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Articles intended for publication should focus on international agricultural education and/or international extension education. Articles should relate to current or emerging issues, cite appropriate literature, and draw out implications for international agricultural and extension education. **Manuscripts, or portions of manuscripts, must not have been published or be under consideration for publication by another journal.**

Three types of articles are solicited for the *Journal*: Feature Articles; Commentary Articles; Tools of the Profession Articles.

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Feature articles focus on philosophy, current or emerging issues, and the methodology and practical application of specific research and appropriate technologies, which have implications for developed and developing countries. For publication in the *Journal*, feature articles must pass the *Journal’s double blind, peer-review process*, which utilizes peer reviewers who evaluate manuscript content and ensure readability. Reviewers are selected usually from the membership of the AIAEE. In the double-blind, peer-review process, all reference to author(s) is removed before the manuscript is sent to reviewers. Feature Articles may be submitted for peer-review a total of three times before they are no longer acceptable for publication in the *Journal*.

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Commentary articles state an opinion, offer a challenge, or present a thought-provoking idea on an issue of concern to international agricultural and extension education, including a published article in the *Journal*. Commentary articles are reviewed by two members of the Editorial Board for appropriateness, readability, and relevance to the *Journal*.

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Tools of the Profession articles report specific techniques, materials, books and technologies that can be useful for agricultural and extension educators in a global context and/or in a country/region. Tools of the Profession articles are reviewed by two members of the Editorial Board for appropriateness, readability, and relevance to the *Journal*.

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Journal of International Agricultural and Extension Education

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From the Editor

Greeting to all members of the Association for International Agricultural and Extension Education (AIAEE) and to all readers of the Journal of International Agricultural and Extension Education! It is springtime in the northern hemisphere; a great time to plant and nourish the educational seeds of professional development. I am hopeful that by the time you read this, you have planted your seeds by completing the registration process and have plans to attend the 21st Annual Association for International Agricultural and Extension Education Conference in San Antonio, Texas. The conference planners have put together a fantastic schedule, which can be viewed at http://www.aiaee.org/index.html; take time to view the conference events today.

It doesn’t seem possible that three years have passed so quickly since I became editor of the JIAEE. Three years as editor have broadened my knowledge and understanding of the scholarship representing international agricultural and extension education. I begin my second three-year term as JIAEE editor with this issue, Volume 12(1). The JIAEE has made many advances in the past three years; now we must challenge ourselves to increase the level of scholarship (rigor, timeliness, impact on the profession, etc.) reported in the JIAEE over the next years. Please don’t forget that the JIAEE will no longer publish an annual summer issue as a “Conference Issue,” but will publish it as a regular issue (similar to spring and fall issues), replete with peer-reviewed research produced by our AIAEE members. In addition, our annual fall issue will contain a new component; you’ll have to ask me what it is at the AIAEE Conference if you want to know before the fall issue reaches your mailbox. Finally, sometimes we have to undo those things that are not easily undone; please note the erratum below.

The 21st Annual AIAEE Conference in San Antonio, Texas will be a great time to increase your knowledge base, acquaint yourself with current research, and add to your professional skills through the post-conference workshop. AIAEE conference planners have prepared an exciting assortment of activities, and as always, it is a great time to renew friendships throughout the profession. I wish you all safe travels to San Antonio! Please remember to promote greater understanding of agricultural and extension education worldwide!

Sincerely,

Gary J. Wingenbach, Editor
Journal of International Agricultural and Extension Education

ERRATUM

Irregularities have been discovered in a JIAEE article published in 2002: An introduction to risk communication for international agricultural and extension educators, Journal of International Agricultural and Extension Education, 9(3), 83-88, on which M. Woods was the lead author. Therefore, the validity of the published information is questionable. All authors are advised to refrain from using it as a reference (printed hardcopy or electronic formats) in all future manuscripts submitted for peer review and possible publication.
Abstract

Sustainable agriculture extension programs are mandated worldwide to foster the implementation of sustainable agriculture practices. These required sustainable agriculture extension programs are to be conducted by extension agents, therefore understanding extension agents’ perceptions toward sustainable agriculture is especially important. This research identified the perceptions toward sustainable agriculture of agricultural extension agents in the Riyadh Region, Kingdom of Saudi Arabia. The findings show that extension agents generally had a positive perception toward sustainable agriculture concepts. No significant differences between overall means of agents’ perceptions toward sustainable agriculture concepts and their age, rural/urban background, or educational background were found. Extension agents’ positive perceptions regarding sustainable agriculture and the perceived need for providing sustainable agricultural extension programs to farmers provide a basis for sustainable agriculture programs development.

Keywords: Sustainable Agriculture, Saudi Arabia, Competencies, In-Service Education, Extension Agents
Introduction
The decline and degradation of natural resources have increased partially because of the conflict between production agriculture and the environment. Currently, farmland worldwide is facing environmental challenges such as soil erosion, desertification, and water shortages. This conflict between agriculture and natural resources has led to many kinds of pollution and contamination (FAO/Netherlands Conference on Agriculture and the Environment, 1991). These factors may eventually contribute to a shortage of food and water, nationally and internationally. The world’s natural resources are important and at risk today more than ever (Fridgen, 1995).

The Kingdom of Saudi Arabia has experienced rapid and successful agricultural development since the mid-1980s. As a result of this development, Saudi Arabia has succeeded in achieving self-sufficiency in some botanical and animal commodities, such as wheat, eggs, dates, milk, and some fruits and vegetables. Prior to this period of development, the country’s agricultural production sector met less than 10% of its national needs (Ministry of Agriculture, 1999). However, this rapid agricultural development substantially damaged the country’s limited natural resources. Serious depletion of underground water supplies, primarily due to the huge amount of water consumed for food production purposes accrued; therefore, Saudi policy makers have recently changed the country’s agriculture policy to make it more sustainable.

The Seventh Saudi Development Plan (2000-2004) emphasizes the rational utilization and conservation of natural resources, raising income levels and improving the standard of living of citizens in rural areas, the intensification of agricultural extension programs to raise awareness among farmers regarding the significance of water conservation and development of manpower in the agriculture sector (Ministry of Planning, 2000). The objectives of the Seventh Development Plan of Saudi Arabia relate to developing sustainable agriculture. This plan also mandates related agricultural extension programs. To reach the goal of conducting successful extension programs in sustainable agriculture requires knowing the current perceptions and knowledge of Saudi extension agents toward sustainable agriculture.

Sustainable agriculture aims to produce healthy and ample food for both the present and the future through the wise use of natural resources. Sustainable agriculture has been defined in many ways and people’s views of it depend on their areas of interest and background (Minarovic & Mueller, 2000). Lockeretz (1990) believes that sustainable agriculture was embedded in the older term “organic farming,” which started before the 1940s. The impact of industrial agriculture on the environment during the late 1960s and early 1970s forced people to consider sustainable agriculture (Harwood, 1990). According to Schaller (1998), sustainable agriculture is currently a significant component of public policy. Sustainable agriculture is considered a significant component of Saudi strategic plans and recently has become a serious concern among Saudi scientists and professionals (AL Mogel, 1999). In Saudi Arabia, sustainable agriculture is viewed the same as the definition by the FAO.

The FAO defines sustainable agriculture as:

The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present...
and future generations. Such sustainable development (in the agriculture, forestry, and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable. (FAO/Netherlands Conference on Agriculture and the Environment, 1991)

**Purpose and Objectives**

The purpose of the study was to describe agricultural extension agents’ perceptions toward sustainable agriculture. Agricultural extension agents in the Riyadh Region of the Kingdom of Saudi Arabia were the study population. The study addressed the following objectives:

1. To describe the demographic characteristics of agricultural extension agents in the Riyadh Region of Saudi Arabia;
2. To describe agricultural extension agents’ perceptions toward sustainable agriculture concepts;
3. To determine if differences exist in agricultural extension agents’ perceptions toward sustainable agriculture concepts when examined by age, rural/urban background, and educational background.

**Methods and Procedures**

**Population**

The study was carried out with all 127 agricultural extension agents in the 8 agricultural directorates and 28 agricultural branches with primary responsibility for extension in the Riyadh Region of Saudi Arabia. These extension agents are employed by the Saudi Ministry of Agriculture. All 127 extension agents were surveyed, and all (100%) returned the questionnaire. One survey was not completed. Usable data were provided by 126 extension agents. The study participants are considered a census of the Riyadh Region agricultural extension agents.

**Instrumentation**

A questionnaire developed by Sisk (1995) to address agricultural extension agents’ perceptions toward sustainable agriculture in the southern region of the United States was partially modified and used to assess the perceptions of agricultural extension agents in the Riyadh Region of Saudi Arabia. Approval to use Sisk’s questionnaire was obtained. Questions were also developed by the current investigator to collect additional information regarding extension agents’ perceptions toward sustainable agriculture.

