td></td>
<td>2.45</td>
<td>.86</td>
</tr>
<tr>
<td>It is stressful to prepare, organize, and implement</td>
<td>7</td>
<td>115</td>
<td>199</td>
<td>225</td>
<td>76</td>
<td></td>
<td>2.43</td>
<td>.93</td>
</tr>
<tr>
<td>Transferring course credits</td>
<td>8</td>
<td>100</td>
<td>241</td>
<td>199</td>
<td>77</td>
<td></td>
<td>2.41</td>
<td>.90</td>
</tr>
<tr>
<td>Paperwork required for studying abroad</td>
<td>6</td>
<td>103</td>
<td>260</td>
<td>190</td>
<td>63</td>
<td></td>
<td>2.35</td>
<td>.88</td>
</tr>
<tr>
<td>Being allowed to study abroad by my major</td>
<td>9</td>
<td>155</td>
<td>196</td>
<td>179</td>
<td>87</td>
<td></td>
<td>2.32</td>
<td>1.00</td>
</tr>
<tr>
<td>My family situation makes it difficult for me to consider the opportunity</td>
<td>26</td>
<td>248</td>
<td>154</td>
<td>109</td>
<td>84</td>
<td></td>
<td>2.05</td>
<td>1.08</td>
</tr>
<tr>
<td>I may lose opportunities in the U.S. if I leave for a long period of time</td>
<td>17</td>
<td>262</td>
<td>163</td>
<td>110</td>
<td>72</td>
<td></td>
<td>1.99</td>
<td>1.04</td>
</tr>
<tr>
<td>It would be difficult for me to leave the U.S. and my family for a long period of time</td>
<td>11</td>
<td>278</td>
<td>170</td>
<td>99</td>
<td>66</td>
<td></td>
<td>1.92</td>
<td>1.02</td>
</tr>
</tbody>
</table>
We asked students a summary question relating to the perceived value of their participation in a study abroad program: “Do you believe that participating in a study abroad program would improve your competitiveness in the global marketplace? Seventy percent of the students responded with “yes,” 26% with “neutral, unsure,” and 4%, “no.”

Finally, we examined selected relationships. There was a moderate, statistically significant, positive relationship between students’ willingness to study abroad and their beliefs that participating in a study abroad program would improve their competitiveness in the global marketplace. A large majority (83.4%) of those who wanted to study abroad believed that the experience would increase their competitiveness; fewer than 50% of those who would not consider studying abroad believed that (Table 7).

Table 7
Relationship Between Willingness to Study Abroad and Belief in Increased Competitiveness in the Global Market, N=956*

<table>
<thead>
<tr>
<th>Would you consider studying abroad?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you believe that participating in study abroad programs would improve your competitiveness in the global market?</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>501</td>
<td>83.4</td>
</tr>
<tr>
<td>Unsure</td>
<td>86</td>
<td>14.3</td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Cramer’s V = .38, p < .01. *Frequencies may not total 956 because of missing data.

We also looked at relationships between selected student characteristics and their interests in and concerns with studying abroad. For example, was student classification (graduate or undergraduate) related to their aspirations for study abroad? Similar percentages—65% of the undergraduate population and 72% of the graduate population—indicated that they wanted to study abroad. So, as a whole, about two-thirds of student respondents aspire to study abroad, which demonstrates a need for further internationalization of the curriculum (Table 8).

Table 8
Relationship Between Student Classification and Their Aspiration to Study Abroad, N=956*

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Consider studying abroad</td>
<td>531</td>
</tr>
<tr>
<td>Do not want to study abroad</td>
<td>279</td>
</tr>
<tr>
<td>Total</td>
<td>810</td>
</tr>
</tbody>
</table>

Cramer’s V = .04, p = .19 (ns). *Frequencies may not total 956 because of missing data.
Another relationship examined was interest in studying abroad and year of study. Because year of study is inherently different by degree sought, undergraduate and graduate students were examined separately. There was no relationship between year of study and desire to study abroad for graduate students. But there was a small, statistically significant relationship between year of study and desire to study abroad for undergraduate students, as shown in Table 9.

Table 9  
*Relationship Between Year in Undergraduate Study and Willingness to Study Abroad, N=844*  
<table>
<thead>
<tr>
<th>Would you consider studying abroad?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of study</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Freshman</td>
<td>61.3</td>
<td>38.7</td>
</tr>
<tr>
<td>Sophomore</td>
<td>79.7</td>
<td>20.3</td>
</tr>
<tr>
<td>Junior</td>
<td>68.0</td>
<td>32.0</td>
</tr>
<tr>
<td>Senior</td>
<td>62.3</td>
<td>37.7</td>
</tr>
</tbody>
</table>

Cramer’s V = .11, p = .04. *Frequencies may not total 844 because of missing data.

There was also a statistically significant relationship between gender and willingness to study abroad. Females (77.2%) were more likely to consider studying abroad than were males (56.7%), as shown in the Table 10.

Table 10  
*Relationship Between Gender and Willingness to Study Abroad, N=956*  
<table>
<thead>
<tr>
<th>Would you consider studying abroad?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>56.7</td>
<td>43.3</td>
</tr>
<tr>
<td>Female</td>
<td>77.2</td>
<td>22.8</td>
</tr>
</tbody>
</table>

Cramer’s V = .22, p < .01. *Frequencies may not total 956 because of missing data.

There was no relationship between willingness to study abroad and grade point average (Cramer’s V = .07, ns), or degree sought (Cramer’s V = .05, ns).

**Summary, Conclusions, Implications, and Recommendations**  
Drucker (1994) advanced the idea of the knowledge worker and said, “we can also predict with confidence that we will redefine what it means to be an educated person” (para. 2). Drucker (2008) explained that the educated person must “understand the world’s cultures, religions, and traditions . . .” and “will have to be trained in perception fully as much as in analysis” (p. 530). He concluded that this integration “requires continuous learning and teaching” (p. 530). Glanville (2006) noted that “all
higher education institutions should aspire to improve and enhance the education they offer their students” (p. 48).

This study determined the perceptions and aspirations of 956 students concerning international educational experiences. The respondents were enrolled in 29 academic undergraduate majors and 24 graduate majors in the College of Agriculture and Life Sciences at Texas A&M University name during the fall 2009 semester. Although drawn as a purposive critical case sample, the demographics were consistent with the larger student body. This sample of 956 students revealed a strong interest in acquiring international educational experiences, with two-thirds of students holding positive perceptions of international experiences and identified a wide array of countries in which to experience internationalization. This is congruent with the findings of Place, Irani, and Friedel (2004). Students said they preferred a faculty-led program or an internship, directed study, research project, or similar experiences. However, students were receptive to a variety of other international educational experiences. Like their international counterparts (Shinn et al., 2008; Shinn et al., 2009), Texas A&M University students seek international experience to enhance their overall life experience, for the opportunity to live in another country or culture, and to increase their employability. From a realistic perspective, students recognized the challenges in paying for the program and funding the additional living expenses and studies. This is consistent with the findings of Irani, Place, and Friedel (2005); Shinn et al. (2008); and Shinn et al. (2009). However, in the face of these challenges, more than 70% of the students felt that participating in a study abroad program would improve their competitiveness in the global marketplace. Ironically, Siaya (2002) reported that “forty-eight percent of the students said they wanted to study abroad, and yet we know that it is likely that only 3 percent actually will by the time they graduate” (para. 12).

Respondents reported that affordability, the country itself, and subject matter were important considerations. They reported various financial issues as the top three perceived difficulties. “Approximately 79% of currently enrolled Aggies receive some type of financial assistance to cover their college costs” (New Student Programs, 2009, p. 47).

Conclusions

Students in COALS at Texas A&M University hold positive perceptions of their world and demonstrate an assertive global view. COALS faculty also recognize the value of global experiences for students (College of Agriculture and Life Sciences, Task Force on Internationalization of the Curriculum, 2009). These viewpoints are congruent with the findings of the American Council on Education (2005), Irani et al. (2005), and Place et al. (2004). Andreasen (2003) concluded that “efforts to increase faculty participation in international endeavors should be of great importance for Colleges of Agriculture around the world” (p. 68). Consequently, faculty and advisors should be committed to organizing experiences that open windows to a global world.

Implications

If a majority of today’s university students hold positive perceptions regarding the value of international educational experiences, then it is important to identify experiences that contribute most to their education. Contributions should address the nature and structure of knowledge, the needs of society, and the needs of the learner (Madeus & Stufflebeam, 1989; Tyler, 1949). If students are open to a variety of structured experiences, such as faculty-led studies and transferring foreign university credits, then the organization, scope, and sequence of curriculum should be examined. Students
implied a readiness for international educational experiences that move from structured experiences to self-directed learning in foreign environments. This is consistent with the work of Shulman (2002). If student’s acquisition of information about these experiences follows Rogers’s (2003) communication channels, then information should be provided early and often. Glanville (2006) noted that the university has a responsibility to encourage experiences that will prepare students for global leadership roles.

Recommendations

While today’s Texas A&M University College of Agriculture and Life Sciences millennial generation students are flooded with information, they are frequently starved for facts that are timely for decision-making. As a result of this study, the authors posit four recommendations:

1. The university can serve as an incubator to nurture experiences that prepare students for global leadership roles. The curriculum should engage the learner and result in an educated person with global knowledge coupled with perceptual and analytic skills (Drucker, 2008).

2. Faculty members and advisors often regulate the incubator—the environment that melds perceptions and analysis into action, collaboration, and problem-solving. Early and consistent messages help students to actualize their plans. Integrating international experiences into the curriculum is essential—both on and off the campus.

3. By applying simulations and case studies within traditional courses, students will transition from a safe, comfortable learning environment to real-world experiences that foster analyzing, evaluating, and creating (Anderson et al., 2001).

4. Simplifying planning and preparation for an international experience is crucial—with technical “one-stop” assistance for students, parents, and faculty members. Particularly important are encouraging early experiences, facilitating student loans, providing financial assistance, and assisting with travel logistics.

This combination of strategies will lead to a framework for action—a triple convergence of engaged students, committed university guidance, and a world that seeks crucial global leadership for agriculture and the life sciences in a hungry world.

References


Professional Competencies Needed by Agricultural and Extension Program Evaluation Staff and Managers of Iranian Ministry of Agriculture

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Abstract

The purpose of this study was to investigate professional competencies needed by program evaluation staff and managers of the Ministry of Jihad-e Agriculture (including the evaluation staff and managers of Monitoring and Evaluation Directorate and the program evaluation staff of the Extension and Farming Systems Deputy) in Iran. This research was conducted during 2008 using a descriptive and correlational design and utilizing a stratified random sampling, which selected 132 out of 170 evaluation managers and agricultural personnel involved in program evaluation of that ministry. The reliability of the instrument was estimated to be acceptable (alpha= 0.75- 0.98). Both staff and managers suggested the development of evaluation competencies for their programs. They are interested in participating in relevant training courses to enhance their proficiency. The priority of the extension program evaluation staff tends to “Situational Analysis” area, while agricultural program evaluation managers mainly prefer the “Systematic Inquiry” area. Most evaluation competencies should be acquired or developed after the managers have being employed.

Keywords: Professional Competencies, evaluation staff and managers
Introduction / Conceptual Framework

Competency has been defined and utilized differently by various organizations and people (Lee, 2006). Competence is the ability of an individual to perform a task using his/her knowledge, skills, and experience. Assessing professional competencies should be especially relevant to the specific tasks needed for successful performance in a given position (Herringer, 2002).

Today’s ever-changing world faces and causes new challenges for human resources activities (Ramlall, 2006). Program evaluators should improve their professional competencies in order to act more effectively than before to cope with these challenges (Zorzi, et al., 2002). The main purpose of identifying competencies is to clarify the essential behavioral standards and specific tasks needed by an organization’s employees (Williams, 2003). The specification of competencies can help organizations define their development approaches in the context of human resources activities (Gonzales, & Nelson, 2005).

Identifying core competencies of agricultural extension staff may not be new; many studies have been carried out regarding this subject. Beeman, Cheek, McGhee and Grygotis (1979) first assessed the importance of core competencies needed by the county and state staff in Florida. They reported that the state staff competencies were higher than incumbent staff.

The agricultural and extension staff of developing countries need to achieve the professional competencies in the areas of management, communication, administration and program planning skills (Pezeshki Rad, Yoder & Diamond, 1994). Gussman (2005) reviewed the professionalism of evaluation, which was used to assess the effectiveness of government plans. The effective implementation of programs was related to the employees’ competence. Program evaluators need to attain appropriate skills to improve their competencies (Cousins & Aubry, 2006).

Cooper and Graham (2001) identified 57 competencies needed by the agents and the supervisors at the county level, which were classified into seven areas: 1) program planning, implementation and evaluation; 2) public relations; 3) personal and professional development; 4) faculty/staff relations; 5) personal skills; 6) management responsibility and; 7) work habits.

Furthermore, Place and Jacob (2001) and Lindner, Dooley and Wingenbach (2003) mentioned that extension workers need management competencies such as time management, workplace management and stress management.

The Australian Evaluation Society has outlined four principal areas of competence:  
- Knowledge or cognitive competence (e.g. models, theories, context, research methodology, project management, and communication);
- Functional competence (e.g. design, data collection, data analysis, planning, and reporting);
- Personal competence (e.g. problem solving, analytical thinking, and professional development); and
- Values/ethical competence (Zorzi, et al., 2002).

In addition, the Canadian Evaluation Society has defined four essential competencies for evaluators: 1) Systematic inquiry, 2) Performance competence, 3) Public skills and 4) Professionalism of evaluation (Canadian Evaluation Society, 1999).

According to the study of Gibson and Hillison (1994), staff need eight core competencies including communication; effective thinking; organizational
management; program planning; research and development; technical knowledge; and human and social development (Gibson & Brown, 2003). Cousins (2006) and Gussman (2005) maintain their views concerning the Essential Competencies for Program Evaluator (ECPE). This can be used as the criteria for education, evaluation, training and implementation (Huse & James, 2006).

The theoretical framework of this study was based on the incessant studies (the years of 1998, 2001, 2005, 2006) conducted by King, Stevahn, Ghere, and Minnema (2001, 2005, 2006). They have worked on identifying a set of competencies called the Essential Competencies for Program Evaluators (ECPE), which can be summarized into a taxonomy with six primary categories: 1) systematic inquiry, 2) reflective practice, 3) project management, 4) situational analysis, 5) professional practice, and 6) interpersonal competence. (See Figure1).

**Figure 1.** Theoretical Framework

Because there is an increased emphasis on human resources competencies as a means to increase the effectiveness of organizations, this existing research will investigate core competencies needed by evaluators in the Ministry of Jihad-e-Agriculture, as a chief center to agricultural program evaluation in Iran.

**Purpose and Objectives**

This study examined professional competences needed by the evaluation experts of the Ministry of Jihad-e-Agriculture (including the evaluation staff and managers of Monitoring and Evaluation Directorate and the program evaluation staff of Extension and Farming Systems Deputy) in Iran. Objectives of the study were 1) to identify professional competencies needed by evaluation managers and 2) to identify professional competencies needed by extension program evaluation staff.

**Methods**

The study was conducted using survey methodology. The population consisted of the evaluation managers and the personnel involved in agricultural program evaluation in the Ministry of Jihad-e-Agriculture of Iran (N=170) including 1) the evaluation...
staff and managers of Monitoring and Evaluation Directorate and 2) the extension program evaluation staff of the Extension and Farming Systems Deputy. A stratified sampling technique was utilized to select the sample (n=132), which included 67 staff and managers of the first group and 65 extension evaluation staff of the second group. In this article, we have named the first group as “agricultural evaluation staff and managers” and the second group as “extension evaluation staff.”

The researchers developed a questionnaire adapted from the research instruments of King et al., (1998, 2001) Stevahn et al., (2005) and Ghere et al., (2006). The face validity and content validity of the instrument were established using a panel of experts consisting of senior faculty members of the agricultural extension and education department in Tarbiat Modares University. Subsequently the instrument was translated into Persian, after being reviewed for content validity by the extension and evaluation experts of Tarbiat Modares, Tehran and Shiraz universities.

The final version of the instrument contained two sections. Section one included 63 statements grouped in 6 competency categories: professional practice, systematic inquiry, situational analysis, project management, reflective practice and interpersonal competence. The items in this section were rated in terms of being needed by extension personnel using a five-point Likert-type scale, that ranged from; 1= very low value, 2=low value, 3=moderate value, 4=high value, 5=very high value.

Section two of the questionnaire consisted of demographic information of the respondents (age, gender, position title, administration responsibilities, total years experience in evaluation and in the current position, and their last education level). A reliability analysis conducted using the final study returns of respondents, which indicated that the instrument had acceptable reliability. Cronbach's alpha values ranged from 0.75 (interpersonal competence) to 0.98 (systemic inquiry).