The survey contained two sections. Section one had 15 questions to assess agents’ perceptions toward sustainable agriculture concepts. For this section, a five-point, Likert-type response scale: 1 = disagree; 2 = slightly disagree; 3 = no opinion; 4 = slightly agree; and 5 = agree, was used. Section two contained demographic information, asking extension agents’ age, years of service in extension, highest levels of education, area of specialization for highest levels of education, place of birth, and current residence. The survey was translated into Arabic. The translation to Arabic was reviewed by expert panel members who know both English and Arabic. An expert panel assessed the content validity of the questionnaire. The panel included faculty members from the Department of Agricultural and Extension Education, The Pennsylvania State University; faculty members from the Department of Agricultural Extension and Rural Sociology, King Saud University, Kingdom of Saudi Arabia; and a group of Saudi professionals in extension and sustainable agriculture.
Pilot testing was conducted with 11 extension agents in Qasim and Hail regions (Saudi Regions closest to the Riyadh Region). Reliability of the summatated values for section one (perceptions regarding sustainable agriculture) from the pilot-test data was verified by calculating the Cronbach’s alpha internal reliability measure. Cronbach’s reliability alpha coefficient was .79.

Data Collection and Analyses

The data were collected with the cooperation of the Directorate of Extension and Agricultural Services in the Saudi Ministry of Agriculture. The Director of Extension and Agricultural Services sent a cover letter to each Agricultural Directorate in Riyadh Region with the questionnaires. In his letter, the Director asked the Agricultural Directors to distribute the questionnaires to extension agents in their directorates as well as to extension agents working in Agricultural Branches in their areas of service. Also, the Director of Extension and Agricultural Services requested the Agricultural Directors in Riyadh Region to return the completed questionnaires to the Directorate of Extension and Agricultural Services.

The questionnaires then were collected by the main researcher from the Directorate of Extension and Agricultural Services. One to three phone calls were made by the researcher to each Agricultural Director to enhance the response rate. Data collection started April 2, 2002 and was completed May 15, 2002 with a 100% return.

The Statistical Package for Social Sciences (SPSS) was used to analyze data. Descriptive statistics (frequency distributions, means, and standard deviations) were used to address objectives one and two. Analysis of variance was used to determine if differences existed for study objective three. An alpha risk level of $p < .05$ was set as the critical standard.

Findings

Demographic Characteristics

The ages of the respondents ranged from 22 to 60. The mean age was 36.19 ($SD = 7.91; N = 124$). The majority (52.4%) of the extension agents were 31 to 40 years old. Approximately two-thirds of the extension agents (64.8%) in the Riyadh Region were born in urban communities. Over three-fourths of the extension agents (78.4%) identified urban communities as their current residence. Over one-half of the extension agents (54%) reported a diploma from a Saudi agricultural institute as their highest education level. Just over one-third of the extension agents (34.9%) had a bachelor’s degree, and 6.3% reported high school or less as their highest level of education. Only 4.8% of extension agents had a master’s degree.

Slightly less than one-third of the extension agents (31%) reported general agriculture as their area of specialization and 27.4% indicated plant production and protection as areas of specialization. Agricultural engineering was the area of specialization for 17.7%. Only 10.5% of the extension agents specialized in the social science. The mean years served in extension were 9.8 ($SD = 7.03; N = 117$). Two-thirds of the extension agents (66.6%) had served in extension from 1 to 11 years while one-third (33.3%) had served in extension for 12 to 32 years.

Agricultural Extension Agents’ Perceptions toward Sustainable Agriculture

The mean value of the overall (summatated across the 15 items) perceptions of the extension agents toward sustainable agriculture was 3.8; the standard deviation was 0.4. This overall value to sustainable agriculture indicates that the extension...
agents generally had a positive perception toward sustainable agriculture concepts. The highest mean value for an item (4.8; $SD = 0.6$) was reported for two statements: “chemical residues on many fruits and vegetables pose a significant health threat to the consumer” and “water conservation methods should be used to save limited water resources” (Table 1).

Table 1

<table>
<thead>
<tr>
<th>Sustainable Agriculture Concept</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable agriculture practices can be successfully implemented.</td>
<td>3.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Agricultural system using crop rotation, green manure crops, and animal manures can be economically comparable to a traditional system that uses synthetic fertilizers</td>
<td>3.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Chemical residues on many fruits and vegetables pose a significant health threat to the consumer.</td>
<td>4.8</td>
<td>.62</td>
</tr>
<tr>
<td>Many insects can be controlled without the use of chemical insecticides.</td>
<td>3.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Several fungi diseases can be successfully controlled without the use of fungicides.</td>
<td>2.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Most weeds can be controlled economically without the use of herbicides.</td>
<td>3.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Crops, with the potential for sustaining or increasing production with limited inputs, should receive more research emphasis.</td>
<td>4.5</td>
<td>.78</td>
</tr>
<tr>
<td>Organic pest control methods would reduce pesticides and contribute to the reduction of non-point source pollution.</td>
<td>4.4</td>
<td>.93</td>
</tr>
<tr>
<td>Many sustainable agriculture practices that may be successfully adopted in other Saudi regions are economically feasible in this region.</td>
<td>3.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Sustainable agriculture is essential for agricultural development in Saudi Arabia.</td>
<td>4.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Water conservation methods should be used to save limited water resources.</td>
<td>4.8</td>
<td>.67</td>
</tr>
<tr>
<td>Agroforestry systems (mixed trees with crops) are important in agricultural production.</td>
<td>3.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Extension programs in sustainable agriculture are needed to educate farmers.</td>
<td>4.4</td>
<td>1.0</td>
</tr>
<tr>
<td>The meaning of sustainable agriculture is not clear for me.</td>
<td>2.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Shelterbelts could maintain farms’ soil and water resources.</td>
<td>4.2</td>
<td>1.1</td>
</tr>
</tbody>
</table>

*Note.* $^a1 = disagree to 5 = agree with three = no opinion.
The second highest item mean value (4.5; SD = 0.8) was “crops, with the potential for sustaining or increasing production with limited inputs, should receive more research emphasis.” The third highest item mean value (4.4; SD = 0.9) was reported for the statements “organic pest control methods would reduce pesticides and contribute to the reduction of non-point source pollution” and “extension programs in sustainable agriculture are needed to educate farmers.” The lowest item mean value (2.1; SD = 1.4) was reported for the statement “the meaning of sustainable agriculture is not clear for me.” In this case, because the word not is in the item, the mean of 2.1 reflects that the agents slightly disagreed with the statement. Thus, the agents in reality communicated they were fairly clear in their understanding regarding the meaning of sustainable agriculture.

Differences in Agents’ Perceptions by Age, Rural/Urban, and Educational Background

The findings did not show any significant differences between overall means of agents’ perceptions toward sustainable agriculture concepts and their age, place of birth, current residence, educational level, and areas of specialization (Tables 2 and 3).

Table 2

ANOVA Comparison of Means for Overall Agents’ Sustainable Agriculture Perceptions by their Age, Highest Level of Education, and Area of Specialization

<table>
<thead>
<tr>
<th>Factor</th>
<th>df</th>
<th>F</th>
<th>Sig. (2-tail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>3</td>
<td>1.02</td>
<td>.386</td>
</tr>
<tr>
<td>Education Level</td>
<td>3</td>
<td>.54</td>
<td>.655</td>
</tr>
<tr>
<td>Area of Specialization</td>
<td>5</td>
<td>.49</td>
<td>.783</td>
</tr>
</tbody>
</table>

Table 3

Independent t-Test of Means for Overall Agents’ Sustainable Agriculture Perceptions by their Place of Birth and Current Residence

<table>
<thead>
<tr>
<th>Factor</th>
<th>df</th>
<th>t</th>
<th>Sig. (2-tail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of Birth</td>
<td>99</td>
<td>-.685</td>
<td>.497</td>
</tr>
<tr>
<td>Current Residence</td>
<td>99</td>
<td>-.661</td>
<td>.510</td>
</tr>
</tbody>
</table>

Differences in Agents’ Perceptions toward Individual Sustainable Agriculture Statements

Age. However, extension agents’ perceptions toward sustainable agriculture differed significantly by agents’ age for the statements “most weeds can be controlled economically without the use of herbicides” (F = 3.31; df = 3,116; p = .022) and “water conservation methods should be used to save limited water resources” (F = 7.34; df = 3,117; p = .001).

Agents 51-60 years of age agreed at a significantly higher level (M = 4.9) with the item “most weeds can be controlled economically without the use of herbicides” than did agents in the three other age groups. The means for the other three groups were 3.9 for 22-30 year old agents and 3.4 for both the 31-40 and 41-50 year old agents. Significant differences for the item “water conservation methods should be used to save limited water resources” were found across age groups. Agents in the 51-60 age group rated that item lower (M = 3.71) than did agents in the other three age group levels. The means for the other age groups were 4.9 for 22-30 year and 31-40 year old agents and 4.7 for 41-50 year old agents. Although differences were significant, it is important to note that each of the three age groups (22-30 yrs, 31-40 yrs, and 41-50 yrs) slightly agreed or agreed with the statement. However, the results for age group 51-60...
ranged from no opinion to slightly agree with the statement.

Significant differences between agents’ age and their perceptions regarding sustainable agriculture concepts were found by Sisk (1995) and Chizari, Lindner, and Zoghie (1999). Sisk (1995) found that the senior agents (34 years and older) perceived sustainable agriculture as less important than younger agents. Chizari, Lindner, and Zoghie (1999) also found that younger extension agents supported sustainable agriculture more than older agents in Khorasan Province, Iran.

**Current Residence.** The results show that mean differences in extension agents’ perceptions toward sustainable agriculture varied significantly with current residence (rural and urban) for the statements “organic pest control methods would reduce pesticides and contribute to the reduction of non-point source pollution” and “sustainable agriculture is essential for agricultural development in Saudi Arabia.” Agents currently residing in urban settings agreed at a significantly higher level ($M = 4.6$) compared with agents in rural settings ($M = 3.9$) with the statement “organic pest control methods would reduce pesticides and contribute to the reduction of non-point source pollution.” Conversely, agents in rural settings agreed at a significantly higher level ($M = 4.7$) than urban agents ($M = 4.1$) with the statement “sustainable agriculture is essential for agricultural development in Saudi Arabia.” Agents currently residing in urban communities were significantly more likely to agree with this statement. One possible explanation is that agents in urban communities could be more aware of the negative impact of pesticides on the environment than agents in rural communities.

**Highest Level of Education.** The findings show that the means of extension agents’ perceptions toward sustainable agriculture differed significantly when examined by their highest level of education for the statements “organic pest control methods would reduce pesticides and contribute to the reduction of non-point source pollution” and “water conservation methods should be used to save limited water resources.” Extension agents whose level of education was high school or less were significantly less likely to agree with both statements. Extension agents who had agricultural diplomas, bachelor, or master’s degrees were significantly more likely to agree with both statements. Perhaps agents having higher educational levels are more aware of the value of organic pest control methods and the need to conserve limited water resources in Saudi Arabia.
Conclusions

This study indicated that the extension agents in the Riyadh region generally had a positive perception toward sustainable agriculture concepts. These results were similar to Jayaratne’s findings (2001) with extension educators in the North Central region of the United States and Minarovic and Mueller’s results (2000) for the overall perceptions of North Carolina Cooperative Extension Service professionals regarding sustainable agriculture. Chizari, Lindner, and Zoghie’s (1999) conclusions regarding preferences of extension agents in Khorasan Province, Iran, toward some sustainable agriculture practices, including fertility, crop mix, crop production management, social concern, tillage systems, environmental protection, and variety selection were also similar.

Agents’ overall perceptions toward sustainable agriculture concepts did not vary with their age, place of birth, current residence, education level, and areas of specialization. This lack of significant differences between overall extension agents’ perceptions toward sustainable agriculture concepts and their age and education level was similar to Jayaratne, Martin, and Witt (2001) findings with extension educators in the North Central region of the United States. Similarly, the lack of significant differences between overall means of agents’ perceptions toward sustainable agriculture concepts and their current residence, educational level, and area of specializations was also similar to Sisk’s findings (1995) of extension agents’ perceptions toward sustainable agriculture in the southern region of the United States.

Implications and Recommendations

Provision for the professional development of the extension agents in the Riyadh Region requires providing in-service training programs and encouraging agents to attain higher education with an emphasis in extension education and/or technical agricultural fields as well as environmental content. In-service education and multi-year professional development plans need to be developed which include non-credit courses/workshops and credit toward a degree. These professional development programs should be provided sequentially based on different levels of agents’ knowledge and experiences. Content should focus on extension education, environmental, and technical agriculture as identified by an advisory planning committee. The advisory planning committee should have representatives from the Ministry of Agriculture, colleges of agriculture, agricultural training centers, and extension agents. These in-service education and professional development plans can be developed through cooperation among the Ministry of Agriculture and Saudi agricultural colleges.

Personnel in both the Ministry of Agriculture and at the agriculture colleges should collaborate to plan and implement sustainable agriculture programming. This collaborative program development effort should be built on the current positive perceptions of extension agents regarding sustainable agriculture concepts and the perceived need for such program initiatives expressed by the agents in this study.

The study implications are consistent with the findings of Sisk (1995), Chizari, Lindner, and Zoghie (1999), and Jayaratne (2001) regarding the need to develop sustainable agriculture programs to educate farmers in sustainable agriculture concepts and technologies. Since the conflict between industrial agriculture and natural resources
is a global issue, the implications of this study for developing sustainable agriculture programs extend beyond Saudi Arabia’s boundaries. Determining extension agents’ perceptions toward sustainable agriculture, assessing agents’ competence level in sustainable agriculture, and their competence in teaching sustainable agriculture in other regions of the world are recommended in order to implement sustainable agriculture programming successfully. Additionally, farmers’ perceptions toward sustainable agriculture, factors affecting their adoption of sustainable agriculture practices, and their specific educational needs in sustainable agriculture as well as their preferred learning approaches should be surveyed and known in order to foster the implementation of sustainable agriculture practices in Saudi Arabia as well as in other countries.

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A Cooperative Approach to Rural Development in Ireland: Cultural Artifacts and the Irish Diaspora as an Example

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Abstract
There is a need for rural development and policy interests to explore alternative methods of rural economic development. In rural Ireland, where diverse economic conditions exist, this is particularly true. Here, a rural development framework which focuses on the use of cooperatives manufacturing culturally significant items as a primary or supplemental economic development tool is described. Such cooperatives could provide steady jobs and incomes making them resistant to the seasonality of tourism and recurring agricultural crises. Such a development strategy allows for the retention of decision-making in rural communities, further contributing to social and economic well-being. Ireland is highlighted because the goods produced have a clearly defined market in the Irish-American population.

Keywords: Rural Development, Cooperative Development, Ireland, Cultural Artifacts
Introduction
The need for community and economic development in rural Ireland has been widely recognized (Murray & Greer, 1993; Department of Agriculture and Food, 1999; Commins, et al., 2000; Varley & Curtin, 2002). Here and elsewhere, extension and development agents routinely seek alternative approaches for enhancing community and economic development opportunities. Such information is particularly relevant in light of Irish economic stabilization following years of unprecedented growth coupled to declining state and European Union financial support. Further, events like the Foot and Mouth Crisis of 2001 and terrorist attacks of September 11th highlight the increasingly fragile climate in which the mainstays of rural Irish economies, namely agriculture and tourism, operate.

Historically, agricultural cooperatives have been successfully used in rural America and Ireland to aid economic development while contributing to rural community development (Briscoe & Ward, 2000; ICOS, 2003). Limited production cooperatives and small manufacturing enterprises have also shown promise (Cawley, 2001; Jodahl, 2003; Phillips, 2004). Using a similar methodology that focuses on the production of culturally significant items marketed directly to specific diaspora groups could serve as a tool for alternative rural and community development in rural Ireland.

Through a review of the extant literature related to cooperatives, rural development, economic conditions, and markets the viability of such a cooperative is explored. This review is directed at the primary question: “Can cooperatives that create culturally representative items be a method for promoting rural and community development in Ireland and elsewhere?”

Related Research
Ireland’s Rural Economy
A variety of conditions exist which suggest a possible role for specialized production cooperatives as an alternative or supplemental rural community and economic development strategy in Ireland. Beginning in the late 1980s and continuing through the late 1990s, economic and social conditions in the Republic of Ireland improved dramatically (O’Hearn, 1998; Department of Agriculture and Food, 1999; Commins, et al., 2000; Ferreira & Vanhoudt, 2004). This remarkable economy, referred to as the Celtic Tiger, reshaped Ireland’s economic climate. Much of the upturn was directly related to economic reinvestment by the Irish government and the location of technology and manufacturing firms that capitalized on an educated workforce, cheap labor, and low cost of living in urban Ireland during the late 1980’s (O’Hearn, 1998; Ferreira & Vanhoudt, 2004). A low corporate profit tax, reduced personal income taxes, and an improved social and political climate brought on by the Good Friday Agreement peace accord in the north of Ireland also enhanced this growth. And, significant urban labor shortages led to new immigration from rural areas.

Not surprisingly, this growth did not contribute to improvements in the quality of life and economic conditions of rural Ireland (O’Hagan, 1995; Department of Agriculture and Food, 1999; Commins, et al., 2000; Leavy, 2001). Simply stated, the majority of increases in technology and manufacturing services occurred in larger metropolitan areas. This uneven development was recognized, and steps taken throughout the 1990s to encourage rural development and revitalization. Often, these efforts focused on tourism development.

Despite numerous state-funded projects, only a slight increase in improvements to existing economic
conditions in rural Ireland was realized (Murray & Greer, 1993; O’Connor & Cronin, 1993; Department of Agriculture and Food, 1999). As a result of these projects, some success in promoting economic growth, stopping outward migration, and improving socioeconomic conditions in rural areas were realized (O’Cinneide & Walsh, 1990; O’Cearbhaill & Varley, 1996; Varley & Curtin, 2002). Where successful, however, only local economies appeared to benefit with little multiplier effect beyond the immediate development zone (Murray & Greer, 1993).

Rural development efforts that have focused on community development, local leadership, and self-help models of change have demonstrated promising results (O’Cearbhaill & O’Cinneide, 1986; Devereux, 1993; O’Cearbhaill & Varley, 1996; Leavy, 2001; Varley & Curtin, 2002). In contrast to government development efforts, many rural residents have turned to locally owned small manufacturing enterprises to sustain and supplement their economic needs (Cawley, et al., 1999; Jodahl, 2003; Phillips, 2004).