Results

Background Demographics

Sixty percent of the respondents were between the ages of 36 and 45, 18% under the age of 36, and 22% over the age of 45. Results showed that 72% of the respondents were male and 28% female. The education level of 42% was at a master degree, 56% held an undergraduate degree, and two percent had PhD degree. Moreover, 63% reported to have at least 6 years evaluation experience. Their degrees consisted of various educational fields including agricultural extension and education, other agricultural subjects, and varied fields related to social sciences. Over half of the respondents had participated in 1-6 training courses for developing their evaluation professional career. The others (44%) had more opportunity to participate in these courses (Table 1).
Table 1  
*Evaluation Experience and Participation in Evaluation Training Courses*

<table>
<thead>
<tr>
<th>Evaluation experience (years)</th>
<th>N</th>
<th>Percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 6</td>
<td>34</td>
<td>37.7</td>
<td>37.7</td>
</tr>
<tr>
<td>6-10</td>
<td>36</td>
<td>40.0</td>
<td>77.7</td>
</tr>
<tr>
<td>11-15</td>
<td>5</td>
<td>5.6</td>
<td>83.3</td>
</tr>
<tr>
<td>over 15</td>
<td>15</td>
<td>16.7</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participation in evaluation training courses</th>
<th>N</th>
<th>Percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>19</td>
<td>23.5</td>
<td>23.5</td>
</tr>
<tr>
<td>4-6</td>
<td>25</td>
<td>30.9</td>
<td>54.3</td>
</tr>
<tr>
<td>7-14</td>
<td>22</td>
<td>27.1</td>
<td>81.5</td>
</tr>
<tr>
<td>Over 14</td>
<td>15</td>
<td>18.5</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

The respondents’ workplace was related to two administrations of the Iranian Ministry of Jihad-e-Agriculture. The first group included 67 agricultural program evaluation staff and managers of the Monitoring and Evaluation Directorate in the ministry, who were responsible for managing the evaluation of all agricultural programs in different departments and different geographical levels of the country. The second group comprised 65 evaluation staff of the Extension and Farming Systems Deputy of the ministry, who were in charge of evaluating agricultural extension programs at different geographical levels.

**Professional Competencies Needed**

The professional competencies needed by the extension evaluation staff are presented in Table 2. Based on respective mean values, only the three highest rated competencies of the six competency areas are reported. The most frequent competencies needed by the respondents were: applying professional evaluation standards (mean= 4.35), developing professional practice and remaining open to input from others (4.54), situational analysis and analyzing data (4.38) in the systematic inquiry category. Furthermore, the other main competencies consisted of using appropriate technology (4.36) in the area of project management, facilitating constructive interpersonal interaction (4.32) in the interpersonal competence category, and being aware of self as an evaluator (4.32) in the reflective practice category.
Table 2
*Three Highest Rated Professional Competencies Needed by Evaluation Staff within each Competency Category*

<table>
<thead>
<tr>
<th>Competency Category and Competency Statement</th>
<th>N</th>
<th>Mean*</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Professional Practice</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Applies professional evaluation standards</td>
<td>65</td>
<td>4.35</td>
<td>.87</td>
</tr>
<tr>
<td>2) Respects clients and stakeholders</td>
<td>65</td>
<td>4.21</td>
<td>.89</td>
</tr>
<tr>
<td>3) Strives for integrity in conducting evaluation</td>
<td>64</td>
<td>4.18</td>
<td>.91</td>
</tr>
<tr>
<td><strong>Situational Analysis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Remains open to input from others</td>
<td>65</td>
<td>4.51</td>
<td>.92</td>
</tr>
<tr>
<td>2) Identifies the interests of stakeholders</td>
<td>63</td>
<td>4.29</td>
<td>.86</td>
</tr>
<tr>
<td>3) Serves the information needs of users</td>
<td>64</td>
<td>4.16</td>
<td>.94</td>
</tr>
<tr>
<td><strong>Systematic Inquiry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Analyzes data</td>
<td>65</td>
<td>4.38</td>
<td>.84</td>
</tr>
<tr>
<td>2) Interprets data</td>
<td>64</td>
<td>4.38</td>
<td>.89</td>
</tr>
<tr>
<td>3) Conducts meta-evaluation</td>
<td>64</td>
<td>4.36</td>
<td>.87</td>
</tr>
<tr>
<td><strong>Project Management</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Uses appropriate technology</td>
<td>65</td>
<td>4.36</td>
<td>.65</td>
</tr>
<tr>
<td>2) Communication with clients throughout the evaluation</td>
<td>65</td>
<td>4.30</td>
<td>.94</td>
</tr>
<tr>
<td>3) Train others involved in evaluation</td>
<td>65</td>
<td>4.18</td>
<td>.94</td>
</tr>
<tr>
<td><strong>Reflective Practice</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Aware of self as an evaluator</td>
<td>63</td>
<td>4.32</td>
<td>.94</td>
</tr>
<tr>
<td>2) Builds professional relations to enhance evaluation practice</td>
<td>64</td>
<td>4.30</td>
<td>.86</td>
</tr>
<tr>
<td>3) Pursues professional development in evaluation</td>
<td>64</td>
<td>4.21</td>
<td>.88</td>
</tr>
<tr>
<td><strong>Interpersonal Competence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Facilitates constructive interpersonal interaction</td>
<td>65</td>
<td>4.32</td>
<td>.77</td>
</tr>
<tr>
<td>2) Demonstrates cross-cultural competence</td>
<td>65</td>
<td>4.23</td>
<td>.96</td>
</tr>
<tr>
<td>3) Negotiation</td>
<td>64</td>
<td>4.13</td>
<td>.80</td>
</tr>
</tbody>
</table>

*Mean computed by a five point Likert type scale: 1="very low value through 5="very high value"

The professional competencies needed by agricultural program evaluation staff and managers are also presented in Table 3. In the same way, only the three highest rated competencies in each of the six competency areas are reported. The eight highest rated competencies are provided as follows: applying professional evaluation standards (4.45) in regard to professional practice, remaining open to input from others (4.54) in the area of the situational analysis category, identifying data sources (4.66) in the systematic inquiry category, identifying needed resources for evaluation (4.45) in the area of project management, being aware of self as an evaluator (4.32) in the reflective practice category, and facilitating constructive interpersonal interaction (4.32) in the interpersonal competence category.

**Comparing Competencies between the Extension Staff and the Agricultural Evaluation Staff and Managers**

Because of the small sample size and ordinal data, a Mann-Whitney $U$ test was employed to test the competency differences between extension evaluation staff and agricultural evaluation staff and managers. The Mann-Whitney $U$ test ranks the scores for two groups from the lowest to the highest.
highest value. The test also helps researchers investigate whether the values from one population are significantly higher or lower than the values from another population (Ortega, et al., 2003, p. 73).

Table 3
Three Highest Rated Professional Competencies Needed by Agricultural Evaluation Managers within each Competency Category

<table>
<thead>
<tr>
<th>Competency Category and Competency Statement</th>
<th>N</th>
<th>Mean*</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Applies professional evaluation standards</td>
<td>65</td>
<td>4.45</td>
<td>.66</td>
</tr>
<tr>
<td>2) Strives for integrity in conducting evaluation</td>
<td>67</td>
<td>4.35</td>
<td>.79</td>
</tr>
<tr>
<td>3) Considers the public welfare in evaluation practice</td>
<td>67</td>
<td>4.23</td>
<td>.79</td>
</tr>
<tr>
<td>Situational Analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Remains open to input from others</td>
<td>66</td>
<td>4.54</td>
<td>.63</td>
</tr>
<tr>
<td>2) Modifies the study as needed</td>
<td>67</td>
<td>4.38</td>
<td>.74</td>
</tr>
<tr>
<td>3) Identifies the interests of stakeholders</td>
<td>66</td>
<td>4.28</td>
<td>.74</td>
</tr>
<tr>
<td>Systematic Inquiry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Identifies data sources</td>
<td>65</td>
<td>4.66</td>
<td>.57</td>
</tr>
<tr>
<td>2) Conducts meta-evaluation</td>
<td>67</td>
<td>4.65</td>
<td>.92</td>
</tr>
<tr>
<td>3) Interprets data</td>
<td>66</td>
<td>4.63</td>
<td>.73</td>
</tr>
<tr>
<td>Project Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Identifies needed resources for evaluation</td>
<td>67</td>
<td>4.45</td>
<td>.63</td>
</tr>
<tr>
<td>2) Budgets an evaluation</td>
<td>67</td>
<td>4.23</td>
<td>1.00</td>
</tr>
<tr>
<td>3) Supervises others involved in evaluation</td>
<td>66</td>
<td>4.21</td>
<td>1.02</td>
</tr>
<tr>
<td>Reflective Practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Pursues professional development in evaluation</td>
<td>67</td>
<td>4.45</td>
<td>.74</td>
</tr>
<tr>
<td>2) Aware of self as an evaluator</td>
<td>64</td>
<td>4.38</td>
<td>.79</td>
</tr>
<tr>
<td>3) Builds professional relations to enhance evaluation practice</td>
<td>66</td>
<td>4.30</td>
<td>.78</td>
</tr>
<tr>
<td>Interpersonal Competence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Uses listening communication skills</td>
<td>66</td>
<td>4.30</td>
<td>.68</td>
</tr>
<tr>
<td>2) Uses verbal communication skills</td>
<td>65</td>
<td>4.26</td>
<td>.70</td>
</tr>
<tr>
<td>3) Uses written communication skills</td>
<td>67</td>
<td>4.21</td>
<td>.71</td>
</tr>
</tbody>
</table>

*Mean computed by a five point scale: 1=" very low value through 5="very high value."

Table 4 shows differences of ratings of the competency areas between evaluation managers and staff. The managers ranked their required competencies to be higher in the areas of systematic inquiry and “conveying personal evaluation, approaches and skills to clients” in professional practice. Whereas the staff ranked higher levels of competencies needed, as “training others involved in conducting the evaluation” in the project management area. The greatest level of competency difference was identified in the systematic inquiry area (Table 4).
Table 4
Comparison of Competency Areas Needed by Staff and Managers

<table>
<thead>
<tr>
<th>Competency Category</th>
<th>Position Title</th>
<th>Mean</th>
<th>N</th>
<th>U Rank</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Systematic Inquiry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifying data sources</td>
<td>Extension evaluation Staff</td>
<td>57.49</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agri evaluation staff &amp; managers</td>
<td>43.29</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>55</td>
<td>121</td>
<td>800.000</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Understanding the knowledge base of evaluation</td>
<td>58.20</td>
<td>57</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extension evaluation Staff</td>
<td>46.87</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agri evaluation staff &amp; managers</td>
<td></td>
<td>120</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>57</td>
<td>120</td>
<td>978.500</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Specifying program theory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extension evaluation Staff</td>
<td>57.88</td>
<td>58</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agri evaluation staff &amp; managers</td>
<td>43.96</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>58</td>
<td>121</td>
<td>823.500</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Project Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training others involved in conducting the evaluation</td>
<td>Extension evaluation Staff</td>
<td>44.69</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agri evaluation staff &amp; managers</td>
<td>56.27</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>56</td>
<td>129</td>
<td>974.000</td>
<td>0.05</td>
</tr>
<tr>
<td><strong>Professional Practice</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conveying personal evaluation, approaches and skills to clients</td>
<td>Extension evaluation Staff</td>
<td>57.52</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agri evaluation staff &amp; managers</td>
<td>44.46</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>54</td>
<td>127</td>
<td>881.000</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Conclusions, Recommendations and Implications

Professional staff of an organization need to show effective action in today’s ever-changing world. A substantial effort is required to indicate “what they do?” and “what they should do?” This in turn causes a real challenge for both staff and managers to acquire and develop effective training programs.

Overall, both the staff and managers involved in evaluation activities of agricultural extension programs and other agricultural programs suggest the development of evaluation competencies for their programs. All evaluation competences are reported to be needed at a high or very high level by both managers and the professional staff, although the agricultural program evaluation staff and managers rated the extent of their requirements with a higher value. These subjects can improve the competencies of the professionals and managers to evaluate more effectively both agricultural and natural resources programs, particularly extension programs. Their comments in ranking competencies show that they are interested in participating in relevant training courses to enhance their proficiency. The priority of the extension program evaluation staff mostly tends to the situational analysis area through remaining open to input from others, while the agricultural program evaluation staff and managers mainly need the systematic inquiry through identifying data sources,
interpreting data and conducting meta-evaluation.

In addition to the competences mentioned above, the extension program evaluation staff prefer to learn (a) professional practices of applying evaluation standards; (b) situational of identifying the stakeholders’ interests; systematic inquiries (such as data analysis, data interpretation and conducting meta-evaluation); (c) project management in using appropriate technology and communicating with clients through the evaluation; (d) reflective practices through being aware of self as an evaluator and building professional relations; and (e) interpersonal competence through facilitating constructive interpersonal interactions. At the same time, the agricultural program evaluation staff and managers also prefer professional practices of applying evaluation standards, situational analysis through remaining open to input from others, project management through identifying needed resources for evaluation, and reflective practice through pursuing professional development in evaluation.

Despite their similar requirements, the agricultural program evaluation staff and managers are significantly different from the extension evaluation staff. The agricultural program evaluation staff and managers show a higher value of requirement to these competences: systematic inquiry through identifying data sources, understanding the knowledge base of evaluation, and specifying program theory; project management through training others involved in conducting the evaluation; professional practice of conveying personal evaluation, and approaches and skills to clients.

It is recommended that training courses be developed in regard to these various priorities. Most evaluation competencies should be provided or developed after the agricultural and extension staff and managers are employed through in-service training courses. This is due to their job characteristics which demand inevitable needs for their professional development through continuing education programs. Further research is required to be conducted regarding evaluation competencies of agricultural extension staff, for example, the perception assessment of current evaluators concerning the importance of the competency areas. Moreover, the use of the instrument should be further tested using factor analysis to distinguish the dimensions of evaluation.

The professional development of evaluation programs requires developing the competencies of the incumbent staff and managers in the six skill areas, which thus constructs a basic source for future evaluation situations. The results of this study can be used for coordinating and adapting the competencies needed for the practitioners with the evaluation programs being taught in university curricula.

References


A Case Study of the Diffusion of Agricultural Innovations in Chimaltenango, Guatemala

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Abstract
The adoption of appropriate innovations is an important issue in agricultural development. However many development project officers fail to use strategies to identify and select opinion leaders who can leverage the diffusion and adoption process. This case study used qualitative methods including interviews, focus groups, and observations to gather data to analyze current social networks, identify key participants, understand the roles and characteristics of leaders, and define a strategy to engage leaders within the region of Chimaltenango, Guatemala. The analysis revealed three diverse social networks; one powered by political structures in the urban and rural areas while organized groups of regional farmers powered a second type of social networks. Independent farmers shaped still other unstructured and informal networks that influenced adoption and diffusion of innovations. Data confirmed that opinion leaders have identifiable and predictable roles and characteristics within and among the networks. Therefore, the diffusion of innovation through formal and non-formal leaders represents a promising strategy for development project officers. Local leaders influence adoption decisions largely because of their recognition and respect by community members. The diffusion of innovations through opinion leaders promotes the active participation of local farmers and validates the innovation through time. Therefore, the importance of analyzing social networks and selecting opinion leaders to support the diffusion process of development projects was important in Chimaltenango, Guatemala. The authors recommend future studies to compare results from other regions and cultures in Guatemala.

Keywords: Opinion leaders, social networks, diffusion, agricultural innovations, Guatemala
Introduction

Heemskerk (2005) observed that agricultural innovations are changing to be more demand driven to respond to farmers’ needs. Farmers need to be active participants of the development and diffusion of innovations to make adoption happen.

The role of the change agent in the diffusion process is to promote a participatory environment where opinion leaders will lead the diffusion and adoption of innovations. Rogers (2003) emphasized that “the opinion leaders approach magnifies the change agent’s effort” (p. 388). Therefore it is important for change agents to recognize the social network and empower opinion leaders to share the responsibility of diffusing innovations to other farmers.

The involvement of opinion leaders increases the credibility of innovations because these opinion leaders convince their peers to adopt appropriate innovations. In addition, innovations that are validated by an opinion leader acquire local sponsorship and sanction (Rogers, 2003). Therefore, to achieve long-term adoption, opinion leaders should lead the diffusion process.

Change agents, as sole entities of the diffusion of innovations, have scarce resources and limited access to peers. Rogers (2003) suggests that communication strategies should target opinion leaders, who then are going to target their peers. The number of individuals reached at the end is higher and adoption is sustained through time. Participatory approaches have shown to be effective as innovations are diffused. Change agents have realized the importance of identifying keys players to collectively implement innovations among social networks.

Theoretical Framework

Heemskerk (2005) found a natural characteristic of farmers that they “innovate to sustain, expand, and improve their production systems” (p. 1). Miller and Mariola (2009) found farmers were willing to adopt conservation farm technologies but many farmers discontinued the use of the technology because of socioeconomic factors. Therefore, it is important to promote the diffusion of agricultural innovations among all farmers through social networks.