Existing Rural Development Efforts and Possibilities for Alternatives

In response to economic conditions, rural development in Ireland has historically taken a variety of governmental and nongovernmental forms (Department of Agriculture and Food, 1999). Among the Irish government departments and agencies responsible for rural development are the Department of Agriculture and Food, Teagasc (The Irish Agriculture and Food Development Authority), and the Department of Community, Rural and Gaeltacht Affairs. The Teagasc is an independent research and extension agency under the aegis of the Department of Agriculture and Food. Both organizations focus largely on the role of agriculture and rural development in rural areas. Similarly, the Department of Community, Rural and Gaeltacht Affairs have taken on an increased role in community development in rural locales. Rural development has become a consistent and important aspect to all of these departments within the Irish context.

Due to traditionally limited government support and funding, numerous nongovernmental organizations and community institutions evolved to meet rural resident needs (Commins, et al., 2000; Varley & Curtin, 2002). These organizations provided services, support, and a voice for rural communities in policy and development settings. The Catholic Church played a central role in the provision of education, health, and welfare services. This followed the historical principle of the state being responsible for community development only when conditions went beyond what the family, Church, and local community could provide.

Similarly, Muintir na Tíre (People of the Land), a national voluntary organization dedicated to promoting the process of community development, evolved. In addition, Macra na Feirme (Young Farmers Association), a national, voluntary, rural youth organization came to be involved in rural development efforts. It promotes agricultural, rural, and the personal development of its members. Essentially this organization is the Irish equivalent of the 4-H program found in America, but it directs its efforts at an older audience. Finally, the Gaelic Athletic Association (GAA) has been important. While a local sport organization in most Irish communities, the GAA also has various support structures that extend beyond sports, including community service, fundraising, and cultural promotion.

Bridging the gap between government and nongovernmental efforts has been the EU sponsored LEADER and Area Development Management (ADM).
programs (Department of Agriculture and Food, 1999; Linn Services, 2004). LEADER and ADM seek to stimulate the development of rural areas by encouraging rural individuals or groups to find innovative and locally based ways to develop their community. Central to their efforts were in all were integrated development, involvement of the local community, long-term programmed approaches, and voluntary input, each envisioned as being reflective of local character and culture.

Problems Facing Irish Communities

Rural Ireland has long been noted for its beauty and harsh economic realities. Its history is marked by self-sufficiency and subsistence activities including farming and fishing that rarely generated ancillary economic benefits for the immediate area (Devereux, 1993; Department of Agriculture and Food, 1999; Commins, et al., 2000). This problem has been exacerbated by industrial relocation from rural to urban (and overseas) locations during the last several decades (Curtin & Varley, 1986; Commins, et al., 2000).

This economic restructuring has led to the declining economic viability of many Irish rural communities (O’Cinneide, 1987; O’Cinneide & Walsh, 1990; Department of Agriculture and Food, 1999). While tourism from the United States and Europe has infused a new source of income into some local economies, it has not been dependable or reliable for long-term economic development (O’Connor & Cronin, 1993). Moreover, tourism efforts, while nationally successful, have had limited impacts on rural locales due to improper planning, the lack of local leadership, poor rural infrastructure, and the recent phenomenon of tourists remaining in larger, urban areas (Hannigan, 1994; Department of Agriculture and Food, 1999).

Compounding these problems has been the out-migration of younger residents from rural areas (O’Cearbhaill & O’Cinneide, 1986; O’Sullivan, 1995). With limited opportunities for dependable work, many have been forced to relocate to urban areas, neighboring European nations, and America. This migration depletes the local workforce and removes central components of the social structure (Wilkinson, 1991; Department of Agriculture and Food, 1999).

In response to these problems, many rural communities have simply refocused their survival on traditional means of existence – agriculture, dairy, livestock, and fishing. Current state efforts focus on traditional financial methods for economic development (grants, loans, assistance), but routinely ignore community and social needs. In some areas, small manufacturing enterprises have developed around the production of traditional clothing and other culturally representative items which have been marketed to local residents and tourists (Cawley, et al., 1999). Such industries have allowed rural residents to supplement their incomes and to retain community identities. Based on strong community ties, economic needs, and established lines of communication, a logical method for community and economic development would be the creation of a production cooperative (Bender, 1986; Bendick & Egan, 1995).
Cooperatives

In their most basic configuration, cooperatives are jointly owned enterprises engaged in the production and/or distribution of goods. These enterprises are operated by their members for their own mutual benefit. The use of cooperatives in fostering rural community and economic development has received considerable attention (Bendick & Egan, 1995; Briscoe & Ward, 2000; Madane, 2002; Phillips, 2004). Much work has focused on the use of agricultural cooperatives as a means for promoting local economic development. Only limited work has been devoted to the role of cooperatives in tourism related activities or other alternative industries.

Cooperatives serve several purposes. First, they allow for local resources – human, economic, and natural – to be maximized. Second, while direct economic opportunities may arise from cooperatives, they also allow for sustainable economic development in areas that traditionally have had little opportunity to engage such processes (Bendick & Egan, 1995; Fairbairn, 2001; Madane, 2002; Gordon, 2004). By providing public input and clear linkages to local community development, cooperative members rural take a much more active role in local development than they do in projects designed by extralocal organizations or interests (Briscoe & Ward, 2000; Dorsner, 2004; San Gabriel, 2004).

The use of cooperatives to foster social and economic growth is not new to Ireland (European Commission, 1997; Briscoe & Ward, 2000; McCarthy & Ward, 2001). Approximately 100 cooperatives exist, with 200,000 members and 35,000 employees, and they account for €12 billion in sales (ICOS, 2003). These groups, especially in rural areas, consist of formal and informal economies that provide primary and secondary incomes for community residents (O’Cinneide & Walsh, 1990; Briscoe & Ward, 2000). At the heart of the informal economy is cooperative work, reflecting the historic collective organization of labor characteristic of local communities and economies. The subsistence economy helps maintain the social integration of rural populations and provides protection against extreme poverty (O’Cinneide & Walsh, 1990; Briscoe & Ward, 2000; Madane, 2002; Gordon, 2004).

Using cooperatives to produce cultural items of interest to tourists and others appears well suited to many Irish rural communities (Phillips, 2004). Typically, the latter communities have gone to considerable lengths to retain their social character, preserve vital aspects of community structure (communication, social support, and interdependence), and maintained symbolic cultural characteristics including the traditional Irish language (Gaelic). Further, locally owned and operated cooperatives could protect and support these unique communities and characteristics.

Rural communities, either from necessity or choice, have come to rely on residents to provide services and functions to ensure community systems operate (Bendick & Egan, 1995; Luloff & Bridger, 2003). Such communities often have a strong sense of identity, culture, and social support systems. The presence of established lines of communication, social interaction patterns, and other cultural components, all vital to the development of community are also important (Wilkinson, 1991; Luloff & Bridger, 2003). The role and importance of each of these characteristics would be enhanced as cooperative partners identify procedures for operating cooperatives and producing goods (Bendick & Egan, 1995).

Tangible benefits of using cooperatives in this setting include increased economic traffic and employment opportunities, potential declines in out.
migration, and support for essential community components (McCarthy & Ward, 2001; Madane, 2002; Gordon, 2004). The use of cooperatives can also have a direct impact on community cohesion and development (Luloff & Bridger, 2003). Cooperative structures produce informed and committed leaders able to guide local development processes (McArthur, 1995; Dorsner, 2004; San Gabriel, 2004). Such leaders could facilitate the expansion and tightening of social relationships and creation of a shared identity necessary for community development (Wilkinson, 1991; Luloff & Bridger, 2003).

Similarly cooperatives can be used to encourage community members to remain in their locales, as demonstrated by examples in the United States and elsewhere (Christenson & Robinson, 1989). They could provide steady jobs and incomes, which are more or less impervious to the seasonality of tourism, swings in government policy, and unpredictable agricultural crises. Because these jobs and income would be directly tied to the community and its residents, they would aid in supporting community identity (Wilkinson, 1991; Briscoe & Ward, 2000; Luloff & Bridger, 2003; Dorsner, 2004).

Finally, cooperatives as proposed here could be used in cooperation with government and nongovernmental programs. They could augment existing programs, and provide primary economic opportunities in areas not reached by state and nongovernmental agencies. In particular, the use of specialized cooperatives could possibly fit well with LEADER, ADM, and other programs seeking to capitalize on the unique character of specific regions. Cooperatives would build on established traditions of community involvement (Church, GAA). Future assessments of the unique conditions present in rural areas could be assessed to determine the extent to which these cooperatives could contribute to rural development.

Goods produced through such cooperatives could be produced and marketed year round, both in Ireland to tourists and internationally through other specialty channels. The goods produced through such cooperatives would already have a clearly defined market that continues to seek such items (Enterprise Ireland, 1999). By capitalizing on the substantial product interest of Irish Americans for cultural and social artifacts (Enterprise Ireland, 1999) rural communities would enhance their social and economic viability.

**Ireland’s Connections with the United States**

The desire of many Irish Americans and others of Irish descent to obtain sentimental items related to their heritage has created a potential economic niche for rural manufacturers (Enterprise Ireland, 1999). More than 33 million Americans claim Irish ancestry (Enterprise Ireland, 1999; United States Census Bureau, 2002; Coogan, 2002). Segments of the Irish business community have recognized the economic potential of this population. Not only are such people willing to spend substantial amounts of money to visit the lands of their ancestors, but also they have shown a clear and consistent interest in obtaining items representative of their Irish heritage (Enterprise Ireland, 1999). Items such as woolen goods, tweeds, sweaters, crystal, and china have been of particular interest to this population (Enterprise Ireland, 1999).

While many American cultural groups quickly assimilated into American society, Irish Americans often took on a different character. Despite their active contribution to America’s sociopolitical culture, many Irish Americans closely guarded their heritage (McCaffrey, 1997; Byron, 1999; Coogan, 2002). A
determination to link themselves with the culture of their ancestors marks a significant segment of this population (Esman, 1984; van den Bergh, et al., 1984).

This identification has its roots in the massive waves of Irish migrations to America, beginning in 1845 and continuing until 1854. Most Irish Americans identify with this migration, often glorified in Irish myth (Coogan, 2002). Driven from Ireland by the escalating poverty and starvation during the Great Hunger or Famine (An Gorta Mhór) in the mid 1800s, over 1.5 million Irish emigrated to America and institutionalized emigration as a permanent feature of Irish life (Byron, 1999; Coogan, 2002). This process continued between 1860 and 1900, during which 50,000 emigrants from Ireland entered America annually (Byron, 1999). The rapid growth of the Irish in America created a “nation in exile” which became an integral part of the historical development of both their native and new homeland (Byron, 1999; McCaffrey, 1997; Coogan, 2002). Political and social Irish activists from the 1800’s through the present day continue to recognize the potentials of this sentiment and consistently rely upon the vast wealth and power of Irish America for numerous causes.

The desire to attain a lost culture, which large segments of Irish America believe they were denied, has encouraged them to possess items representative of their culture (Esman, 1984; van den Bergh, et al., 1984; Allcock, 1988). Community members assign a sentimental value to such items. Cultures with these characteristics have been identified as strong candidates for tourism and related projects (Allcock, 1988; Madane, 2002; Jodahl, 2003).

Proposed Development Model

While attention is give here to Ireland and Irish America, it could prove equally valuable in other nations with large diaspora populations. A possible innovative methodology that communities could adopt would include:

1. Establish Partnerships. Establish cooperative relationships with Irish rural development groups (LEADER, Teagasc, NGOs), business/marketing groups (Enterprise Ireland), and academic interests willing to provide assistance in the initial planning, establishment, and launching of a cooperative. Such partnerships would provide training in the areas of community and leadership development designed to enhance local decision making and cooperative development;

2. Community Level Research and Assessment. Conducting formal and informal assessments within the community and region to identify possible obstacles to development, leadership needs, and local skill levels. Key informant interviews, SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats), focus group discussions, community surveys, and strategic planning meetings facilitated by Irish academic and community development personnel would be useful in this stage (Luloff, 1998; Valentin, 2001). Such steps would also identify key players and help form a network for local resources to be coordinated and managed;

3. Conduct Market Analysis. Conducting analysis of the Irish American market and identify cultural groups, associations, and potential marketing channels. Through a review of directories, Internet resources, and business sources, the American market could be evaluated. The primary market channels would include existing Irish American retail stores, cultural
associations, and individuals of Irish heritage. Items could also be offered to specialty retailers (catalogs, Internet web sites, etc.) and small clothing store chains (Enterprise Ireland, 1999). Identifying US and Irish import/export companies and distribution channels through a review of secondary trade data (SEC, EU) and other sources. These organizations can be assessed to determine those most closely compatible with the community economic development strategy of the community. Particular attention could be focused on firms located in New York, Philadelphia, Chicago, and Boston since each has significant and active Irish American communities and cultural organizations (United States Census Bureau, 2002). Through this stage, the feasibility of selling cooperative items directly to consumers through the Internet or specialized mailings could also be determined; and,

4. Develop Cooperative Business Plan. In partnership with university and community development interests, an overall synthesis of research findings and methodologies can take place. Such findings can serve as the basis of formal business plans to launch the cooperative. This plan would include specifics on the cooperative structure, industry analysis (Ireland and abroad), a summary of the market analysis, marketing plans, exporting logistics, and relevant financials. Also included in this phase would be efforts to implement a formal evaluation of the cooperative at set intervals. Such evaluations would assess strengths, weaknesses, opportunities, and threats (Valentin, 2001; Babbie, 2003) encountered in the cooperatives early organization as well as future needs.

Conclusion

Establishing cooperatives that produce unique, culturally reflective items could be a useful tool for extension and other change agents in their efforts to enhance rural community and economic well-being. The increased interest in uniquely Irish items (sweaters, clothing) by Irish Americans and others provides a direct opportunity for economic growth for the residents of rural Ireland.

Employment opportunities, reliable income, and increased trade are direct tangible benefits of such an effort. Further, cooperatives act to strengthen community support functions. Through cooperative development, residents of the community could become closer and more integrated. In this process, the vital tenants of community including communication, interaction, and social support would increase (Wilkinson, 1991; Luloff & Bridger, 2003). At the same time, such community development facilitates the retention of local control of cooperative decisions.

Finally, programs such as the one described here could provide a template for rural development interests to use in a much broader context. While attention has been focused on Ireland and Irish America, similar opportunities exist elsewhere. This is especially the case in locations where diaspora groups identify with their homelands. Cooperatives, as described here, could be a valuable template for locally based economic development. In doing this, cooperatives would provide a valuable tool for protecting and preserving the character and uniqueness of rural communities.
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A New Implication for China’s Rural Education Reform: Organizational Learning Theory

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Abstract  
After more than two decades of extraordinarily rapid policy-induced development, rural China is now faced with the challenge of transferring to a science- and technology-induced development. For such historical development to come about, China needs a cadre of well-qualified workers and managers in strategic rural locations. Paradoxically China is well known for a rural education policy that produces millions “who can neither apply their learning to scientific and technological industry nor develop new technology for agricultural and rural development.” Although numerous reforms have been attempted to ameliorate these conditions, very little progress has been realized. This paper credits past reform failures to single-loop learning and explores potential new “organizational learning” directions for China’s rural educational system.

Keywords: Organizational Learning, Single-Loop Learning, Double-Loop Learning, China’s Rural Education, China’s Exam-Orientated Education Philosophy, Theory-In-Use, Espoused Theory
Introduction
Since the implementation of agricultural reform in 1978, tremendous changes have taken place in China’s rural community. Most of these changes were policy induced, the function of which had reached its summit after having been used for more than 20 years (Ma, 1990). Further expansion of rural development and reform requires different development strategies. Ma stated, “The future stable development of the rural economy will depend more and more on science and technology, on the quality of labor, and on the quality of qualified personnel” (p. 30). Education, as the carrier of science and technology, should play an important role in this transformation process from the, now worn-out, policy-induced development process to a science- and technology-induced development process. However, the traditional education system, particularly in rural China, has failed to shoulder the load. “Rural areas still face a shortage of knowledgeable people” (Ma, p. 30). Considering the importance of the rural community in the development of the whole nation, China has started taking some measures aimed at upgrading rural education to enhance its role in rural development, for example, popularizing nine-year compulsory education, setting up more agricultural vocational and technical schools (Cheng, 1986; Ma; Lin, 1993), decentralization (Hawkins, n.d.; Lin), and implementing quality education (“Quality Education,” 2000). However, the outcomes are not satisfactory. According to Guo and Sun (1999), the contribution rate of agricultural science and technology to agricultural production in China is only 35% or so, while most of the developed countries have reached 70% or 80%. A strong indicator that China has very low ability in terms of applying existing science or technology to support the development of its rural community.

The ineffectiveness of these reforms might be explained by various factors; however, from the perspective of organizational learning theory, it is actually a matter of “doing things right” versus “doing the right thing.” Virtually all the reform activities mentioned above took the form of single-loop learning, which is concerned primarily with efficiency (i.e., doing things right); that is, “with how best to achieve existing goals and objectives and how best to keep organizational performance within the range specified by existing norms” (Argyris & Schön, 1978, p. 21). According to Connellan, “There is no point in doing well, that which you should not be doing at all” (as cited in “Students First,” n.d.). Single-loop learning will not work when the existing norm is problematic, which is the case of China’s rural education. In such cases, double-loop learning, which has the ability to question and modify the guiding norm when it is not appropriate, is needed (i.e., doing the right thing). However, it is not recognized in China.

Purpose
The purpose of this paper is to address problems of rural education and its reform in China from a new perspective; that is, organizational learning theory. Recommendations and implications will be offered as well.