The process of diffusion of an innovation occurs when it is “communicated through certain channels over time among members of the social system” (Rogers, 2003, p. 5). This definition identifies three key components: innovation, communication channels, and social system. First, Rogers (2003) defines an innovation as “an idea, practice, or object that is perceived as new by an individual or group of individuals” (p. 12). More specifically an agricultural innovation is defined as the result of a social negotiation between farmers (Heemskerk, 2005). Rogers also described a communication channel as “the means by which messages get from one individual to another” (p. 18). The most influential channels in the diffusion process are interpersonal channels which are face to face interactions between two or more individuals (Rogers, 2003). Finally, a social system is considered as interactions among individuals to solve a joint goal (Rogers, 2003).

Rogers (2003) observed that a common source of information in all stages of the adoption process of an innovation was interpersonal communication between farmers, friends, and neighbors. Starting with the awareness stage, farmers (potential adopters) learn about an innovation from peers. This occurs in a social learning process which lowers uncertainties related to adoption. Later, during the interest stage, farmers gather details about the innovation from other farmers. Then, in the evaluation stage, farmers discuss the positive and negative aspects of adopting the innovation with other farmers and develop a joint
evaluation. Afterward, in the trial stage, farmers often do small-scale trials to observe the benefits of innovation. Finally, during the adoption stage, farmers use the innovation in a large-scale operation as an ongoing practice.

**Social Networks**
Analysis of a social network recognizes all interactions among individuals of a social system. Monge, Hartwich, and Halguin (2008) noted that the analysis identifies the influence that certain individuals have over others’ choices and decisions. The type of links and relationships between human actors within the system shows their social structure (Knake & Kuklinski, 1982). Monge, Hartwich, and Halgin (2008) citing the works of Kohler, Behrman and Watkins (2007) and Hagset (2005) concluded that “social networks affect the diffusion of innovations through social learning, joint evaluation, social influence, and collective action processes” (p. 9). Therefore, it is important to study the nature of the different networks, identify the social links, and define participatory strategies to diffuse an innovation among the network.

**Horizontal and Vertical Communication**
Feder, Just, and Zilberman (1985) found that the diffusion of information in a social system depends on interpersonal communications among individuals. These horizontal communications occur between farmers with similar social and economic characteristics and who are able to persuade each other to adopt innovations and knowledge. Individuals from other communities, who are identified as outsiders of the social structure, are not considered as key players, especially in isolated rural areas.

Horizontal communications promote the observation, monitoring, and discussion of farmers’ experiences. These dialogues allow them to evaluate innovations and make decisions about adoption among their peers. However, peers generally have access to the same information. Monge, Hartwich and Halguin (2008) posited that farmers must also have vertical communications to learn about innovations. A common source of new information and innovations in a social structure are opinion leaders.

**Opinion leaders and their role in the diffusion of innovations**
Opinion leaders are heterophilous individuals who observe and evaluate innovations proven by innovators. They are considered “early adopters of culturally acceptable innovations and generally are opponents of culturally unacceptable ones” (Monge, Hartwich, & Halguin, 2008, p. 12). Once opinion leaders approve and adopt an innovation, it influences others in the group who also adopt the innovation to maintain a social and economic status among the social system. Leaders are important determinants of rapid and sustained change, as diffusion happens faster when it is initiated by them (Valente & Davis, 1999). They are considered the bridge between farmers and sources of innovations.

Opinion leaders have certain characteristics that make them heterophilous to contribute to their social systems with innovations. Rogers (2003) observed that opinion leaders tend to have access to mass media information and external contacts that provide them new ideas from outside. Additionally, Rogers concluded that opinion leaders have “greater contact with change agents, social participation, higher social status, and more innovativeness” (p. 362). Opinion leaders are used as role models in the adoption of innovations. This can be effective at the social and economic levels of the diffusion process. From the economic perspective of projects’ implementation when diffusing an innovation, opinion leaders multiply the efforts of the change agent, by carrying the message to more possible adopters. This translates into
effectiveness by achieving more diffusion in less time. At the social level, once opinion leaders have adopted an innovation, that innovation acquires local sponsorship and credibility (Rogers, 2003).

Selection Process of Opinion Leaders

Valente and Davis (1999) identified a set of procedures that allows researchers to analyze a social system to identify opinion leaders or key players and their interactions among the network. Some of the suggested recruitment procedures were: a) individuals select themselves to be leaders; b) external individuals or key informants select leaders; c) community members select participants that then pick other participants (snowball); d) selected community members select opinion leaders; and e) all community members nominate opinion leaders. According to this study, the first two procedures were shown not to be effective because of possible selection bias. The most recommended methods of selecting opinion leaders to support the implementation of development projects are participative procedures like c, d, and e that allow all individuals to be part of the selection process. Frequently, opinion leaders are selected based on two important characteristics, credibility and trustworthiness, and other demographic factors, such as gender, ethnicity, and geography.

Innovations in Latin America

Hartwich, Monge, Ampuero, and Soto (2007) concluded that common problems found in the traditional top-down extension services of countries, such as Bolivia, are obstacles in the communication and diffusion of knowledge (information and skills). This top-down approach creates an inability of the system to reach a greater number of farmers. The limitation to reach more farmers is due to the use of a vertical system where extension agents are responsible for all interpersonal communications that occur. Therefore, there is a need to replicate the diffusion of innovations through the analysis of social networks or systems of small farmers to identify key players who will support the diffusion process to reach a greater numbers of farmers.

Evidence provided by a study conducted in three areas of Bolivia, suggests that farmers from rural areas adopt innovations based on persuasion, social influence, and competition within their social system (Monge, Hartwich, & Halguin, 2008). This study confirms that using the farmers’ influence over their peer networks is effective to diffuse the adoption of agricultural innovations.

Another study about diffusion of innovations analyzed the adoption through time of nontraditional export products as main crops by small farmers in the Central Highlands of Guatemala. Carletto, De Janvry, and Sadoulet (1999) observed adoption twenty years ago when nontraditional products were introduced quickly. In the last decade two thirds of small farmers who adopted these crops discontinued the use of the innovation due to external factors such as the changes in price in the global market and low qualities of the soil. This study suggested that for the adoption of agricultural innovations to be sustained through time it needs to be economically and environmentally sound.

It is also important to mention that several studies about the application of social networks analysis have been done in areas such as medical, economics and marketing, but few are applied to the innovation process in agriculture (Monge, Hartwich, & Halguin, 2008). Therefore, this research study will define a methodology to identify key players that will contribute to the diffusion of appropriate agricultural innovations among small farmers in the region of Chimaltenango, Guatemala.
Background on the Study Context

The diffusion of agricultural innovation to farmers of the region of Chimaltenango is conducted through governmental, nongovernmental, and farmers’ organizations. These organizations use the political, social, and agricultural networks and their communication channels to transfer information.

Chimaltenango has a recognized political structure. This structure is made up of individuals that have been elected by the population. The authorities guide the economic and social development of the urban and rural areas. The main authority of the region is the governor (called CODEDE-Departmental Counsel for Development) who coordinates projects with the mayors (also called COMUDE-Municipal Counsel for Development) of the different municipalities. Mayors then coordinate activities with the rural villages through the principal authorities of each village, the COCODE (Community Counsel for Development). There is a vertical communication system between the central area and the villages where the units have a meaningful difference in their economical and social characteristics. Under this system farmers are located at the end of the chain.

The Guatemalan farmers though, have their horizontal channels and their own distinct organization. Some are part of organized groups, such as associations and cooperatives, and others are independent. Associations and cooperatives provide farmers the benefits of receiving technical assistance, being able to commercialize larger volumes to the market, and receiving funds from governmental and nongovernmental organizations to improve and increase their productions.

Agriculture is the main economic activity of small farmers in the region of Chimaltenango. Farmers have applied traditional agricultural practices such as intercropping to produce basic grains like corn and beans for family consumption. Productivity levels of grains are low because of the lack of use of agricultural inputs such as fertilizers to improve the quality of the soil. A number of small farmers have diversified their productions by planting nontraditional vegetables that are sold to exporting companies. Diversification is applied as an option to improve their income and the quality of life of their families.

This case study observed and analyzed the social network of these farmers to identify their links and relationships. Farmers were asked about their perceptions about the key participants and how they lead the diffusion process of innovations among them.

Purpose and Objectives

The purpose of this study was to analyze the diffusion process of innovations among a group of small farmers in Chimaltenango, Guatemala. The specific objectives were as follow:

(a) Explore the social networks and identify key participants, their links, and relationships;
(b) Identify the roles of opinion leaders in the diffusion of agricultural innovations; and,
(c) Analyze the applicability and diffusion of techniques learned through training.

Methods

Qualitative research was used in this study to “understand how people make sense of their experiences” (Merriam, 2009, p. 37). Qualitative methods (interviews, observation, and journal entries) were used to gather individuals’ perceptions about who they think are the opinion leaders, what their characteristics are, and how these leaders influence the adoption or non-adoption of agricultural innovations. The field work was conducted over a one-month period (July, 2009) to ensure prolonged engagement directly in the community. The data were gathered in the local language, Spanish, and
translating into English by the principal researcher who is native Spanish speaker. Also, the principal researcher is Latin-American, which provided greater reliability of the translation.

The study focused on key players of a particular area (Chimaltenango, Guatemala) and more specifically, a group of individuals participating in training activities funded by the United States Department of Agriculture (USDA). Individuals in the sample were identified by the principal researcher through snowball, chain, or network sampling. This type of sampling allowed the principal researcher to identify a few key informants who referred others whom they know could provide rich information to learn about the diffusion process of agricultural innovations. Subsequently, a purposive sample consisting of 15 individuals were identified. Ten of these individuals were female and five were male (Table 1). Seven individuals were ethnically indigenous and the other eight were Ladinos. The Spanish Royal Academy Dictionary (2003) defines ladino as a person of mixed European and American Indian ancestry who speaks Spanish as a first language.

Table 1

Demographic Attributes by Cohort

<table>
<thead>
<tr>
<th>Demographic attribute</th>
<th>Demographic cohort</th>
</tr>
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<tbody>
<tr>
<td>Vertical political networks</td>
<td>1-I, 4-I, 6-I, 7-I, 8-I</td>
</tr>
<tr>
<td>Horizontal networks</td>
<td>2-I, 3-I, 5-I, 9-I, 10-I, 1-FG, 2-FG</td>
</tr>
<tr>
<td>Female</td>
<td>1-I, 2-I, 3-I, 4-I, 5-I, 10-I, 2-FG</td>
</tr>
<tr>
<td>Male</td>
<td>6-I, 7-I, 8-I, 9-I</td>
</tr>
<tr>
<td>Ethnically indigenous</td>
<td>1-I, 2-I, 3-I, 4-I, 1-FG</td>
</tr>
<tr>
<td>Ethnically Ladinos</td>
<td>5-I, 6-I, 7-I, 8-I, 9-I, 10-I, 2-FG</td>
</tr>
<tr>
<td>Agriculture as economic activity</td>
<td>2-I, 4-I, 5-I, 6-I, 7-I, 8-I, 10-I, 1-FG, 2-FG</td>
</tr>
<tr>
<td>Formal leader</td>
<td>1-I, 3-I, 4-I, 5-I, 6-I, 7-I, 8-I</td>
</tr>
<tr>
<td>Non-formal leader</td>
<td>2-I, 9-I, 10-I, 1-FG, 2-FG</td>
</tr>
<tr>
<td>Age 18-30 years</td>
<td>1-I, 2-I, 9-I, 2-FG</td>
</tr>
<tr>
<td>Age 30-65 years</td>
<td>3-I, 4-I, 5-I, 6-I, 7-I, 8-I, 10-I, 1-FG</td>
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The 15 selected participants were identified because of their knowledge and experiences about the process of diffusion of agricultural innovations among their networks. Respondents were selected by their peers as formal and informal leaders because of their natural characteristics to lead and the role they play in the groups and communities. The principal researcher acted as an observer who gathered information about the social networks and the diffusion of innovations.

Data were collected through semi-structured interviews with individuals and focus groups. These interviews were guided by a set of 17 questions, with no predetermined order. Questions help the principal researcher to gather information about the participants’ experiences, opinions, and perceptions about the diffusion process of innovations. Ten individuals were interviewed on a one-to-one basis, and five individuals were part of two focus groups. One focus group was made up of three individuals from a farmers’ association and the other was made up of two individuals from another organized group of farmers. Focus groups among small number of participants were used to
encourage discussions among them (Berg, 2001). Observation and journal entries were also used to gather information about participants. Observation by the principal researcher provided knowledge of the context of participants and systematically gathered behaviors and reactions to the diffusion of innovations. Journal entries allowed the principal researcher to collect information about events, such as farm visits and training sessions.

Respondents were coded according to the type of method used to gather the information, I-Interview and FG-Focus Group. In addition, a random number was assigned by the principal researcher to ensure confidentiality of the participants. Validity and reliability of this study were monitored through different methods, including triangulation, member checking, prolonged engagement in data collection, and peer reviews. Triangulation was done by repeated interviews, observation and reviewing documents about the categories by the principal researcher. In addition, all the information and tentative interpretations gathered during interviews were reviewed and checked by participants. Raw data, interpretations, and categories were discussed with colleagues to confirm the validity.

Finally, the principal researcher stayed at the research site for a month where she interviewed participants, spent time in the rural communities, and observed their daily activities.

Findings
Three categories emerged during the study: 1) social networks with subcategories about the leadership roles and relationships within the social network, 2) characteristics of leaders and techniques to influence other, including a subcategory on successful development projects, and 3) applicability of training topics in the region. Representative quotes, using an audit trail of respondent’s unique identifiers, provide verification back to the raw data sources. Each category will be discussed in detail by sub-heading.

Social Networks
Participants for this study were asked to identify their positions inside their social network. A groups of participants identified themselves as political leaders, including COCODES (4-I, 6-I, 7-I), mayor’s assistants (8-I), and a municipality representative (1-I), others identified themselves as organizational leaders (3-I, 5-I, 9-I) and, finally, others identified themselves as members of a group/organization or rural communities (2-I, 10-I, 1-FG, 2-FG).

The leaders and their networks.
The roles, links, and relationships of participants varied according to their positions. The political leaders interviewed were selected by the members of their communities through democratic elections for a four year period. In the case of the mayor’s assistant, his major role was to be the link between the mayor and the community members to satisfy the people’s needs and implement development projects at the community level (8-I). The COCODES were counsels that work with the people to try to alleviate their social, economic, and environmental problems through the implementation of local projects (7-I). On the other hand, municipality’s workers were elected by the mayor and their role was to implement projects that responded to the mayor’s work plan (1-I). Political leaders were part of a vertical system with structured communication channels and recipients. In this case, the mayor and his/her staff were the center of the system. The mayor communicates and coordinates activities with the rural communities through the mayor’s assistants and COCODES to implement activities and projects at the local level.

Organizational leaders were individuals that were recognized as leaders
by their peers. They organize their members into specific projects or activities that respond to the organization’s goals and objectives. Leaders in this category clearly defined their role and responsibilities among the organization. One respondent stated, “As the president of the group, I make contacts with organizations (governmental and nongovernmental) to seek for funds to support the implementation of projects for the members of the group” (5-I).

Other participants defined themselves as members of an association or community. As members, they were aware of the social structure of their group or community and recognized their leaders, their roles, and responsibilities (10-I, 1-FG, 2-FG).

Participants also identified common roles of leaders. One recognized role was keeping constant communication among peers. Other roles were to seek for external funds to implement projects and to promote unity and organization among members of the communities (5-I, 6-I, 8-I).

Participants recognized formal, as well as informal leaders. Informal leaders that influence the adoption of innovations were recognized based on their success as farmers and their extensive professional and social networks (7-I). In addition, elder villagers in rural communities were also considered leaders because of their knowledge and wisdom (6-I).

The role of a leader in the diffusion of agricultural innovations. The role of a leader is to seek for social, economic, and environmental suitable innovations that suit their peers’ needs. In Guatemala as small farmers have scarce economic resources to sustain their plots, farmers look for low cost and effective agricultural techniques that may result in higher productivity (6-I, 7-I, 8-I). As agricultural leaders, they are trying organic fertilizers in small plots to evaluate results. If they observe improvements such as better quality of the soil and high production levels, they want to share the knowledge and skills learned with other farmers to improve their income and quality of life.

Other participants with formal leadership positions mentioned specific roles such as “to provide information about workshops to learn improved agricultural techniques.” They were also searching for funds, credits, and productive projects for reforestation, greenhouse production, and irrigation systems to benefit small farmers (1-I, 5-I, 2-FG).

Links and relationships among the social network. As part of the process to get to know the social network, participants were asked about a person whom they may contact in case they have a question about agriculture. The majority responded that they would go to the person with the most agricultural experience in the community. According to a respondent, an experienced farmer was “someone who has had high yields in past productions and has several market contacts to sell the agricultural products at a good and stable price” (6-I).

Participants mentioned that when they asked for technical assistance from peers, they also look for someone they trust and with whom they are familiar. In most of the cases, these people were family members or close friends (4-I, 5-I, 10-I). In other cases, respondents mentioned they may contact the formal leaders of their associations or communities (3-I, 6-I, 8-I, 2-FG).