The lead author participated in the Chinese educational system during her entire public schooling. The second author has spent the past seven years as a researcher and extensionist dealing with rural development issues in China. They have experienced China’s rapid growth but fear for the systems sustainability when pursued primarily from an economics point of view, which is currently the fashion. Their investigations point squarely to the
need for major reform in the congruence between schooling and career development. However, the authors recognize that problems faced with China’s rural education system and the subsequent reform activities discussed in this paper do not only belong to China.

According to a press report of World Education Forum (2000), many developing countries in Asia, Africa, and Latin America, etc., are confronted with same education quality problems in terms of producing qualified personnel. Even some developed countries, such as the United States, are not exempt. A report issued by ACT, which administers college entrance exams in the United States, indicated that “we [the United States] have made virtually no progress in the last 10 years’ helping students prepare for college or the workplace” (as cited in Coplin, 2004, p. 11A). As a result, it is expected that this paper can also provide some implications to other countries too.

Methods
This paper is based on related literature review and the experience of the lead author as a life-long product of the Chinese educational process. Her educational life-history, coupled with the second author’s 35-year career as an extensionist and researcher dealing primarily with rural youth development are utilized in a quasi-ethnographic fashion as one facet of the methodology for this research. Detailed library, Internet, and other data-based searches were used resulting in information that focuses primarily on the educational psychology framework encompassed in the related areas of Organizational Development and Learning System, Workplace Competency Development, Effective Teaching, Curriculum Design, Confluent Learning, and Chinese Education History. In addition to these information sources both authors are currently involved with focus groups, interviews, and historical document review data generation processes on rural education in China. Researchers and educators from the main Agricultural branch of Zhejiang University, Zhjiang Normal University (a major teacher education institution in the region), and numerous local rural Chinese school systems within Zhejiang Province are likewise involved with the research.

In China, public schools were and are still playing a dominant role in educating people. As mentioned, the lead author received her education in public schools in China for about 18 years before she obtained her Master Degree. Those experiences as a student acquainted her with the Chinese education system, both its problems and challenges, especially from the learners’ perspective. In addition, before the lead author came to the U.S to pursue her PhD Degree, she taught in a college for a year, as a result of which she also understand the system from the perspective of an educator.

Findings
Nature of Education
Before exploring organizational learning theory in the case of the Chinese rural education system, it is necessary to understand the nature of education first. According to Sparkes (1993), “education can be helpfully defined as the process through which individuals assimilate and discover information, skills and understanding” (as cited in Nichols, 2001, p. 16). There are three educational levels in this definition – that is information, skills and understanding. Information refers to “the knowledge that can be memorized and recalled”, while skills are described as “abilities and functions that an individual can do” (Nichols, p. 16). Both are comparable to lower levels of Bloom’s Cognitive Taxonomy, knowledge,
comprehension, and application in a similar environment (as cited in “Effective Teaching,” n.d.). Understanding, on the other hand, involves “grasping concepts and being able to use them creatively” (Nichols, p. 16), corresponding to higher levels of Bloom’s Cognitive Taxonomy, analysis, synthesis, evaluation (as cited in “Effective Teaching”), and generativity (B. L. Jones, personal communication, October 18, 2002). Thus, the ultimate goal of education “is not to simply transfer knowledge or skills…What really counts in education is the ability to truly understand subject matter so that it can be applied in various circumstances” (Nichols, p. 19). In other words, students should have both “Professional Technical Skills” (PTS) and “Professional Practical Skills” (PPS).

“PPS” and “PTS” are two kinds of education that are most frequently written and discussed among writers, except that they are described in different terminologies by different writers. Basically speaking, “PTS” refers to a specific subject matter, for example, mathematics. It is “associated with technical aspects of performing a job and usually includes the acquisition of knowledge” (Page, Wilson, & Kolb, 1993; as cited in Rainsbury, Burchell, & Lay, 2002, p. 9). It is often termed as “Technical Knowledge” or “Hard Skills.” “PPS”, on the other hand, refers to the ability to put into practice “PTS” in the real life situation, which is usually named “Soft Skills” or “Life Skills” by other writers. “PTS” is the base upon which “PPS” scaffolds. It is “PTS” that can be acquired, comprehended, and applied; but it is “PPS” that brings “PTS” up to higher levels of Bloom’s Cognitive Taxonomy. Mastering of both types of education makes students not only able to do what an expert does (i.e., know what and know how), but also able to think what an expert thinks (i.e., know why). However, to realize this goal of education, students are required to apply deeper learning approaches (Nichols, 2001). They need to take responsibility for their own education and have the opportunity to take an active role in learning, so that they can make meaning of their education and finally construct knowledge (i.e., generativity) instead of passively receiving information from the teacher.

Organizational Learning Theory in China’s Rural Education System

Organizational learning theory was mainly put forward by Argyris and Schön (1978; 1996), as a theory about the effective learning process of organizations. Organizational learning is built upon theory of action, which “examines reality from the point of view of human beings as actors” (“Double Loop,” n.d., ¶ 2). According to Argyris and Schön (1978), each individual has two theories of action, espoused theory (i.e., what people think or say that they will do) and theory-in-use (i.e., what people actually do), and there is always a mismatch existing between these two theories. Theory-in-use, which is the mental maps of individuals regarding how to act in certain situations that include how they plan, implement and review their actions, actually governs people’s everyday life, even though people claim their espoused theories (Argyris & Schön, 1978). For example, Managers “typically see themselves as rational, open, concerned for others, and democratic, not realizing that their actions are competitive, controlling, and defensive” (Bolman & Deal, 1997, p. 145). From the perspective of theory of action, individual learning happens when the mismatch between his/her espoused theory and theory-in-use is detected and corrected (Argyris & Schön, 1978).

Organizations are composed of individuals, but not all the collections of individuals can be termed as organizations
(Argyris & Schön, 1978; 1996). Similarly, organizational learning does not simply equal the collectivity of its members’ (i.e., individuals’) learning. “By establishing rule-governed ways of deciding, delegation, and setting the boundaries of membership, a collectivity becomes an organization capable of acting” (Argyris & Schön, 1996, p. 9). This definition indicates that organizations can learn as well. Organizations also have the espoused theory and theory-in-use. Take a public university for example; its espoused theory includes its organizational charts, its policy statements, and its job descriptions, etc, whereas its theory-in-use is its actual behavior (Argyris & Schön, 1978). And just like the individual learning, organizational learning happens when its espoused theory and theory-in-use are in conflict with each other. On the other hand, this definition implies that even though organizational learning is undertaken by individuals in the organization, it can be called organizational learning only if the detection and correction of the mismatch is encoded in the organization and becomes a part of the organizational theory-in-use (Argyris & Schön, 1978). And just like the individual learning, organizational learning happens when its espoused theory and theory-in-use are in conflict with each other. On the other hand, this definition implies that even though organizational learning is undertaken by individuals in the organization, it can be called organizational learning only if the detection and correction of the mismatch is encoded in the organization and becomes a part of the organizational theory-in-use (Argyris & Schön, 1978; 1996).

China’s rural education system can be viewed as an organization with its collective rules to govern ways of deciding, delegating, and setting the boundaries of membership. For example, exams’ being the final assessment of students’ performance is a kind of collective rule. It helps the organization decide who can be classified as good students, and therefore can pursue higher education. The espoused theory of China’s rural education system can be described as the purpose of rural education it claims, which is to produce competent rural youth (i.e., those who master both “PTS” and “PPS” education) for the development of rural community (Guo & Sun, 2001), while its theory-in-use is actually producing “millions of exam experts” (Lin, 1993, p. 28) of “PTS.” There is a discrepancy between the espoused theory and theory-in-use, which then leads to a series of reforms in the rural education system, such as popularizing nine-year compulsory education, setting up more agricultural vocational and technical schools (Cheng, 1986; Ma, 1990; Lin), decentralization (Hawkins, n.d.; Lin), and implementing quality education (“Quality Education,” 2000). All these reforms become part of the theory-in-use of China’s rural education system. For example, quality education has become one of the main goals of running rural education in China (“Three Goals,” 2003).

However, these reforms are not effective in terms of bringing the espoused theory and theory-in-use of China’s rural education into congruence. “Criticisms remain revolving around educational quality and the extent to which this is providing the skills [i.e., both “PTS” and “PPS”] needed in a marketised economy” (Venter, 2002, p. 7). The reason can be explained from the two learning styles of organizational learning, single-loop learning and double-loop learning. Nevertheless, before further elaboration of the organizational learning style of China’s rural education system; it is beneficial to first better understand the organization itself, the nature of education it depicts, the philosophic perspectives on education behind its two theories of action, and subsequent learning process and styles.

**China’s Rural Education**

In China, the leading philosophy of education is traditional. Reflected in practice is the exam-orientated education system that has existed for centuries. Although the format and the purpose of exams have been changed throughout the history of China, the key essence, which uses exams as the assessment tool, stays unchanged. Originated in 16th century B.C., exam-
orientated education took the form of a systematic imperial civil service examination, the purpose of which was selecting able men for high official positions (Cleverley, 1985). During the process learners learned principally by rote memorization to prepare for the examination; as a result, they did not understand what they had learned and were not able to apply what they had learned (Cleverley). After the establishment of the People’s Republic of China in 1949, exam-orientated education was resumed and used till now mainly as a way to help China realize four modernizations: “significant advances in the areas of agriculture, industry, national defense, and science and technology” (Surowski, 2000, 1976-Present section, ¶ 1). It has been so deeply rooted in Chinese society that “people regard those who pass the exam as dragons and those who fail the exam as worms” (Lin, 1993, p. 26).

Exam-orientated education in modern China (i.e., after 1949) can be broadly defined as the kind of education that focuses on transferring “Technical Knowledge” (i.e., “PTS” education) and using all kinds of exams as the final evaluation measurement (Lin, 1993). It places heavy emphasis on textbooks, memorization, and examination of core academic subjects” (Su, 1996, p. 142). Under the exam-orientated education system, students are passive receivers of information from teachers, with an aim of passing exams. In 1920s, Tao “recognized the grave problem of education in China: Traditionally, teaching consisted of spoon-feeding, and learning was largely by rote” (as cited in Su, p. 134). What was true about education in old times is still true today. “Exams have become the striving target for teaching and studying activities….Chinese education has become an education for exams” (Lu, 2000).

The exam-orientated education system covers urban education as well as rural education, under which students’ responsibilities of their education were stolen. Brown (1996) stated, “Deep learning does not take place when we steal these responsibilities from the learner” (p. xxi). As a result, there is no way that Chinese rural students can reach higher levels of Bloom’s Cognitive Taxonomy to construct knowledge. Actually, most of them are either called “high score and low ability” or “low score and low ability.” The only difference between these two kinds of students is whether or not a student can pass exams (of “PTS”). Whatever score level a student falls; s/he is not capable of applying his/her knowledge creatively or generating new knowledge. They do not have “PPS.” Lin (1993) stated, “Rural schools are turning out millions of exam experts who do not know how to apply their knowledge to actually life settings, they lack the ability to work or to solve problems independently” (p. 28).

Single-Loop Learning and Double-Loop Learning in China’s Rural Education

According to Argyris and Schön (1978; 1996), there are two kinds of organizational learning, single-loop learning and double-loop learning. The working mechanism of each learning style can be explained by the theory-in-use model. As shown in Figure 1, there are three elements in this model, governing variable, action strategy, and consequences. The governing variable is the norm that guides people’s action; the action strategy is the action people take based upon the governing variable; while consequences are the results of the action strategy (Smith, 2001). They function in a sequential order, and, according to Argyris and Schön (1978), reflect organizational theory-in-use.
If the consequences brought about by action strategy align with the organizational intention, the theory-in-use leads to the expected behavior of espoused theory. There is a match between these two theories of action. However, it is usually not the case in the real life. More often than not, there is a mismatch existing. When this mismatch is detected and corrected at the level of action strategy and consequences, single-loop learning happens, whereas double-loop learning occurs when the mismatch is detected and corrected in ways that involve the modification of an organizational present governing variable(s) (Argyris & Schön, 1978; 1996).

In other words, single-loop learning refers to the ability “to detect and correct the deviations from predetermined norms” (Morgan, 1997, p. 86). The resulting behavior is often referred to as “doing things right”, whereas double-loop learning theory describes the action of being able to take a ‘double look’ at the situation by questioning the relevance of operation norms” (Morgan, p. 87); that is, “doing the right thing.”

Figure 1. Theory-in-use model (Smith, 2001).

Figure 2 illustrates the theory-in-use model of Chinese educational theory. Under the traditional exam-orientated education philosophy, which is the governing norm, rural students are treated as empty vessels, receiving and storing whatever information the teacher dictates in order to pass exams through different action strategies that are designed based on the governing norm. Consequently, most these students produced by the education system are either “high score and low ability” or “low score and low ability.”

Figure 2. China’s rural education theory-in-use model.
As mentioned earlier, there is a mismatch between the espoused theory and theory-in-use of the rural education system in China, which stimulates organizational learning; that is, a series of reforms in China’s rural education system. However, all of these reforms have taken the form of single-loop learning because they focus on reforming action strategies to correct the consequences without questioning the exam-orientated education philosophy, the governing norm. Take “quality education” reform for example, some rural schools developed their own curricula to help students develop life skills for the workplace, however, the summative assessment instrument remains exams that assess core technical knowledge (i.e., “PTS” education), which is the governing norm.

**Implications and Recommendations**

Reflected in the process of transferring from policy-induced development to science- and technology-induced development, the espoused theory of China’s rural education system requires students to be able to apply science and technology creatively in various circumstances. Thusly students should apply a deep learning approach to “truly understand subject matter” (Nichols, 2001, p. 19). However, under the present exam-orientated education system in rural China, students’ rights of “understanding” have been taken away. Education equals transmitting information from teachers to students. There is no need for students to synthesize, analyze, evaluate, and generate knowledge. As a result, “students will gain at best a naïve grasp of knowledge within their field of study (Nichols, p. 20), which is actually training (Posner, 1995). In no way can students apply what they learn under various circumstances, which is education (Posner). Lin (1993) said, “They [graduates from rural schools] can not draw up a contract, or write a poster or an advertisement…Few can use what they have learned to analyze the advantages and disadvantages of their areas and to utilize local resources to increase their earnings” (p. 29). Therefore, the governing norm, the exam-orientated education, is actually the real cause for the discrepancy between espoused theory and theory-in-use.

From the perspective of organizational learning, double-loop learning should be used to reform China’s rural education system, because single-loop learning works only when the guiding norm is correct. Morgan (1997) stated that “using single loop learning, the organization can only detect and correct the deviations from predetermined norms, but they are unable to question the appropriateness of what they are doing” (p. 86). Double-loop learning, on the contrary, can overcome this weakness because it has the ability to question and modify guiding norms when they are not appropriate. It creates a double feedback loop that connects the detection of errors not only to action strategies and consequences but to the very norm which defines and guides these strategies and consequences as well. It is the learning that results in a change in the governing variable, as well as in its strategies and consequences. “It is this kind of self-questioning ability that underpins the activities of systems that are able to learn to learn and self-organize” (Morgan, p. 86). As a result, without questioning and correcting the real source of the problem, the exam-orientated education system, reforms on rural education in China will continue to be futile. Take reforming teaching methods for example, which is part of the “quality education” reform, some schools that try to use more student-orientated teaching methods find themselves ending up with the old “banking” teaching method, because the new teaching methods cannot help students pass exams.
In conclusion, organizational learning theory, especially double-loop learning theory, can provide China with the theoretical rationale to reflect upon its learning process and question the validity of its governing norm before it starts any reform regarding rural education. In addition, double-loop learning theory can also stimulate the questioning of the philosophic rationale behind the governing norm of China’s rural education. This may lead to a more thorough reform, because the philosophic perspective “is a basic set of beliefs that guide action, whether of the everyday garden variety or action taken in connection with a disciplined inquiry” (Cuba, 1990, p. 17) (as cited in Broido & Manning, 2002, p. 435). It is necessary for China to reform the exam-orientated education system to facilitate students to apply deep learning approach and then master both “PTS” and “PPS” education. However, the reform won’t be successful either unless the underlying philosophic stance is adjusted accordingly. Admittedly, applying double-loop learning style to reform China’s rural education system will take time and energy; it is worthwhile based on the fact that more competent rural youth will be produced to help the development of rural China through science and technology.

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Teachers’ Perceptions of Curriculum Reforms and Teacher Training Programs in Chinese Agricultural Schools

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Abstract
As Chinese agricultural schools have gradually transferred from ineffective academic institutions to vocational education, the need for renewing teachers’ attitudes, knowledge, and skills to implement the curriculum innovations is evident. The purpose of this study was to describe teachers’ perceptions toward teacher training and reforms of curriculum and instruction in agricultural schools in China. The population for the study was teachers in 12 agricultural schools. A systematic random sampling technique generated a sample of 398 teacher participants. The results revealed that teachers supported curriculum reforms and they were interested in trying new ideas in their teaching practice. They believed that high quality of teacher training and professional development programs would help them to carry out the reform initiatives in curriculum and instruction. They also thought that knowledge and skills of teachers, attitudes of teachers, and new facilities and equipment were important factors affecting the process of curriculum reforms in agricultural schools. Therefore, policy makers and administrators should seize this opportunity to develop effective teacher education programs and address the needs of teachers in the process.

Keywords: Chinese Agricultural Schools, Curriculum Reforms, Teacher Professional Development, Factors Affecting Curriculum Reforms
Introduction/Background
Since 1978, China has undergone a large transformation as its economic system has shifted from a centrally planned economy to a market-driven system. Agriculture as the basis of Chinese society is facing its greatest challenge to adjust and change its system to meet the needs of the market economy. In particular, agricultural education is playing an important role in preparing people for a new phase of rural development (Chen, 2000).

There were approximately 330 agricultural schools distributed among the provinces, autonomous regions, and municipalities throughout China. Typically, agricultural schools were residential schools that required students to pass standardized admission exams. Schools usually enrolled graduates from junior secondary schools and the academic programs taught for most students are residents. Their age ranges between 15 to 22 years old. The average enrollment for each school ranged from 1000-3000 students.