To learn about the level of organization, participants were asked if they were part of an organized group such as associations or cooperatives. Ten of the 15 respondents were part of different farmers’ groups. Groups were formed with different purposes, such as getting micro-credits to apply to agricultural activities (2-I, 3-I) or implement improved agricultural production techniques such as greenhouses (4-I, 5-I, 1-FG). Other farmers get together to sell
agricultural products, such as coffee, in larger quantities (2-FG) or to implement food processing projects.

In order to analyze the social network, participants were asked about their level of exposure to agricultural innovations and interactions with extension agents. Most of them who were farmers indicated that they did not have direct contact with extension agents. Leaders working in governmental and nongovernmental organizations mentioned a higher level of interaction with extension agents and a higher exposure to agricultural innovations. They also wished that these contacts would be available on a daily basis for rural farmers who needed the technical assistance the most (9-I). In terms of the level of innovation that the participants were exposed to in their daily life, members from one rural community showed a higher exposure to improved horticulture production. They all mentioned one individual responsible for the agricultural and marketing innovations happening in that specific community (6-I, 7-I, 8-I). Two participants from the same association mentioned how they have been exposed to new products through other members of the group (2-I, 3-I). On the other hand, other participants presented their concern of not having access to observe and practice agricultural innovations (4-I, 7-I, 10-I, 1-FG, 2-FG).

**Characteristics of a Leader and Techniques to Influence Others**

In this case, participants were asked about the characteristics they think a leader should have or characteristics that have worked for them as leaders. A leader should work with others, as a team, to accomplish common goals (1-I, 8-I, 2-FG). A participant reinforced this concept by saying, “I don’t work alone; I am sure that I would not have accomplished anything by myself. For example, I get a lot of support from authorities of the rural communities who know the leaders and they help us diffuse the information” (1-I).

Another two participants mentioned honesty as the most important characteristic a leader should have. They believed that when a leader is honest, people immediately trust him/her (2-I, 10-I). Others mentioned that a leader should be loyal to his/her peers no matter what. They also considered that a leader should be dynamic and active in order to benefit the group or community (3-I, 5-I).

Other respondents thought that a leader needs to have good communication skills and communicate with all the members without discriminating (1-FG, 2-FG). Finally, other participants thought that a leader should share the information and knowledge they gain with others (2-I, 4-I, 6-I, 7-I, 8-I) in order for people to follow him/her.

**Successful development projects.** It is important to learn from experiences of individuals, groups, and communities. Therefore, participants shared success practices and projects that have worked for them. Recommendations were focused into types of methodologies, monitoring and evaluation techniques, and importance of sharing the cost of development projects.
A participant mentioned the importance of providing small incentives with short-term results for people to observe accomplishments and motivate them in a long-term project (1-I). Another participant believed that providing constant follow-up to members and maintaining constant communication with them prevent misunderstanding (2-I). Other mentioned the importance of sharing and celebrating the accomplishments of a group to encourage people to continue working hard (3-I). Another respondent thought that beneficiaries should share the cost of a project with the donor in order for them to appreciate and invest the resources properly (9-I).

Other participants reinforced the importance of doing practical training. They thought it was important for the beneficiaries of a project to learn by doing and be able to accomplish their own results. One participant stated, “Nobody learns from others’ experiences, therefore; the importance, of accomplishing our own experiments and projects like we do in our demonstration farm” (5-I). Finally, another respondent said, “for a project to last over time and be sustainable it should start small, where we can observe and monitor results, and later reproduce the knowledge or skill to others through opinion leaders” (7-I).

Applicability and Diffusion of Innovations

The sustainability of the training sessions and workshops offered to small farmers were measured through different questions during interviews and observations done at the field level. Participants were asked about how appropriate the topics were for their conditions, if they would be able to reproduce them on their farms, and if they would be able to teach them to other farmers.

Three participants thought the knowledge and skills that they learned through training were appropriate for their conditions (6-I, 7-I, 8-I). Organic techniques used to produce fertilizers were the most appreciated by farmers as they mentioned that they were an effective and low-cost option to grow their crops. This was especially true since the chemical fertilizers they used to buy increased in prices over the last year. Farmers mentioned that it was easier for them to reproduce the practice on their farm if they practiced the techniques during the practical training sessions. Participants also thought it was going to be easier to teach what they have learned to other farmers because they practiced the procedures of applying the fertilizers. They reinforced the importance of making practical training sessions on their sites (6-I, 7-I, 8-I).

All participants mentioned the importance of teaching others what they have learned, but they clarified that not all farmers were open to learning. Therefore, they talked about the importance of identifying those farmers who were interested in learning about the organic production. Some participants thought that they would teach the techniques first to the members of their own families and, later, to others outside the family network (6-I, 7-I, 8-I).

Participants, in general, thought that they could sustain the activities they were carrying at the present. To improve in the future, they mentioned that education is crucial for agricultural development of the region. They mentioned that training should go hand in hand with other components, such as access to credit or funds for investment (2-I) and marketing information about access to national and international markets (3-I).

According to a participant, the sustainability of projects will be reached when “projects respond to local needs” (9-I). One participant also said that for the project to be sustained through time, “techniques and practices should be taught and
monitored from the beginning to the end; in other words, how to do them and how to maintain them” (10-I).

**Recommendations**

**Strategies to Identify Leaders to Diffuse Agricultural Innovations**

As a result from this study the following is a recommended strategy to identify opinion leaders among groups of farmers. The steps are not listed in order; they can be completed according to the environment, conditions, and negotiations with the different groups of farmers.

The steps are: a) ask the members of the group to define the criteria to select leaders. At the same time, observe potential opinion leaders who have the desired characteristics described by participants; b) facilitate the process for the group to select leaders among the group; c) identify the leaders, communicate the role they will play in the diffusion of innovations, look for their approval, and start the training process; and d) monitor and evaluate the diffusion process by the leaders and provide required feedback. This strategy has the purpose of providing change agents a guide to identify opinion leaders based on a criterion, not randomly. The strategy proposes the selection of opinion leaders by their peers under a participative procedure where they will select them based on credibility and trustworthiness.

**Conclusions and Implications**

Opinion leaders were identified as the source of information and innovations for community members. Participants in this study confirmed that the diffusion process in their communities involved the active participation of opinion leaders who evaluate innovations in their sites and observe results. Later if they consider the innovation to be suited for their peers and situations (in terms of social, economic, and environmental conditions), they influence their decision process, as described by Rogers (2003).

Innovations were diffused by individuals who were honest, loyal, and proactive. These characteristics allowed them to be respected by their peers and also influence others in the decision process of adoption. They were heterophilous by trying and evaluating new practices, but cautious by considering if the innovation would be culturally and socially accepted by their peers. According to Rogers (2003) these individuals’ characteristics are indicative of opinion leaders.

The most-known, structured, and recognized networks in the rural and urban areas are political networks. These networks are effective to identify the different areas and their leaders and to get a formal approval to start the implementation of agricultural projects. Other types of networks are the ones created around organized groups, such as associations, cooperatives, and federations. They are recognized groups that have an organization of members, centralized diffusion systems, and specific goals and objectives. The advantage of working through these networks is that they have established horizontal methods of communications. Therefore, it can be efficient to use their communication channels to diffuse agricultural innovations. The disadvantage of using this strategy as the only means of reaching participants is that information will not reach farmers outside of these networks who might also need technical assistance.
and technology transfer. Finally independent farmers, who do not belong to a structured network, can be reached through meetings called by the local authorities (COCODES) of the rural areas. These farmers who in some cases are considered non formal leaders by their peers can provide support to establish a decentralized diffusion system. A non-formal opinion leader may be as effective as formal leader. Therefore, it is important to include them in the diffusion process.

Diffusion of innovations and information is an essential component of agricultural education and extension. For the diffusion process to be sustained through time, innovations need to be evaluated and validated by opinion leaders. These leaders are identified by their roles and characteristics by the members of their networks. Therefore it is important to review the networks, their participants, the links, and communication channels to transfer information and practices among farmers.

References


Smallholder Fruits and Vegetable Production and Marketing Possibilities: A Baseline Study of Five Selected Dzongkhags in Bhutan

Doe Adovor, Michigan State University

This study of fruits and vegetable production and marketing possibilities in Bhutan has two main objectives: 1) to determine small and medium-scale horticultural production capacity in 5 selected Dzongkhags/Provinces, and 2) to prioritize fruits and vegetables around which a market oriented production can be built. Questionnaire design, data collection, and analysis occurred in several phases between July and December, 2006. A total of 102 farmers were interviewed. Out of a sample population of n=94, 40% may be classified as small-scale producers cultivating <3acres, while 36% fall in the medium scale category cultivating between 3.1-5acre plots. Large-scale producers with farms >5acres constituted about 23% of the sample population. Farmlands are either owned or leased under specific property right arrangements. The choice of crops and revenue from farming are affected by land ownership. Out of n=91, 97% produce on their own farms, while 21% had portions of their crops planted on rented land. Approximately 7% of farmers rented out portions of their farmland in the 2005/2006 season. In general, land rents are paid in kind usually a 50-50 split of total harvests. Several factors including advice from District Agricultural Officers (DAOs) and Extension Agents, advice from potential buyers, knowledge of agro-climatic conditions, pests and disease prevalence, market speculation and historical recollection of crop production patterns influence farmers’ choice of crops. When n=102 farmers were asked about previous years’ production, the decision to produce fruits (69% of respondents) and vegetables (80%) were based on advice from DAOs and Extension Agents. Advice from potential buyers did not appear to play an important role in farmers’ decision to produce either fruits (7%) or vegetables (5%). In a follow-up exercise, DAO’s and Extension Agents in each Dzongkhag were asked to prioritize 5 fruits and 5 vegetables for their respective districts. When a 4-point Likert scale was used to rank farmers interest in producing these prioritized crops, farmers’ interests in producing chili and potato was generally high across all Dzongkhags. Producers in Trashigang and Trongsa were more enthusiastic about producing cauliflower. Only producers in Tsirang and Paro expressed an interest in producing Broccoli. The highest interest in cabbage production was observed among producers in Trongsa. For fruit production, apples received the highest favorable rating in Paro while producers in Tsirang appear to be more enthusiastic about producing oranges. The highest interest in mango production was observed among producers in Punakha. Relative to other Dzongkhags, Trashigang producers were most interested in producing walnuts. Producers in Trongsa were the only ones that expressed interest in producing sugar cane. Findings from this study are particularly important in guiding future production decisions aimed at meeting the new demand points created by Bhutan’s growing urban population and middle class. Recognizing consumer demands and combining those demands with the needs and wants of the concerned communities is the first step to empowering
smallholder to meet market expectation and securing long-term market linkages. A sustainable market linkage at the smallholder level thus involves a coordinated effort among farmer groups, buyers, post-harvest units, agricultural research units and marketing agencies.

Making Extension Relevant for the 21st Century: A Communication Perspective

Robert Agunga, The Ohio State University

This is a concept paper aimed at provoking a discussion on who we really are as extension scholars and practitioners. Are we the engine of development or an appendage to the process? Failure to address human dimension concerns, such as participation, integration and capacity building is the main reason why poverty reduction programs fail. Is promoting the human dimension our challenge or is it someone else’s call? If facilitating development is our raison d’etre, what professional preparation do we have in promoting cooperation and collaboration among development partners? Cut to the core, can we separate extension as a development specialization from agricultural education, which is technology transfer? The World Bank and the Food and Agriculture Organization of the United Nations in a new report, World Congress on Communication or Development: Lessons, Challenges, and the Way Forward argue that the facilitation of development, otherwise known as “Communication for Development” (C4D), is a niche to be filled. Since “extension” is such a warn-out term, can we claim “Communication for Development” (C4D) as our profession?

Emerging Training Needs and Preferred Mode of Delivery for Agricultural Extension Professionals in Mali

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Global market competition, technological advancement, increased government divestiture and changing production are significantly altering the future of agriculture in Mali. Farmers are increasingly demanding for advisory services beyond production agriculture to postharvest, processing and marketing. This paper looks at the need for training along the entire value chain for agricultural extension professionals in Mali. Three out of the eight regions of Mali were selected for this study because of the intensity of agricultural activities in the states and the high involvement of rural women in these agricultural activities. Stakeholders in agriculture were randomly selected and questionnaires were completed by a sample of employees in research, extension and teaching. The study revealed that Mali’s extension officers’ lack of skills and competence to provide advisory services along the entire value chain in agriculture and the need for training in specific areas is evident. Men (mean 3.89) and women (mean 3.95) farmers strongly agreed with the need to train extension workers along the entire value chain. Advisory services provided by the extension officers is limited to production agriculture where as farmers’ activities cover processing, storage and marketing. Public (3.22) and private (3.92) extension officers also agree that training should be organized for them along the entire value chain because they find it difficult to provide advisory services on processing and marketing as these are major areas where women operate and they need to be assisted. Specific disciplinary training were identified: agribusiness (88%), systems management (68%), post harvest technology and
food processing (95%), value chain analysis (100%), marketing (78%), food storage, handling and packaging (92%). Distance education ranked with full time training in Africa as the least preferred mode of delivering training. From the survey, this choice was popular among the older professionals who prefer work and study at home to full time study abroad. Only 25% of them expressed interest in distance education while 70% of them expressed interest in short term training in Mali. all the public extension team below the age of 45 suggested full time training in Mali whereas those above 45 years proposed short courses within Mali or outside Mali. Both groups also emphasized professional exchanges between Malians engaged in agricultural extension and international research institutes or university extension systems. Specific disciplinary training pertaining to agricultural trade and agribusiness, food processing, marketing information systems & management, value chain analysis were the most highly requested. There is need to consider full term and short term training programme for extension professionals to help produce the next batch of Malian Agric. extension professionals that can provide advisory services along the entire value chain. Lessons learnt were: the present diploma and degree curricula for training agricultural extension staff are inadequate and needs to be reviewed; Malian farmers need advisory services beyond production agriculture; and Malian extension professionals have no preference for distance learning and full time degree programme outside.

Innovations in the Marketing of Agricultural Produce: FASO JIGI Cooperative Experience in Mali

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Substantial numbers of small-holder co-operatives in Africa suffer liquidation yearly due to their inability to be self-sustaining. Liberalization of Mali’s cereal sector in the 1990s resulted in transition from cereal deficit to self-sufficiency. However, problems like credit, poor marketing and low prices hindered real development of the sub-sector. In 1997, FASO JIGI Cooperative marketing project, a union of cooperatives with regional coverage was set up, focusing on the collective management of cereal marketing, allowing producers more active role, resulting in better product prices and income stabilisation. Key issues this paper addresses include members’ attributes, what they derive and contribute to its sustainability. The study involved 250 members and 27 extension officers randomly sampled and data analysed using simple cost calculations, frequencies and percentages. Members’ active involvement, good social climate, conformity and control, communication patterns, monitoring, indigenous management systems, funds generation, training and regional government support were key sustainability factors.

Researchers and Extension Agents Attitudes Towards the Agricultural Research and Extension System’s Linkages in Jordan

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The study aimed at examining attitudes towards management and organizational research-extension linkages between the main actors in the Agricultural Research and Extension System (ARES). Three four-point Likert-type scales; the management, organizational and universities scales, were used as a tool for data collection using a convenience sample of 121 researchers and
extension agents. Descriptive and analytical statistics were employed to analyze the data. Based on approximations of the scales to normal distribution, parametric tests were used to analyze the data of the management and organization scales, and non-parametric tests were used to analyze the data of the universities scale. The results suggest that research staff is relatively younger, more open to women work, and more educated. Overall attitudes were found to be generally high, but appear to be higher for researchers as compared to extension agents. The researchers appear to be more positive to institutional linkages and for most of the research oriented activities than the extension agents. However, respondents were alike in their positive attitudes to measures that would promote integrating faculties of agriculture in a unified ARES. No statistically significant associations were observed between attitudes and most of the selected demographic and professional characteristics. More focused and applied research programs have to be designed by the research providers that effectively address local need, and organizational linkages that would help in bridging information gaps are vital in view of the weak research and extension linkages in Jordan.

Assessing Dissemination of Agricultural Technologies Developed and Promoted by International Agricultural Research Centers (IARCs) in Western Kenya

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Increased agricultural productivity is a major stepping stone on the path out of poverty in sub-Saharan Africa, but small-scale farmers in the region face insurmountable challenges related to improving production. Enhanced agricultural productivity is key to achieving economies of scale, increasing per capita income, and overcoming food insecurity problems. In western Kenya, low agricultural productivity is attributed to several constraints including inappropriateness of technology, and poor delivery of agricultural extension services. Agricultural technologies have been developed by Kenya Agricultural Research Institute (KARI) as well as international agricultural research centres (IARCs). The technologies are aimed at improving agricultural productivity in Kenya but they have not been at the reach of most farmers. This study therefore assessed the extent of dissemination of technologies developed by four IARCs in Siaya and Vihiga districts in Western Kenya by determining (i) socioeconomic characteristics of farmers adopting technologies developed; (ii) which technologies have been developed in the last 10 years, (iii) the extent to which technologies developed are disseminated by national extension systems and the IARCs, (iv) factors influencing adoption and dissemination of IARCs generated technologies, and (iv) barriers and improvement to dissemination and upscaling of improved technologies developed by IARCs. Multistage sampling has been used to select a sample of 240 farmers from four purposively sampled divisions where the technologies have been introduced in Vihiga and Siaya. Data were collected on (a) individual and household characteristics (b) farm characteristics (c) knowledge, adoption and benefits realized following technology adoption (d) information sources leading to technology adoption (e) barriers and improvement to adoption and diffusion of IARC generated technologies (f) farmers’ opinions on how the technologies could be widely disseminated. Results show that several technologies have not been adopted by majority of the farmers. This is due to lack of access to requisite inputs and outputs, lack of information and knowledge about the technologies, and weak extension-research-linkages. The findings suggest the need to facilitate increased transfer of agricultural technology, information, and knowledge among small-scale farmers thereby contributing to improved overall agricultural productivity in Western Kenya.
Effects of Extension Services of Firms Offering Contract Farming:  
A Case Study of Small Scale Maize Farmers in the Limpopo Province of South Africa

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A probit regression model was employed in this study to investigate the effect of private extension services on contract farming participation by small scale maize farmers in rural areas of the Limpopo province of South Africa. The study suggested that participation in contract farming was positively influenced by the quality of extension services provided, follow-up visits and type of enterprise. Stock of farm input supply and frequency of extension visits appeared to have negative influence.

A Trans-Disciplinary Perspective of Challenges Facing Subsistence Farmers in Wolaita, Ethiopia

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Ethiopia is an agrarian country where small-scale farmers dominate agricultural production, most of whom are entirely dependent on rain-fed subsistence agriculture production. These farmers face a multitude of complex food production and supply problems caused by both natural and human-induced disasters. This study, conducted by an trans-disciplinary team from the University of Saskatchewan, examined the agricultural practices of subsistence farmers in the Wolaita Zone, a densely populated agricultural region located 250 km south of Addis Ababa in Southwest Ethiopia. Interviews were conducted in two kabeles (the smallest administrative unit in Ethiopia), Delbo Atwaro (DA, n=16) and Kindo Koye (KK, n=16), in the Wolaita Zone in May 2009 to determine the challenges in crop and livestock production, soil fertility, land degradation and fragmentation, as well as drinking water, nutrition, and food insecurity, all of which affect the wellbeing of subsistence farmers in the region. The objectives of this study were a) to gain an understanding of subsistence agriculture and its impacts on the wellbeing of farmers in the Wolaita Zone; b) to identify challenges, problems and barriers of subsistence agriculture from the farming households’ perspective; and, c) to provide recommendations for future research that would improve the livelihood of subsistence agricultural farmers in Ethiopia. Farmers in these two kabeles support large families (average of 9.3 in DA, 8.6 in KK) on a very small plot of land (average of 0.7 ha in DA and 0.4 ha in KK). All households surveyed reported that household food production and income from farming were not sufficient to feed the household throughout the year. Food shortages range from 4 – 9 months per year (average of 8). The majority of the farms surveyed indicated a decline in soil fertility in the past five years, and attributed shortage of inputs (manure, fertilizer and compost) to this decline. Most farmers owned some livestock, with cattle being the most common (average of 1.2 oxen/1.6 cows in DA and 0.5 oxen/1.2 cows in KK). Ownership of all species was limited by feed and grazing availability. Under stress of climate change, reductions in crop and livestock production result in a negative feedback loop where less organic matter and nutrients are returned to the soil to support subsequent crops that will feed animals and humans. In a country where the cost of inorganic fertilizers prohibits their use, careful maintenance of organic resources is vital to the
sustainability of the farming system. Potential areas of research identified in the Wolaita region are many and span the disciplines of livestock breeding and health, soil conservation, crop breeding, and human nutrition. However, in order to improve the livelihood of subsistence farmers, the dialogue between farmer, researcher, and extension communities needs to improve so that farmers may successfully implement and adapt new technologies in the context of their local knowledge. Given the close relationship between agriculture and food security, the development of community based projects by interdisciplinary teams that include community, government, agriculture, environment, and nutrition inputs is necessary to provide sustainable solutions.

Antigua and Barbuda Pesticide Certification Program

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There are over 170 products listed for pest control with the Pesticide and Toxic Chemicals Board (PCB) of the Ministry of Agriculture (MOA) in Antigua and Barbuda. Safe handling and application of these products is crucial to achieving desired pest control and to protect non-target organisms and the environment. The Pesticide and Toxic Chemicals Act of 2007 dictates that any person performing pest control activities for remuneration, must be certified to do so. The MOA partnered with University of Florida/IFAS to develop a pesticide certification training module modeled after the Florida program. The objectives of the module are to: enhance the knowledge base of pest control applicators on identification of pests, control options and safe use of pesticides; and ensure that all actions governing the use of pesticides are in accordance with the requirements of the Act. A team of five UF/IFAS faculty members developed a needs assessment survey and modified the Florida curriculum based on the results of the survey submitted by the MOA. The module included four training categories: core (to be taken by all participants), structural pests, lawn and ornamentals, and agriculture. A one-week training was conducted in January 2009 and was attended by 65 people that represented the various categories and MOA personnel. Sixty three (63) participants took the core exam and one category exam. Thirty one participants passed both the core and a category and were certified through the PCB. A regular training and exam schedule is needed for pest control applicators to ensure compliance with the Act and proper pesticide usage to protect pesticide users, public health, and the environment.

Professionals View of Croatian Rural Youth Opportunities

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Unemployment among rural youth in Croatia is high. In 2001, more than 37% of the youth in Croatia were unemployed (Globalis, 2009). Some authors have suggested that the educational system is in crisis and this coupled with the possible accession into the European Union could have tremendous impact on rural youth in communities across Croatia (Slaus, Slaus-Kokotovic, & Morovic, 2004). The purpose of this study was to determine the perceptions of selected
Croatian agricultural professionals regarding opportunities for rural youth. The objectives were to 1) identify key issues that professionals agree were of greatest concern for rural youth in Croatia and 2) identify educational issues where professionals understanding of policy would exceed youth capacity to know or to respond accurately. Ninety-seven Croatian professionals responded to a perceptions survey. Purposely selected individuals that participated in the study ranged from administrators in colleges of agriculture to professional farm managers. National and county agricultural ministry professionals were represented in the study as were college professors, graduate students and instructors. The survey instrument was guided by previous youth development research in Croatia and the U.S. The instrument was first written in English and then translated into Croatian by local native speakers. Face validity was provided by a graduate student and a professor in the Agronomy Faculty, at the University of Zagreb. Results indicated that professionals see the need for improved secondary agricultural education programs in Croatia. Respondents tended to strongly agree that more cultural events and the possibility for entertainment should be provided for youth in rural areas and that more technical agricultural education is needed in rural Croatia. Respondents also tended to strongly agree that working conditions in villages needs to be improved and the Croatian government needs to invest more in rural secondary education. Enhanced technical agricultural education at the secondary school level could stimulate interest and knowledge of students. A stronger curriculum could also be the catalyst for enhanced production, processing and marketing education within rural communities as Croatia anticipates accession into the European Union.

An Evaluation of Elements that Impact the Success or Failure of Cooperatives: Lessons Learned Based on the Literature

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Cooperatives provide unique opportunities to encourage international agricultural development; however, the success of a cooperative is dependent on both internal and external factors. The purpose of this paper is to communicate the fundamental elements, as described in the literature, which can impact the success of cooperatives. Common pitfalls, methods of avoiding failure, and elements required for success are summarized based on studies conducted in multiple international locations. This paper provides a foundation for the creation of an instrument to be used to determine the suitability of establishing a cooperative, elements that could impact the success of a cooperative, and steps that could be taken to facilitate the establishment of a cooperative in developing nations. While each cooperative is unique to its environment, economy, government involvement, industries etc., there are common themes and practices linked throughout successful cooperatives as well as failed ones. This paper highlights the methods and frameworks common to achieving cooperative goals and also outlines the environment required to implement a cooperative in a developing nation.
Influences of Students Background on Their Academic Performance at the University of Swaziland, Faculty of Agriculture

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The purpose of the descriptive correlational study was to determine explanatory variables of students’ academic performance at the University of Swaziland, Faculty of Agriculture. The target population of the study included all undergraduate fourth year students during the academic year, 2008-2009. The study design was ex post facto. Background variables of students were collected using a valid and reliable questionnaire. Students’ performance marks were obtained from records at the University of Swaziland. Descriptive statistics, correlations, and regression analysis were used to describe data. Findings revealed that, variables that explained academic performance were: length of time spend studying, age, study area, type of high school student graduated from, number of roommates, number of activities involved in outside campus, resident distance from campus, and overall grade in high school. Conclusion from the study was that explanatory variables for students’ academic performance relate to previous academic performance, institutional academic environment, and students variables. Recommendation is that The University of Swaziland needs to pay attention to background variables in terms of admission criteria, and to the learning environment within the institution, and individual needs of students.

Cost Considerations in Mounting Farmer Field Schools in Trinidad and Tobago.

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This paper investigates cost factors in mounting Farmer Field Schools (FFS) in Trinidad and Tobago. With the use of various project accounts and field records the paper will assess the cost of conducting the FFS in several Extension districts in Trinidad and Tobago. These costs will be compared with the cost of mounting other selected farmer education programmes. There will be an account of the cost of appropriate IPM practices, farmer field practices and recommended farmer practices. The paper will conclude whether it is possible to reduce the cost of pesticides with the use of technologies which have emerged from the FFS. Preliminary analysis suggests a cost advantage with the use of Integrated Pest Management. The cost per farmer participant is similar to reported cost in several parts of Asia. Yet the cost compares with that of mounting a routine technology transfer programme within the government service. There are opportunities to reduce the cost of production among the new technologies which have emerged from the Farmer Field School. There are implications if a country’s investment in a new educational method does not justify its cost. Given the other positive impacts of the FFS, this study will provide ways of counteracting any negative financial outcomes from its implementation in Trinidad and Tobago. The study will also instruct further improvements in positive economic impacts.
A Crisis Communications Needs Assessment of Agricultural Industry Professionals to Determine Best Practices for Second Life© Simulations

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“We live in a society continually affected by natural disasters, such as hurricanes, tsunamis, and forest fires, and by organizational crises, such as food-borne illnesses, corporate malfeasance, and terrorism... No community and no organization, public or private, is immune from crises” (Ulmer, Sellnow, & Seeger, 2007, p.3). This study used mixed methods to assess agricultural industry professionals’ needs regarding crisis communication training and best practices for Second Life© simulations were identified. The study assessed an advisory team of agricultural communications professionals to gather perceptions of crisis communications educational needs for new professionals and identify best practices for using Second Life© (SL), a 3-D virtual world, simulations for training. Advisory team members represented the human, crop, animal, and environmental sectors of the agricultural industry. The study followed Krueger’s (1998a, 1998b) methods of questioning during the advisory team of agricultural communications professionals interviews to gather perceptions. Participants’ comments and discussion remarks were analyzed (Creswell, 1998) and emergent themes identified. A researcher created instrument following Dillman’s Tailored Design Method was administered to participants (N=44). Through questioning techniques, study themes emerged and were used to identify educational objectives for training professionals in agricultural communications dealing with potential crisis situations, and multiple scenarios for SL simulations were noted. Four emergent themes were identified: 1) Pre-planning, 2) During crisis communications / actions, 3) Post crisis communications / actions, and 4) Individual competencies needed. Themes one through three were necessary for an organization to be successful in both managing and responding effectively to a crisis. The fourth theme included skills required for crisis communicators to effectively and successfully support an organization before, during and after a crisis situation. Survey respondents identified areas for training needs and crisis communications task activity importance and performance level (based on a 5 point Likert scale). Respondents identified four areas of training needed: 1) Utilize crisis management skills to minimize damage to a company's image (58.3%); 2) Properly interact with the media during a crisis (58.3%); 3) Handle the difficulties that arise during crisis management situations (50%); and 4) Build a crisis management action plan (50%). Five areas were identified as “critical” in crisis communications training: 1) Develops media policies and procedures for crisis events (50%); 2) Recognizes the need to communicate during a crisis with honesty, candor, and openness (50%); 3) Capable of listening to others as a means of collecting information (37.5%); 4) Manages the accuracy and consistency of the messages coming from the organization (37.5%); and 5) Identifies necessary response to resources (25%). As evidenced in the study’s findings, agricultural communications professionals can serve as effective instruments in identifying educational needs for new professionals dealing with crisis communications. Because online learning participants can visualize themselves and others through their self-created avatars, SL can create a presence that is not available in traditional modes of distance learning. Additional research should continue to identify crisis communication needs for new professionals and whether or not SL is an effective educational training platform.
Implications of Gender and Context on the Design of IPM Programs for Tomato Growers in East Africa

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The argument that gender matters in the design and implementation of agricultural development programs acknowledges women’s important contribution to agricultural production in Sub-Saharan Africa. Gender can influence access to productive resources, new information, and support services. Failure to uncover and examine gendered differences in production relations has led to program failures and inequitable and unsustainable development. However, there is enormous complexity and heterogeneity in the way gender influences agricultural decision making and production and few lessons are applicable across contexts. Generalizing about gender relations from one context to the other may obscure variability and lead to false conclusions and policy recommendations. The IPM Collaborative Research Support Program (CRSP) in East Africa has been using a farmer participatory IPM strategy with small-scale tomato growers at on-farm research sites in Kenya and Tanzania since 2004. Understanding local farmer knowledge of agricultural production, including both gendered and contextual factors, is a hallmark of participatory approaches, and important to the design and development of appropriate location-specific IPM technologies. The purpose of this study was to compare and contrast gender and contextual influences on tomato production farm-level decision-making and marketing practices, and to use this information to improve IPM program design and delivery.

Data from baseline surveys conducted with tomato farmers at IPM CRSP research sites in Kenya and Tanzania in 2006 were used for the analysis. These two sites represented different tomato production contexts. A structured questionnaire was administered by personal interview to tomato farmers who were selected using a multi-staged random sampling procedure resulting in 120 questionnaires, 23 female and 97 male, being completed in Kirinyaga District, Mwea Division, in Kenya; and 100 questionnaires, 33 female and 67 male, completed in Morogoro Region, Tanzania. The results indicate that regardless of context, gender influenced access to resources and this influenced production quantity and decision making. The implication is that gender differences need to be incorporated into IPM programs by ensuring female participation and access to training and knowledge transfer opportunities. However, contextual differences predominated, suggesting that “one-size does not fit all” and that planned interventions need to be tailored to specific contexts in which gender relations unfold. The study provides evidence that the gender-specific nature of traditional African farming is transitioning. Contextual similarities in the production of higher value marketed horticultural crops including female cash crop production and the prevalent use of synthetic pesticides and fertilizers requires that IPM research focus on developing alternative pest and crop management strategies along with training that focuses on pesticide usage and safety. Farmers indicated that extension agents were relatively minor sources of information indicating that they too may require additional training on horticultural production and IPM. Thus, horticultural cash crop production suggests an important contextual basis for differentiating the demand/need for IPM programs.
Russian Agricultural Students’ Critical Thinking Disposition and Moral Intensity: Is there a Relationship?

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The exponential increase of knowledge has altered the approach to providing agricultural education and extension services to international students and has prompted international agricultural educators to include critical thinking and value based judgments as part of the curriculum. However, few studies have examined if a student’s disposition to use critical thinking skills was related to how students perceived the moral intensity of a specific situation. The purpose of this study was to examine relationships between levels of critical thinking disposition and levels of moral intensity among Russian students enrolled in an agricultural economics class at a Russian university. Participants in this study included 64 undergraduate students enrolled in a world economics course offered at a Russian university. Ultimately, total critical-thinking disposition scores did not significantly correlate with total moral intensity scores; nor were there significant relationships between construct scales. Practitioners should still be encouraged to teach critical thinking and improve the disposition to thinking critically even though there may be no relationship with perceptions of moral intensity.

Reassessing the Organization of Experiential Learning in Agriculture with Specific Reference to the American Farm School in Greece

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Experiential learning plays an important role in agricultural academic institutions both in developing and developed countries. Most North American agricultural academic institutions are utilizing experiential learning methods extensively in their curricula. The extensive network of public university teaching and research farms, an ideal environment for experiential learning, relies heavily on student participation and thereby providing an effective initiation to science and industry. The American Farm School, Greece, an independent non-profit educational institution serving the rural population of Greece and the Balkans, has been a pioneer in the field of experiential education in South – Eastern Europe since its foundation. The objective of this study was to review and compare approaches of experiential learning between the American Farm School and leading agricultural universities in North America. A qualitative methodology was used to collect and analyze data from managers and educators of university teaching and research facilities. A series of examples of experiential learning facilitated at these units is presented. Ideas for a holistic approach in utilizing student engagement in a variety of work related tasks are discussed. Educators may consider these findings useful when designing internships and developing curricula for students. Incorporation of best practices identified in this study will encourage the development of better trained graduates and more open minded leaders.
Global Seminar: Rural Sustainability –
Problem-centered Learning in a Cross-Cultural Setting

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Global Seminar is an internet-based, student-centred learning approach that includes text and
real-time video discussions via internet conferencing among students at collaborating institutions
in North and South America. The Global Seminar was created at Cornell University and adapted
for a course, originally initiated under the North America Mobility Project (NAMP): Rural
Sustainability in Agriculture and Aquaculture, developed by universities/colleges in Canada, the
United States and Mexico. Initially, the primary aim of NAMP was student mobility and
language education among institutes in the host countries, but when the program ended the
distance-learning course became the main vehicle for academic exchange among non-mobile
students and faculty. The focus now is to engage students in dialogue about environmental
sustainability issues using learning strategies that encourage them to articulate their decision-
making process as they adopt different roles in the local and/or global community. In 2006 and
2007, three case studies were presented, two based on the virtual library of the Global Seminar:
A Learning Community database and one was developed under the leadership of Virginia Tech;
several other case studies have been developed since the inception. The course was permanently
moved to Fall semester beginning in 2007 to accommodate the different academic years between
the northern and southern hemispheres. Also, language was recognized as a possible constraint
during the design phase, so cases were developed in both Spanish and English. The live video
discussion is conducted in English on the first day and in Spanish on the second day. Students
are free to participate in either language of their choice or in both discussions. This allows for the
participation of unilingual participants or participants with limited ability in the other language.
The problem-centred learning approach our team has implemented allows the educators to
develop the case studies, provide background resources and create a series of directional
questions/comments. Too often in the regular theory-based lecture instructional method, students
sit passively and are not challenged to form and voice their own perspectives. Under this learning
approach, the participating students themselves must delve into current literature and global
commentaries to prepare for debating the issues(s), participate in the discussion, draw
conclusions and make recommendations. Since they participate in both email-style and live-
discussion with students of other international institutes, the onus is on them to present and
support their viewpoints from a globally sustainable perspective. As a future employee, this
translates to the decision-making process that will guide their actions and recommendations to
their local or global community, government or industrial agencies. The goal of this undertaking
is to use the Global Seminar as a model that functions as a learning community comprised of
students and faculty from various countries. It offers shared understandings that transcend
national boundaries, cultures, and backgrounds offering the best hope for our future food safety
and security (i.e. agriculture, aquaculture), as well as for environmental sustainability. It also
demonstrates the importance of integration of real time communication technologies in the
process of development of the global society.
Establishing Contract Extension Services in Iran: A Comparative Study of Agri-business Ventures' Consultants and Directors

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In many countries, agricultural extension services are shifting from the public to the private sector. Since 2007, Iran has been phasing out its public extension system and replacing it with a publicly-funded contract system of extension by establishing agri-business ventures. However, globally there is no evidence indicating that this kind of cooperation between public and private extension will be more effective than the one currently being phased out. The objective of this study was to assess the capacity, management and organizational characteristics of the new extension system through assessing and comparing agri-business ventures’ consultants and directors' capacity. A survey research design study was conducted among the agri-business ventures’ consultants and directors in Iranian province of Zanjan. The study found that for all examined capacities directors had higher status than the consultants. Also, the regression procedures indicated the two independent variables that accounted for the explained variance of agri-business ventures' members' total capacity were the motive in doing extension work and membership in job related associations. It is recommended that responsible authorities take measures to train both directors and particularly consultants in technical, communication and managerial skills.

Challenges and Strategies for Implementation of University Outreach Services as Perceived by Faculty Members of Iranian Agricultural Colleges

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A descriptive survey research was undertaken to investigate the challenges and strategies for implementation of university outreach services in Iranian agricultural colleges. The statistical population of the study consisted of all the faculty members of 30 Iranian agricultural colleges (N=1799). A stratified random sample of 10 colleges, based on college size was selected, encompassing a total of 140 faculty members. Data were collected using a mailed survey questionnaire which was validated by a panel of experts from the related academic departments and organizations and the reliability index was established by Cronbach's coefficient. Prioritizing of 25 identified strategies for successful implementation of university outreach services showed that top two most important strategies were "conducting joint need oriented and applied research projects with the related executive departments and commercial institutions" and "providing research opportunities for faculty members in rural areas and institutions and organizations related to agriculture sector". In regard to the challenges facing the outreach services 28 identified challenges were perceived important or very important, the top two most important challenges being: "lack of satisfactory interaction/linkages between agricultural colleges and the related institutions" and "lack of necessary support for university outreach activities by various governmental organizations". Four factors explained 64.29 percent of variations of the strategies for successful implementation of university outreach services, namely: educational, communication, research, and creating outreach opportunities; and five factors explained 66.46 percent of variations of the challenges facing university outreach services, namely:
Outcomes and Impacts of the CSREES International Science & Education Grant Program: The Results of an Online Survey of Grantees and Directors of International Agriculture Programs

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The CSREES/USDA International Science and Education (ISE) grants program, formally initiated in 2005, seeks to enhance higher education institutions in the U.S. to conduct international collaborative research, extension, and teaching activities. This may take the form of enhanced curriculum and campus efforts to reflect global and multi-cultural perspectives, increased opportunities for more effective research and extension partnerships and faculty exchanges, and/or an international cross-pollination of technologies and innovations that contribute to the productivity and competitiveness of the U.S. agricultural sector in the global arena. During the 2005-06 grant competitions, the ISE program provided support for 32 projects to academic institutions throughout the U.S. The purpose of this paper is to present the results of an online survey of the award grantees, as well as Directors of International Agriculture programs, to determine the short and long-term benefits of the ISE program and its projects. It is expected the data gained through the online survey will provide insights into the state of internationalization at key academic institutions in the U.S. particularly as related to ISE Program goals and, in particular, best practices for strengthening global engagement. Besides providing leaders of internationalization efforts with concrete evidence of effective programs and strategies, the results of the survey presented in this paper will suggest the most effective use of Federal funds for strengthening internationalization of higher education institutions in the U.S.

International Experiences and the Power of Reciprocity: Bringing Mali to U.S. Academia and an Amish Farming Community - Who was Impacted More?

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Five Malians were selected for an intense training program held in a southern Indiana Amish community and at a mid-size university in the southwest United States during summer 2009. This was a multipurpose program which had many positive results for both the Malian participants and faculty and students of the host university. The program allowed the host university to improve the ability of faculty and graduate students to internationalize their curricula as it relates to agriculture and natural resources in Sub-Saharan Africa. A second benefit was to introduce the Malians to animal powered relic technology manufactured with modern methods. Third, the program allowed the host university the opportunity to train the Malians in instructional design so they could take home their newly acquired knowledge and share it with as many stakeholders as possible. Fourth, a surprising unintended but desirable consequence of the Malian’s visit was the welcoming embrace they received from the Amish who hosted them in southern Indiana. The Amish offered to help by training Malians in the
manufacturing of animal-powered equipment. Fifth, U.S. manufacturers of animal-powered farm equipment were introduced to a potentially new market for their products. Sixth, the Malians were introduced to the use of distance learning techniques to enhance their curriculum and instructional development in their universities. Seventh, introducing the host university’s faculty and students to the Islamic culture of Mali may be the most enduring benefit from this project. The project’s activities brought a new awareness of how different cultures share many similar needs, values, and interests.

Framework for Analyzing Agricultural and Extension Education Situation of a Country

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The purpose of this paper is to present a framework for analyzing the agricultural and extension education situation of a country. Analysis of the agricultural and extension education situation of a country is important when planning agricultural development projects. Without a systematic frame, it is easy to forget some of the major factors in the analysis. This paper presents eight themes to organize the situation analysis. The first of the eight themes is the significance of agriculture in the country’s economy. This factor analyzes the contribution of the agricultural sector for GDP, employment, export earnings and food security. The second theme is analysis of the composition of agricultural sector. This will help us to understand the major sectors such as crops, livestock, forestry and export oriented plantation crops. It is important to analyze the current situation of food production and industrial agricultural sectors to understand the significance of each in the agricultural economy of the country. The third theme is analysis of the agricultural infrastructure such as input-output marketing, agricultural insurance, agricultural credit, and agriculture-based value adding industry. This will help us to understand the current situation and needed interventions for marketing, credit, and agriculture-based industries. The fourth theme is the agricultural extension and education system in the country. This is helpful for us to find answers to these questions: What is the current extension system in the country? What is the current situation of the secondary and higher education system preparing human resources for the agricultural development work of the country? How effective is the agricultural extension and education systems in meeting the agricultural development needs of the country? What changes are needed to enhance the effectiveness? The fifth theme is analysis of the agricultural research system in view of its organization, role, capacity, problems and needed changes for agricultural development of the country. It is important to analyze whether the research system has the capacity to meet the technological needs of the agricultural sector. The sixth theme is environmental factors contributing to agricultural situation of the country. This includes climate, soil, topography, water resources, rainfall patterns and seasons. Understanding these environmental factors is helpful for us to realize the effects of the environment on current agricultural patterns and situation of the country. The seventh theme is the agricultural policy and politics of the country. It is important to review policies impacting production, export and environment for making recommendations for agricultural development. The eighth theme is socio-cultural situation of the country. Understanding the socio-cultural situation is significant in formulating culturally acceptable development projects for the country. Farmer organizations, women’s role in agriculture, food habits, religions and traditions are some of the important socio-cultural factors we need to consider. Finally, this paper analyzes the interconnectedness of these eight factors. It is important to analyze the interconnectedness of these factors to understand the overall dynamic picture of the agriculture and extension education system of the country.
Potential of Farmers of the Future (FoF) in the Integration of Natural Resources Management in the Secondary School Curriculum in the Western Region of Kenya

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The Farmers of the Future (FoF) initiative is a recent integrated school programme in Kenya. Its main objective is to integrate natural resources management in the school curriculum. The influence of the FoF initiative on students’ perceptions towards natural resources management in Kenya secondary schools is not adequately documented. The purpose of this study was to document activities and determine the effects of the FoF programme on secondary school learners’ perceptions towards natural resources management by comparing learners involved in the FoF programme and those not involved. Further, comparison of perceptions by gender among learners who are involved in the FoF initiative was done. The study employed an ex-post-facto design. The location of the study was the western region of Kenya. The sample was composed of 120 learners. The data were collected using questionnaires and were analysed using t-test at alpha = 0.05. The findings indicated that the FoF programme had a significant influence on learners’ perceptions towards natural resources management. It was therefore concluded that FoF programme enhanced positive perceptions towards natural resources management among learners. On the basis of the findings, it was recommended that the FoF programme be expanded to cover more schools.

The Provision of Extension Services in Afghanistan: What is Happening?

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Afghanistan’s agricultural sector is extremely important. It provides livelihoods for almost 80% of the population; however, due to 25 years of conflict, Afghanistan’s agricultural sector has been left in ruins. After the fall of the Taliban regime, the world has taken a more proactive approach in rebuilding the country. The Afghan government and NGOs have started to create programs that enhance agricultural production throughout the country. This paper is a synthesis of the literature spanning 2000-2008 pertaining to what has been done thus far in the country and what entities were responsible for those outcomes. This study describes the role of the Ministry of Agriculture, Irrigation and Land’s Division of Extension and how that division has addressed problems in the agricultural sector. The literature suggests that NGOs play a vital role in Extension program implementation, while the Ministry of Agriculture serves primarily as a regulatory body.
Relevance of Mid-Career Training Programs towards Improving Job Performance among Agricultural Field Extension Workers in Uganda: The Case of the Bachelor of Agricultural Extension Education, Makerere University

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The Bachelor of Agricultural Extension Education (BAEE), a midcareer education was designed to meet the educational needs of agricultural field extension workers in Uganda. Though this is true no specific studies have been conducted to determine the relevance of the skills and knowledge acquired in BAEE program to promoting the agricultural professionalism in Uganda. The study revealed that the FEWs who participated in the BAEE educational program possessed unique personal characteristics in terms of age, work experience, family responsibilities as compared to regular high school graduates. To cater for the diversity of agricultural background as well as work experience, the BAEE educational program covered several agricultural-related disciplines to balance skills and knowledge in extension methodology as well as technical agriculture. The diverse mix of agricultural-related courses therefore prepared FEWs to organize work for different agricultural related environments. The bulk of coursework however was offered by the Department of Agricultural Extension Education. Other agricultural-related disciplines were nonetheless included in the program to bridge the deficiencies in technical agriculture for the field extension workers. Though this was true, more technical courses were noted as irrelevant to the agricultural career and therefore perceived as overloading the BAEE educational curriculum. Other courses, more towards the improvement of extension methodology and research, were thought to be lacking in the BAEE Educational curriculum. Despite the deficiency of the curriculum to cater for some job skill and knowledge requirement, the BAEE program provided a classroom environment that fostered a positive learning environment for fundamental people skills.

A Case Study from Costa Rica: Using Formative Evaluation to Enhance Program Implementation

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International extension programs have been introducing innovative agricultural practices for years (Roling, 1988). However, these programs are continually criticized for a lack of sustainability (Rogers, 2003). Through the correct utilization of formative evaluation, implementation recommendations relevant to the long term success and sustainability of a program can be discovered and disseminated (Rossi, Lipsey, & Freeman, 2004). With this information, program planners will be able to adapt their programs at a time when concerns can be addressed. The main purpose of this study was to identify the usefulness of formative evaluation through a case study of an international agricultural program. In this study, changes to recruitment plans, enhanced communication across the program team, clearer educational objectives, changes to experiential learning techniques used during the program, and programmatic enhancements for the future resulted from the recommendations created throughout all five phases of the formative evaluation process. The study revealed that when formative evaluation process is followed, program planners do not have to wait for suggestions regarding programmatic changes and adaptations. Issues were identified in the planning phase,
while the program was occurring, and at the first year’s conclusion. Adding this insight gave the program team an opportunity to fix the problems as they occurred, thereby increasing their chances of program sustainability. International program evaluators should consider how formative evaluation can be framed to enhance programs while there is still time to do so.

**Diffusion of Technologies by the Tikonko Agricultural Extension Centre (TAEC) to Farmers of the Tikonko Chiefdom in Sierra Leone: Identifying Problems and Solutions**

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Sierra Leone, a west African coastal nation, is endowed with substantial cultivable land and natural resources. Most of the people in the country are engaged in agriculture and related activities for their livelihoods. The country had a decade-long civil conflict that disrupted its agricultural, economic, social and political activities. Sierra Leone is recovering from the harrowing conflict, but a great need exists to provide improved farming technologies to farmers. The Tikonko Agricultural Extension Centre (TAEC) was established to manufacture farm tools intended for farmers to adopt and use. The tools are less expensive than imported farm tools and more efficient than traditional tools. A study was conducted to describe perceptions of farmers and TAEC staff on problems and solutions associated with TAEC-produced technologies and their diffusion. The study area was the Tikonko Chiefdom in the southern province of Sierra Leone. The target population consisted of 318 farmers and 18 TAEC staff. Seventy-four farmers constituted a random sample whereas the TAEC staff members represented a census. A structured survey questionnaire was used to collect data through one-on-one, oral interviews. Data were analyzed descriptively by calculating the frequencies of participants’ responses as percentages. A majority of farmers agreed that decreased access to loans, lesser networking between farming villages, lack of maintenance facilities, and inadequate training programs were problems affecting technology adoption. On the other hand, all TAEC staff agreed that lack of funding due to donor fatigue, poor conditions of service of staff, low supply of raw materials, and decreased access to loans were problems associated with technology diffusion. In regards to ways to improve TAEC’s technologies, most of the farmers agreed that encouraging greater networking between villages and providing training programs could serve as solutions to problems of technology adoption. In contrast, all TAEC staff agreed that improving the conditions of service for staff and increasing donor funding were ways to improve technology diffusion. However, both groups strongly agreed that increasing access to loan facilities was vital to improving the diffusion and adoption of TAEC’s technologies. It is important for both stakeholder groups to pay special attention to problems associated with diffusion and adoption of TAEC technologies. A great need existed for increased support to the Centre if it were to improve the production of farm tools, which farmers could more readily adopt. In addition, particular focus should be given to the solutions suggested by both farmers and staff for improving the diffusion and adoption of TAEC-produced technologies. Many developing countries grappling with post-conflict problems may learn from Sierra Leone’s experience. Empowering low income farmers could help to increase food productivity, reduce poverty, and achieve food security in other developing countries.
Factors Impacting Collaboration: Implications for Agricultural Extension and Education

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Agricultural Extension and Education can be impacted positively through collaboration. However, successful collaboration ultimately rests upon the commitment of individuals and the willingness for these individuals to work together and “collaborate” with one another. The purpose of this study was to examine factors indicated in the literature as enablers of collaboration in the context of collaboration between agricultural science teachers and Extension agents in an effort to document best practices. Specific objectives included 1.) Describe respondents based on demographics, 2.) Describe respondents based on collaboration, and 3.) Determine the perception of respondents regarding factors that can influence collaboration. Participants were purposefully selected through a nomination process. A survey including background/demographics, collaboration description, and response statements related to aspects of collaboration using a Likert scale, and open-ended questions was utilized. The response statements section of the survey was constructed based on the article entitled “Collaboration: What Makes It Work” (Mattessich & Monsey, 1992). A total of 32 statements related to each of the following categories were included: environmental factors (4), membership characteristics (6), process and structure (4), communication (6), purpose (5), and resources (7). Statements were constructed in a way to document whether or not these factors were influencing collaboration in the context of agricultural education and agricultural Extension. The findings from this study provide insight into factors that can facilitate collaboration. It is the hope of the authors that the findings from this study can be used by those working in international development to further enable collaboration efforts.

Stages of Concern Profiles for Active Learning Strategies of Agricultural Technical School Teachers in Egypt

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Since 2005, four professional development workshops focusing on active learning strategies have been conducted with 230 Agricultural Technical School (ATS) instructors in Upper Egypt through the Value-Chain Training project. The project is funded by USAID through the Midwest Universities Consortium for International Activities (MUCIA). The Concerns Based Adoption Model [CBAM] (Hall & Hord, 2006) provides a framework to evaluate one aspect of the effectiveness of this work. Specifically, the Stages of Concern (SoC) indicates what aspects ATS instructors are focusing on in the implementation of active learning strategies. By identifying the ATS instructors’ areas of concern in this implementation, future professional development sessions can be better designed to help instructors progress through the model to full implementation of active learning strategies and internships in their classrooms. In order to meet the purpose of this study, the following objectives were investigated: 1) describe the population of ATS instructors who have participated in the MUCIA active learning professional development sessions, (2) determine the SoC of ATS instructors who have participated in the MUCIA active learning professional development sessions, and (3) examine relationships between SoC and demographic variables. A descriptive census survey design was used. The researchers used a paper questionnaire to
collect the concerns of Egyptian ATS instructors towards the implementation of active learning strategies. The population (N= 230) for this study was Egyptian ATS instructors who had participated in at least one MUCIA professional development workshop on active learning strategies. The researchers utilized the Stages of Concern Questionnaire (SoCQ) developed by George, Hall, and Stiegelbauer (2006). This questionnaire assessed the concerns of the individuals involved in the educational innovation change process – the integration of active learning strategies. This questionnaire allowed respondents to indicate the relevance and intensity of their concerns towards active learning strategies. An overall concerns profile was developed to illustrate the concerns of the population regarding implementing active learning strategies into the Egyptian ATS classroom. The primary and secondary SoC for the group concerns profile was established as well as profiles based on various demographic characteristics (years teaching, level of use, etc). Patterns emerged that were consistent across the various concern profiles. The strongest concerns were in Stage 2 indicating that teachers have intense personal concerns about integrating active learning strategies and the personal consequences of integration (job stability, professional reputation). Concerns were consistently lower in Stage 3 across all profiles which suggests that teachers have minimal to no concerns about managing active leaning strategies in their own classroom. Trends were also found that indicate that more frequent users are concerned about how to best collaborate with others while low frequency users often showed very little concern for how the innovation would affect students. These findings should be used in determining additional educational needs of ATS instructors who have participated in past activities as well as planning future workshops for other instructors. Further, issues regarding the acceptance of the innovation by others can be addressed by providing additional information and/or workshops for school headmasters and Ministry of Education personnel.

Preventing a Framework for Analysis of International Development Non-Profit Organizations

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The purpose of this paper is to present a framework for stakeholder analysis of international development non-profit organizations. This framework adds to what is available in traditional non-profit literature, and focuses on the philosophical foundations and the type of impact achieved by an organization. It also complements the impact-focused framework proposed by Crutchfield and Grant (2008), aimed at organization managers and funders. The dimensions of the framework are both dichotomies and conundrums: They do not have a right or wrong answer, but the way an organization responds to each of them can determine support or resistance from a stakeholder. Some of the dimensions proposed include: 1. Short term vs. Long term; 2. Planner vs. Searcher (Easterly, 2006); 3. Disciplinary vs. Multidisciplinary; 4. Direction of action (community action projects, changing policy, and political action); 5. Who benefits (average or bottom of the pyramid)? 6. Adaptable goals vs. Flexible tools; and 7. Increasing positive intentional results vs. reducing unintentional negative consequences.
Using Indigenous Technical Knowledge (ITK) to Enhance Agroforestry Extension and Improve Agricultural Production in Kenya

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Soil infertility, fodder shortages in the dry seasons, wood fuel shortages, and weeds continue to persist in developing countries. The adoption of new technologies in these countries does not match the scientific development so far as farmers tend to continue using indigenous technical knowledge (ITK). Adoption of agroforestry technologies in Maseno has remained low despite being in an area served by agroforestry extension. This study aimed at investigating the potential of applying existing ITK in supplementing agroforestry extension in Maseno. The study was an ex-post-facto survey. Purposive and proportionate random sampling procedures were used to obtain 150 study subjects (Household heads) as a sample out of a population of 4,070 farm households. Data were collected using an interview schedule administered by the researcher and assisted by a local guide. The results of the study showed that ITK plays a statistically significant role in the management of wood fuel, fodder, soil and weeds. Level of education and age of respondent did not influence dissemination of ITK related to AF. However, respondents’ gender was found to have statistically significant influence on dissemination of ITK related to AF. The level of adoption of recommended AF technologies in the study area was found to be low. Based on the results, it is recommended that new AF technologies be developed with farmers in mind and that new technologies should be seen by farmers as mutual modifications of traditional farming systems. It is suggested that a study be carried out on how to effectively integrate modern AF and ITK to ensure sustainability and vitality in improving agricultural production in generations to come.

Defining Internationalization for University of Minnesota Extension
Using an Appreciative Inquiry approach

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This paper shares the experience of University of Minnesota Extension to begin an internal process to support long-term involvement and commitment for internationalizing University of Minnesota Extension. The paper describes the approach used for a two-day discovery and planning workshop bringing together state and national leaders from around the country to work with a diverse group of staff and faculty across the University of Minnesota Extension and the College of Food, Agricultural and Natural Resource Sciences. The workshop design incorporated a modified appreciative inquiry approach to provide participants historical and current examples of international work in University of Minnesota Extension and examples of successful programs across the country through the US Department of Agriculture’s previous National Initiative to Internationalize Extension. This approach allowed participants to discover and apply new ideas about key aspects of internationalizing University of Minnesota Extension. By engaging participants and valuing their expertise and experiences we have begun building a team committed to internationalizing extension built on positive affect, social bonding, and a sense of purpose to create something meaningful together. Our major results include a concept paper outlining goals, values, and action steps that were a direct result of the workshop Thinking
globally, acting locally: Extension in the World representing the collective thinking of over 40 participants.

**Agricultural Extension: Is the Bubble Bursting?**

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This paper raises issues regarding the future directions of agricultural extension with a particular focus on the contribution of universities. It argues that the development of the research intensive university militates against applied research and weakens university outreach and its contribution to community. The push for research intensity also weakens a university's ability to provide the type of graduate that is required by the agricultural and rural development industry. This disconnect with industry and the economic and financial pressures on universities will make it very difficult for universities to retain/develop agriculture or agricultural extension departments. There is also the situation, particularly in Western Europe, that as the current generation of staff retire, they will not be replaced and both these disciplines will decline and eventually disappear. On the other hand, the successful outreach model led by extension in some countries could be used to inform the new generation who are now only beginning to discover the concept of translational research. The demand for extension in the so-called developed world at farm or rural level will depend on its ability to supply knowledge around a changing set of technologies and areas than would have been the case in the past.

**Obstacles in Use of Information Technologies by Agricultural and Natural Resources Faculty Members**

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Advancements in Information Technologies (ITs) have created opportunities whereby educators in higher education institutions can develop the educational courses beyond the traditional classroom and deliver education and training to geographically diverse audiences locally, nationally, and even internationally (Rockwell, 1999). Although there has been a strong push to get educational technology into the colleges and universities, many barriers and obstacles to the development of E-learning still exist; such as lack of financial resources, lack of time to learn technology skills, inadequate technical support, insufficient information about the use of computers, faculty attitude and motivation toward ITs, and resistant to using computers. As higher education attempts to meet the increasing demand for courses delivered at a distance, identification of possible barriers to use modern technologies by faculty members in educational and research activities are needed. The main purpose of this study was to assess the obstacles in the use of ITs by agricultural and natural resources faculty members at Tehran and Tarbiat Modarres Universities in IRAN. This study used a descriptive survey method and the population of the study included all faculty members at Tehran and Tarbiat Modarres Universities, College of Agriculture and Natural Resources (N=267). A systematic sampling technique was used to select faculty members in the study (n=158). Data was gathered via the use of an on-line questionnaire. Content and face validity were established by a panel of experts consisting of
faculty members at Tarbiat Modarres University, College of Agriculture. A pilot test was conducted with 30 faculty members at Tarbiat Modarres University, College of Agriculture. Questionnaire reliability was estimated by calculating Cronbach’s alpha. The overall Cronbach’s alpha coefficient for the instrument was 0.86. Results of this study showed that nearly 92% of the respondents reported owning a personal computer at home and 98% of them cited that they have a computer in their offices. The results of this study illustrated that the faculty members use ITs in research activities more than educational activities. Most of them (89.9%) lacked experience in teaching learners E-learning. According to the results, the respondents had a positive attitude toward online education and E-learning as a general concept, but they stated that the most effective mode of instruction is combined education (face-to-face classroom instruction and online education). According to the results the major obstacles in the use of new technologies in educational and research process were the infrastructure and physical barriers (mean= 3.06, S.D=0.72) and social-cultural barriers were the less important obstacles in the use of ITs in educational activities (mean 2.25, S.D=0.54). According to the results, it is required to revise the financial plans and to allocate more resources and make financial arrangements for supplying the required equipments, hardware and software.

The Personal Impact on U.S. Agricultural Faculty, Students and Media Practitioners who Participated in a Citizens’ Exchange Project: A Case Study

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As one component of a grant funded by the U.S. State Department’s Professional Exchange Program, a team of academics, practitioners and students with varying interests in the agricultural sector travelled to Mali, West Africa. For many, this was their first experience travelling to the African continent, and for most, it was their first international experience. The team consisted of faculty members from agricultural education, agricultural communications, and mass communications disciplines; media professionals; and graduate students from agricultural disciplines. Members of the team recorded their thoughts, experiences and concerns before, during and after the project through the channels of blogging on a published Web site and writing in personal journals. The purpose of this qualitative analysis was to describe the cultural awareness and personal growth of U.S. based agricultural educators, communicators, graduate students and media practitioners with varying international travel experiences who participated in a cultural exchange project to this country in West Africa. A qualitative case study method was used to analyze written records from this team of U.S. based agricultural educators, communicators, graduate students and media practitioners. The case study approach was selected based on its function of assessing context within a subset (Lincoln & Guba, 1985). Team members’ blogs and/or written journals were digitized and compiled into Weft QDA, a data management software program. This software was used to catalog and manage emergent themes from team members’ blogs, journal entries and survey responses. In addition, data collected by an outside evaluator immediately following the project’s fruition (Irani, 2008) was used to support thematic areas. Participants were asked a series of open-ended questions about their perception of the personal impact the international experience had on them. The instrument used to collect this data was sent via e-mail to the faculty and practitioners who participated in the project. Eight responded and content from the survey was analyzed for commonality (Irani,
A follow-up survey was conducted approximately four years after the experience to assess potential participant behavioral changes toward international issues. Responses were analyzed for thematic relevance. Findings indicated participants with little to no previous international experiences were apprehensive about their physical and health safety while in country. The major thematic areas noted were awareness of culture and poverty. The theme of “endearment” emerged from artifacts with many blog entries noting the passion and friendliness of the Malian people. More people journaled about the cultural differences than sameness; however, participants with little to no international experiences highlighted cultural similarities more often than participants with more international experiences. Follow-up questions indicated that participants were more aware of international issues and more enlightened about their self. However, few respondents indicated an increase in international involvement due to their experiences with the exchange program. It is recommended that businesses and universities provide cross-cultural exchange opportunities to their employees and students. From an educational perspective, such an experience provides opportunities for personal growth and cultural awareness through the enhanced understanding and awareness of cultural differences and similarities.

Diversifying Agricultural Production Utilizing High-Value Fruits and Vegetables to Replace Low Productivity Crops in the Altiplano, Occidental Region of Honduras

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Indigenous Lenca-Mayan people primarily inhabit the Altiplano area in the Occidental Zone of Honduras. This area is one of the least developed areas in Honduras and includes mostly small landholders producing basic grains and potatoes on less than one hectare of land. Their low-value agricultural production technology subjects these families to a lifetime of poverty because they earn less than $120 / manzana / year (manzana = 1.7 acres) and therefore an overall low-level in their quality of life. From 1992 – 2008, the Honduran Agricultural Research Foundation (FHIA), the Secretary of Agriculture and Livestock (SAG), and the Japanese International Cooperation Agency (JICA) implemented a research, extension, and education project centered on the production and marketing of high-value fruits and vegetables as a means of addressing these problems. The purpose of this paper is to describe the efforts FHIA used to increase the incomes and improve the quality of life of poor, rural families of the Altiplano, Occidental Zone in Honduran through the Diversifying Agricultural Production Project (PDAE). The project was first implemented utilizing a research approach to determine the potential crops appropriate for the area and then design agronomic packages followed by an extension and training outreach program. Valuable producer feedback was essential in developing the agronomic packages. The end of project evaluation documented significant increases in income ($2,700 / manzana / year), employment, and quality of life along with a diversified high-value agriculture system that utilizes sustainable practices. It is strongly recommended that FHIA’s efforts be reviewed by others and replicated in other similar Altiplano regions of Honduras and Central America in general. Although a few other NGO’s in the same geographical area are now starting to implement similar extension and outreach projects, the project methodology of first conducting applied research should also be replicated with other poor, rural families in similar geographical regions who may very well benefit from the same approach. FHIA feels that the research component was essential to their success. It is also recommended that a follow-up project
evaluation be carried out to document and measure the long-term impacts of this project. While there is nothing magical in what FHIA has done, it seems that very few other institutions in Honduras have come up with the combination of research, in-house plant materials, technical expertise, training, and outreach. Other agricultural and extension education practitioners should further examine the long-term changes in behavior as a result of this program to determine the exact role of each component and their possible application in other regions.

Selected College of Agriculture Students’ Eurocentric Attitudes about Agriculture

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Eurocentric views are still prevalent in today’s society. Eurocentrism, suggesting a Western model of daily life that should be adopted, creates a permanent core and a periphery from which socio-economic, cultural, and political ideas disseminate into the world (Persaud, Parrish, Wang, & Muffo, 2008). Eurocentrism suggests a western model of daily life that should be adopted, because it is seen as the only solution to the world’s challenges. Studies identified that students’ perceptions of their own global awareness and attitudes toward internationalism reflected Eurocentric ideals, and agricultural students exhibited limited international experience and backgrounds. Persaud and others posited that Eurocentric views held by students may be associated with historical socio-cultural conditioning. The purpose of this study was to determine college students’ Eurocentric attitudes about agriculture, the factors influencing those views, and how students’ attitudes differed between grade levels. A stratified random sample of College of Agriculture and Life Sciences’ undergraduates (N = 166) completed an online questionnaire that measured students’ Eurocentric attitudes about agriculture, using a Likert-type five-point scale, for 16 statements. The results showed that students had Eurocentric attitudes about agriculture. Students generally agreed and sometimes strongly agreed with the 16 proposed Eurocentric statements. While upperclassmen held less Eurocentric attitudes about agriculture than those of underclassmen, Eurocentric attitudes were still represented. Although other influencers measured (gender, living on a farm or ranch, and studying abroad) did not produce significant results, several statements warranted statistically significant results. Students’ race influenced two proposed Eurocentric statements about agriculture, and students’ college influenced two Eurocentric statements about agriculture. Further research is needed to explore how students’ Eurocentric attitudes about agriculture change as they progress through university coursework. Also, research should be conducted explore how students’ personal beliefs and sociological preconceptions influence their attitudes about agriculture. Gathering a larger sample of the population (middle grades, high school, college, young adults in the agriculture sector, and older adult policy makers) will benefit further research by allowing researchers to gather more sociological information about respondents. Recommendations for slowing the process of establishing Eurocentric attitudes about agriculture include using outside speakers and international foci in 4–H, FFA, middle school, and high school student settings to build interests in international agriculture education and development; incorporating information pertaining to natural resources, food science, soil science, crop science, plant biology, etc. in the education system as early as middle school; encouraging international graduate students’ visits to schools located near colleges or universities to speak about agriculture production in their native countries and how it differs from methods in the United States; creating online and electronic
workshops to introduce information about international agriculture production to teachers, FFA advisors, and 4–H youth extension agents.

**Woody Biomass Energy Extension Education: Implication for International Agricultural and Extension Education**

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North Carolina State University

Woody biomass energy is one of many alternatives to fossil fuels currently being explored and one that has broad application internationally. Around the world, non-industrial private forest (NIPF) can serve as a large-scale source for this woody biomass. This paper contributes to a better understanding of the challenges and opportunities of developing an Extension education program to encourage the participation of NIPF landowners in the biomass industry around the world using North Carolina as an example. Over the course of six months we surveyed 395 forest landowners participating in our Forestry Extension program held in ten counties across the state. We saw changes in knowledge, attitudes, and aspirations of participants indicating woody biomass educational programs should be an important component of renewable energy adoption plans. However, while the majority of landowners reported that the information gained was beneficial to them, they need more specifics before deciding to participate in emerging woody biomass markets. Furthermore, there is much work to be done to further develop international outreach in this area.

**The Role and Benefits of the 4-H Club Program in Poland**

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The 4-H non-formal education idea was born in America in the early 1900’s. In the last 100 years, it has migrated and adapted outside U.S. borders. Between 1920 and 2002, 37 non-U.S. countries have implemented their version of the 4-H idea (Cooperative State Research Education and Extension Service, 2008). The authors of this paper have completed research on the benefits of the 4-H program in Poland after 1989. The post-communist changes in the early 1990’s had a great impact on the formation and implementation of education in Central and Eastern Europe (Mitter, 2003). Specifically, Polish education faced a chaos of national and international opinions about what it should look like, linked with a low order in national priority (Tomiak, 2000). As Poland was exploring new ideas in the formal classroom, non formal education systems (NFE’s) such as 4-H were also developing as educational complements. As a result, some 400 4-H clubs containing 7,000 members are active in Poland today. The growth and staying power of Polish 4-H since 1989 suggests that it has been beneficial to Poles. In turmoil of national and educational policy changes, Poland customized 4-H to catalyze local level institution engagement for individual and community benefit. But like many 4-H Extension programs, by whom and how should evaluation take place? A review of formal research evaluating European 4-H systems was found to be very limited. This included a study on Danish 4-H completed in 1989, and a 2002 study exploring the Finnish 4-H system (Staude, 2002). The authors of this paper expanded the literature in international 4-H systems evaluation, specifically
in benefits of the Polish 4-H system. They completed a research project comprised of both American and Polish researchers to answer the question – “What are the benefits of 4-H in Poland”? To accomplish this, a 28-question researcher developed survey was given to ten random cluster samples of 4-H clubs in southern Poland. Each club was considered a cluster, which provided a representative sample of 4-H members, 4-H alumni, 4-H parents, 4-H leaders, and school headmasters (N=234). Findings noted characteristics of Polish 4-H. These included that 51% of 4-H leaders were described as teachers in the school system. Additionally, 90% of 4-H meetings utilized the school as a meeting location. Next, nearly 90% of respondents described their residence as living on a farm or in the country. Also, nearly 75% of participants surveyed were female. Findings also reported benefits of Polish 4-H. Participants perceived 4-H as useful in many ways, such as for individual development, as a teaching method, and as a tool for local community development. Specifically, approximately 83% of respondents reported that 4-H participation improves students’ grades in school. Of the 234 respondents, 28 were able to travel on an international 4-H exchange through 4-H (23-Purdue University, 5-Michigan State University). Many youth noted how 4-H had left an impression on their life path by improving their self-confidence, organizing their leisure time, developing their passions, and positively influencing their chosen lines of study.

**Emerging Innovations within the Ethiopian Agricultural Extension System**

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The purpose of this study was to provide a review of the strengths and constraints of the Ethiopian extension system and, in close consultation with the government and other stakeholders, to outline specific institutional innovations that would improve the overall extension system. Methods used to collect information for this study included a desk review of relevant literature, including successful case studies from several Asian countries; informant interviews; stakeholder consultations; focus groups; and field visits to six of the nine regions of Ethiopia. A pre-test of data collection instruments was also conducted in Addis Ababa and the Oromiya Region. The authors found that the field-extension service had a strong foundation of Farmer Training Centers (FTCs) and trained Development Agents (DAs) in place. Roughly, 8,500 FTCs have been created throughout Ethiopia, and about 63,000 diploma-level graduates have been trained and about 45,000 DAs appointed to provide extension services to farmers. Several innovative examples were found in pockets of the country that could be up-scaled to have greater impact on rural poverty and food security. These included a broadening of the extension approach beyond national food security to focus more attention on high-value crops, livestock and other products that would directly benefit men and women farmers. Another example was to increase the sustainability of the FTCs by conducting income-generating activities that would serve a dual purpose: using this income to expand extension activities for farmers within each kebele (township) and to enhance DA connectivity with subject matter specialists (SMSs) and researchers, as well as to finance additional DA training. To implement these proposed institutional innovations will require additional investment from donors and the national government. These changes include expanded training so DAs can function more effectively as knowledge brokers; enhancing information and communication technology (ICT) to better link DAs with researchers and market information; and enabling farmers to play a more active role in setting extension priorities and assessing DA performance.
Preferred Information Channels and Source Trustworthiness: Assessing Communication Methods Used in Florida’s Battle Against Citrus Greening

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University of Florida/Florida Survey Research Center

The purpose of this study was to examine the perceived source credibility of Florida agricultural organizations associated with containing citrus greening, as viewed by Florida citrus opinion leaders. In addition, this study sought to determine the types of information that opinion leaders receive from these Florida agriculture organizations, as well as identify factors that contribute to an opinion leader disseminating the message. The project described in this paper was developed to assist Tropicana – one of the largest citrus processors in the state – to better understanding Florida citrus growers’ attitudes and behaviors regarding preferred management practices (PMPs) to contain citrus greening. Focus groups were implemented with Florida citrus growers to gather information about the growers’ awareness and understanding of citrus greening, their current management practices, and the best ways for organizations to provide growers and managers with information about greening and other citrus diseases and issues. This paper focuses on the topics of source credibility and communication channels that were brought out during the focus groups. Three focus groups were conducted at county Extension offices in three major areas of citrus production in Florida in late 2007. The number of participants ranged from four to six for a total of 15. Growers were asked about their awareness and experience of citrus greening; management practices; cooperation with fellow producers and institutions that played a role in citrus greening management, namely processors, the University of Florida’s Institute of Food and Agricultural Science (UF/IFAS), and governmental regulators; preferred avenues of communication; and information dissemination methods. Focus group results indicate that Florida citrus growers prefer to receive information about citrus greening in traditional methods, namely meetings and field days. They also prefer to receive their information from other farmers, to find out how their colleagues have been handling citrus greening. Focus group participants were less likely to prefer information transmitted by e-mail. Focus group participants struggled with trusting UF/IFAS and regulators, based on two primary reasons: 1) the farmer’s previous experiences with UF/IFAS and regulators during the unsuccessful citrus canker eradication program and 2) farmers’ perceptions of the practicality of the university’s information. Finally, farmers were critical of the lack of information they were provided in a timely fashion, saying that “no one told us” of the devastating impact of citrus greening, until it became too late. Results presented in this study will be applicable to U.S. and international extension efforts, because it is increasingly important to understand how to communicate timely, effective information to agriculturalists. It is recommended that universities strive to instill trust in the recipients of their information. Although the use of information technology continues to expand, this study indicates that traditional methods – face to face meetings and field days – still serve a valuable role for farmers. Lastly, it is essential that farmers see universities and regulators as partners.
Digital Extension Newsletters Innovative Cooperation and Collaborations

Pete Vergot III, Whitney Cherry, Andrew Diller, Theresa Friday, Judy Ludlow, Carrie Stevenson & Kendra Zamojski, University of Florida IFAS Extension

This paper will share a unique and new “Digital Extension Newsletter” project that was designed, developed and continue to deliver articles written by County Extension Agents. County Extension Faculty develop and distribute program newsletters to disseminate information to their clientele. The purpose of the “Digital Extension Newsletter ” were to provide an opportunity for county faculty to develop original publications and creative works; and to develop a district-wide marketing campaign for these new channels of information; to develop common marketing. The objectives were to develop county agent areas of expertise and to develop a virtual digital site for all Extension program areas. Lead county faculty worked with the software developer to utilize a web-based software to complete the project. New virtual extension program websites were developed for all digital channels including newsletters, county fact sheets, video, blogs and social marketing sites.

Connecting Research, Education and Extension: the Agricultural Extension Center at MSUA

Grant Wood & Paul Stevens, University of Saskatchewan

Mongolia is a vast area situated between Russia and China where semi-nomadic herders who manage the vast areas of native grassland still predominate in the countryside. From the early 1900’s until the early 1990’s Mongolia was heavily influenced by the USSR. Following the USSR breakup, Mongolia was in a crisis situation and very quickly had to redevelop a sustainable agricultural industry that meant having effective research, education and extension systems in place, and working together. The establishment in 2004 of the Extension Centre at the Mongolian State University of Agriculture (MSUA) was a purposeful attempt to ensure effective linkages, coordination and collaboration between research, education and extension, and thus facilitating the creation of a sustainable agricultural industry. Since its inception the centre has fought to realize its purpose and role and become established and accepted. This paper, taking into account history, culture and politics describes the process followed, the history of the office, and the lessons learned from mentoring it through its first five years of operation. The methodology used was a single-case explanatory case study using multiple sources of evidence that included discussions, observation and documentation. Three key areas which are all very interrelated were identified as problematic: a) the concept of extension meant different things to farmers and herders than it did to legislators. This caused confusion in establishing the role of the extension centre at MSUA; b) familiarity with the past and failure to think beyond the pillars seriously hindered the establishment of the centre. Saddled with the name extension, administration chose to focus on program delivery and mandated the centre to only fulfill extension responsibilities – development and delivery of programs on a cost-recovery basis c) frequent administrative and staff changes meant almost continually having to revisit the entire process of establishing the centre. With new administration came new ideas that sometimes were contradictory to the originally established roles and responsibilities. To avoid a top-down decision making process and to help colleagues discover other options and processes, over the years select individuals came to the international partner university as a visiting scholar. Through
tours, meetings, readings and observation they saw the connection between research, education and extension and discovered best-practices that were applicable to the MSUA extension office. Discovery takes time, often involves making mistakes, but results in true ownership that is now happening. MSUA extension centre staff are taking forward several next steps which will help them achieve their original goal. Lessons learned include: use existing terminologies, always take into account the local culture and history, concentrate on clear and inclusive communications, use study tours to enable colleagues to discover alternate processes and approaches.

Baruunkharaa: A Poverty Reduction and Community Development Success Story

Grant Wood, Paul Stevens, & Debra Rasmussen
University of Saskatchewan/Agriteam Canada

Mongolia is a country large in area and small in population. It is a country where agriculture is the backbone of the economy and where semi-nomadic herders predominate in the countryside. The transition to a democratic market economy has not been easy for Mongolia. Plummecting production in combination with two years of drought resulted in a food security issue. Rural people flocked to the cities in hopes of finding employment or support. Rural Mongolia was left in a desperate state. The Baruunkharaa Community Development Pilot Project was designed so that poor families in the community could start commercial vegetable growing operations and become economically self-reliant. This joint investment and training program was a partnership of three Mongolian and three international organizations. A socially responsible international mining company supplied the investment capital. The local government supplied the land. The program families supplied the labour. A combination of international and local educational partners supplied the training materials and trainers. The program used a participatory management approach to ensure participants took ownership of the program. It also used appreciative inquiry with participants in order to discover, dream and design short and long-term goals. By the end of the three-year program 61 of the 75 families who started the program were still actively involved in the program. 320 people from the 61 families had directly benefited from the program. This program saw a 158% increase in the average household income of the participant families. It also saw the average household income of female headed-households in the program grow by an amazing 198%. Total production of vegetables and potatoes grown by the participants grew from 14.2 to 89.4 tonnes, and total yield per hectare grew from 6.3 to 10.9 tonne/ha. The profit realized per participant household grew from just under 10,000 MNT to over 231,000 MNT in just three years. A spin off affect of the program was a 92% increase in the total area of land in the community devoted to vegetable and potato production. Success of this program is credited to several factors including: having a strong local market for sale of produce, having families that are active partners and fully involved in planning and priority setting, selecting participants that had a high literacy rate and were classified as able and willing and unemployed, placing an emphasis on women participants as they traditionally are willing to work and are often more interested in processing which is a lucrative venture, ensuring that the training follows sound adult education principles, encouraging group formation to help share work plus management and finances and to help build community, and the use of appreciative inquiry to help bring the community together and ensure collaborative work.
Evaluation of Participants’ Knowledge scores in an International HACCP Workshop

Landi Woolley, M. Todd Brashears, Jonathan Ulmer & David Lawver
Texas Tech University

The purpose of this study was to evaluate the effectiveness of a HACCP workshop, developed and presented by the International Center of Food Industry Excellence (ICFIE), to Mexican meat processors as measured on levels one and two of Kirkpatrick’s workshop evaluation model. A one-group pretest-posttest design and an evaluation were used for this study. The group of workshop participants (N=24) took a 28-question pretest on their knowledge of HACCP and food safety. This was followed by a two-day workshop. At the conclusion of the training, the participants took the same 28-question test for the posttest. Participants also answered an evaluation instrument including questions pertaining to the workshop presenters and the entire workshop. Participants showed a significant gain in knowledge from pretest to posttest, and researchers detected correlations between posttest knowledge and evaluation scores. The participants and presenters were described.

Integrating Learning for Development: B Agric (Extension) University of KwaZulu-Natal

Steven Worth, University of KwaZulu-Natal

For several years the University of KwaZulu-Natal investigated the development of an appropriate curriculum for its three-year Bachelor of Agriculture (B Agric). The qualification was originally created to provide quality human resources for agricultural and rural development. Its roots are in experiential learning, discovery learning and systems thinking. Five years of research into curriculum, agricultural extension, agricultural policy and educational policy as well as involvement in the evolution of agricultural colleges led the Agricultural Extension and Rural Resource Management (AERRM) unit of UKZN to develop a unique three-year B Agric in partnership with the Cedara Agricultural College. The research underpinning the qualification, which awaits final approval by the Council on Higher Education, produced a new learning-based concept for agricultural extension (Agriflection), a new method for evaluating and designing curricula (Theory-led Instructional Design Curriculum Evaluation and Design, a framework for designing curriculum (the Agricultural Extension Carousel of Learning), and a unique curriculum specifically designed to contribute to the fulfilment of the transformational policies for South African agriculture. The programme meets SAQA and HEQF standards, is aligned with the norms and standards for agricultural extension, and complies with the requirements of the Agricultural Education and Training Strategy and the principles of Agricultural Research for Development. The UKZN B Agric (Extension) is due to be launched at Cedara in 2010.
2010 AIAEE Conference

Outstanding Paper Presentation
Factors Impacting Collaboration: Implications for Agricultural Extension and Education

Theresa Pesl Murphrey
Julie Harlin
John Rayfield
Texas A&M University

Outstanding Paper Presentation -1st Runner-up
Stages of Concern Profiles for Active Learning Strategies of Agricultural Technical School Teachers in Egypt

Brian E. Myers
R. Kirby Barrick
University of Florida
Mohamed M. Samy
Chief of Party, USAID MUCIA Value-Chain Training Project
Cairo, Egypt

Outstanding Paper Presentation -2nd Runner-up
Baruunkharaa: A Poverty Reduction and Community Development Success Story

Grant Wood
University of Saskatchewan

Outstanding Graduate Student Paper Presentation
A Case Study from Costa Rica: Using Formative Evaluation to Enhance Program Implementation

Alexa Lamm
Glenn D. Israel
Tracy Irani
University of Florida
Outstanding Poster Presentation

Building a Comfort Zone: A Pedagogical Approach to International Field Study Seminars

John R. Vreyens
University of Minnesota

Outstanding Poster Presentation -1st Runner-up

Framework for the Development of an International Agricultural and Extension Education Graduate Course

K. S. U. Jayaratne
North Carolina State University

Outstanding Poster Presentation -2nd Runner-up

Radio Broadcast as an Extension tool in Dry Season Vegetable Production in the Upper West Region, Ghana

Abdul-Halim Abubakari & Gustav Mahunu
University for Development Studies, Tamale, Ghana

Patrick Kumah & Irene Idun
Kwame Nkrumah University of Science and Technology, Ghana

Mary Ruth McDonald, Dinah Ceplis, Mervin Pritchard, & Josee Owen
University of Guelph, Canada
Minnedosa, Canada
University of Manitoba, Winnipeg, Canada
Senator Hervé J. Michaud Research Farm, Agriculture and Agri-Food Canada

Outstanding Graduate Student Poster Presentation

Viva Colaboración: Using Mentoring to Enhance International Agricultural Learning Programs

Alexa Lamm
Amy Harder
Tracy Irani
University of Florida
AIAEE Award Winners for 2010

Outstanding Leadership
James Knight
University of Arizona

Outstanding Service Award
Mark Erbaugh
Ohio State

Outstanding Achievement Award
Barnabas Dlamini
University of Swaziland

Outstanding Early Achievement Award
Amy Harder
University of Florida

Special Recognition for Financial Assistance
Pat Rigby
Ohio State
The past editor requested board members to review and nominate articles published in Volume 16 (2009) for the 8th annual **Article of the Year Award**. The nomination period occurred in April 2010. 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 2008**


**Runner-Up Journal Article of the Year for 2009**