In the past, agricultural schools were academic institutions classified as secondary specialized schools. These schools taught a curriculum that was general in nature but the theory was quasi vocational. If these schools were compared to schools in the US, they would be considered residential community colleges. The mission of these schools was officially described to train intermediate-level specialists who were political and technical experts. Government policy indicated that students were required to master basic theory, to have specialized knowledge, and to develop practical technical skills. Graduates from these schools were graded as “middle-level specialists.” Students were usually trained theoretically and narrowly. Most subjects studied in the schools were academic and usually had little relevance to the students’ workplace and reality found in society.

Upon leaving school, graduates were often assigned jobs according to a centrally organized plan. Just like graduates from higher education institutions (or at least in theory)—every graduate would be assigned to a job position that could be characterized as “white collar” (Henze, 1984).

In recent years, significant changes have taken place to reflect the reforms and the development of the “socialist market economy.” Today, jobs for graduates are no longer guaranteed and the government can only hire approximately 30% of agricultural graduates (Chen, 2000). As a result, it has become increasingly difficult for agricultural graduates to find jobs in the public sector. Accordingly, graduates need to find their employment in the private sector or need to be self-employed. Students’ education became more purposive and selective, since it now must relate their training to employment opportunities in the labor market. Moreover, the feedback to schools has indicated that agricultural graduates have had difficulty finding jobs that reflect their educational knowledge and skills (Shao & Bruening, 2002).

In response to China’s continuous reforms in economic and agricultural systems, Chinese agricultural schools have taken actions to reform their existing educational programs and strengthen their vocational programs during the past ten years (Weng, 1998). In addition to modifying existing curricular by emphasizing practical training and job-related skills in the workplace, reform efforts have been strengthened by the information obtained from educational systems outside China. Competency-based education, modular teaching approach, and student-centered instruction have been tried in some schools since 1994. Competency-based education has been practiced in some industrial countries for many years and it has been seen as a means of providing well-
trained and productive workers for the workforce (Rockler, 1979).

Teachers have been identified as key players in the educational reform movement. Traditionally, agricultural teachers in China have not required to be certified in teaching, therefore most of them lacked systematic education in pedagogical knowledge and instructional methodology. In addition, most agricultural schools do not have a well-defined in-service training and professional development program for their teachers. All these challenges have aggravated changes agricultural schools would like to implement. If systematic professional development of teachers is not addressed it will retard the reform movement (Chen, 2000).

**Literature Review**

Significant curriculum change is more than just a curriculum matter; it extends into most other facets of schooling, including teaching, learning, administration, and the culture of the school. Major change demands the attention of community and the full range of school personnel (Reed, 2000).

In many places in the world, it is nearly universally accepted that the teacher is the most important player regarding changes within schools. School improvement efforts and educational reforms will only happen when teachers are identified as a key link in the reform process (Gordon & Yocke, 1999).

Teachers are the final decision makers in the policies they choose to implement and the educational leaders they choose to follow. Therefore teachers’ knowledge and involvement are extremely important in determining what can or cannot be successfully implemented. As Reed (2000) indicated, teachers need to be intimately involved in the conceptualization and direction of school reforms. This means that a teacher in isolation, a norm in the profession, must give way to a shared decision-making process. Teachers need to share what they know with leaders and policymakers. Teacher knowledge needs to be an integral part of the process. Fine and Raack (1994) noted:

> When analyzing the failure of educational research and best practices in improving classroom instruction and student achievement, educators were often overlooked for an obvious reason. That is, most systems lacked an adequate teacher professional development program. An effective professional development system must be in place for teachers to translate research into classroom practice. When the systems fail, it is because they have not provided teachers with ongoing opportunities to study, reflect upon, and apply the research on teaching and learning. (¶ 1)

Time is another important factor affecting teachers’ participation in the reform process. Cuban (1993) indicated that changes in classroom traditions (from teacher-centered to student-centered) impose a direct, unrelenting obligation upon the teacher to invest far more time and effort than is invested by teacher-centered colleagues. Erickson (2001) noticed that curriculum and instruction were critical points for educational change. This job cannot be effectively completed without providing quality time for professional dialogue, training of staff, and curriculum development. Teachers deserve quality-planning time to develop an effective curriculum framework that allows them to raise intellectual and academic standards.

Pierce (1981) revealed in his study that “support of administration” as one of three factors attributed to a teacher’s attitude toward innovative practices. He found those who had administrative support were more...
likely to adopt changes and innovations in their teaching.

**Purposes and Objectives**
The purpose of the study was to describe teachers’ perceptions toward teacher training and curriculum reforms in Chinese agricultural schools. The study also attempted to identify the important factors contributing to curriculum reform. The objectives were to:

1. describe the demographics of teacher respondents;
2. describe teachers’ perceptions regarding policies, management strategies, and resources in teacher training programs;
3. examine teachers’ working conditions and their attitudes toward curriculum reform initiatives within competency-based education; and
4. identify the most important factors affecting the process of curriculum reform.

**Methods and Procedures**
The population for the study included teachers from 12 agricultural schools in China. These 12 schools had been involved in curriculum reform initiatives launched by the Food and Agriculture Organization of the United Nations and Ministry of Agriculture during the years 1994-2000. The total number of teachers obtained from the 12 participant schools was 1,299. A systematic random sampling technique was used to select teachers from each school. Every third teacher from the official teaching roster was selected, which yielded a sample size of 398 participants (Cochran, 1977).

A survey questionnaire was constructed for data collection. The questionnaire was developed based on an extensive literature review. In the questionnaire, two parts collected respondents’ perceptions toward policy, management, resources, and working conditions regarding curriculum reforms and teacher training programs. One section was devoted to rating factors contributing to curriculum reform and the last section gathered demographic information about the respondents. A five-point Likert scale was used to measure the respondents’ perceptions: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree, and 0 = don’t know.

The survey questionnaire was translated into Chinese and the translation was verified by Chinese professors both in the United States and China. The reliability was established through a pilot study in China. Twenty-seven teachers in Beijing Agricultural School participated in the pilot test. The reliability of Cronbach’s coefficient alpha for the section on policy, management and resources regarding curriculum reforms was 0.72 while the section of teachers’ perceptions toward working conditions and reform initiatives had an alpha of 0.81.

Three hundred ninety-eight survey questionnaires were sent to selected teachers through a contact person in each participant school. There were 350 surveys returned, which yielded a response rate of 88%.

**Results/Findings**

**Demographic Information on Respondents**
The majority of the respondents were male (61%) while the female respondents accounted for 39%. A substantial number of the respondents (70%) taught agricultural subjects, 29% taught academic subjects, and 1% taught both vocational and academic subjects.

The respondents’ age ranged from 23 to 60 years old, 72% fell between 27 and 40 years old. Their work experience ranged from one to 38 years and a large number of teachers (82%) had worked between five to 20 years. Years of the respondents’ teaching
experience were similar to years of their work experience. The majority of the teachers (80%) taught between three to 20 years.

A large number of respondents (83%) were bachelor degree holders and only 17% had other educational backgrounds. Eight percent of the teachers had a masters degree, another 8% received a college diploma (equal to an associate degree in the U.S.), and 2% were middle level diploma recipients.

Table 1

*Descriptive Statistics Regarding Perceptions toward Policies, Management, and Resources in Teacher Training Programs*

<table>
<thead>
<tr>
<th>Policies/Management/Resources</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers need high quality in-service training activities to keep updated in instructional methods.</td>
<td>341</td>
<td>3.56</td>
<td>.57</td>
</tr>
<tr>
<td>The current reforms emphasizing Competency-Based Education is in the right direction.</td>
<td>339</td>
<td>3.50</td>
<td>.54</td>
</tr>
<tr>
<td>Agricultural universities need to provide pre-service pedagogical training programs for agricultural teachers.</td>
<td>339</td>
<td>3.44</td>
<td>.66</td>
</tr>
<tr>
<td>Teachers need to play a greater role in curricula development.</td>
<td>341</td>
<td>3.40</td>
<td>.57</td>
</tr>
<tr>
<td>Teachers need to be better prepared to implement a new curriculum through ongoing training.</td>
<td>338</td>
<td>3.38</td>
<td>.66</td>
</tr>
<tr>
<td>In service teacher training programs need to address problems encountered in new curriculum implementation.</td>
<td>336</td>
<td>3.38</td>
<td>.60</td>
</tr>
<tr>
<td>Adequate financial support is the key to teacher training programs.</td>
<td>336</td>
<td>3.34</td>
<td>.64</td>
</tr>
<tr>
<td>My school rewards those who have tried new methods in their teaching.</td>
<td>310</td>
<td>3.09</td>
<td>.82</td>
</tr>
<tr>
<td>My school evaluates teaching reform on a regular basis.</td>
<td>326</td>
<td>3.09</td>
<td>.66</td>
</tr>
<tr>
<td>My school has a long-term plan for teacher professional development.</td>
<td>281</td>
<td>3.03</td>
<td>.84</td>
</tr>
<tr>
<td>My school provides adequate funds to train teachers to implement a new curriculum.</td>
<td>305</td>
<td>2.96</td>
<td>.90</td>
</tr>
<tr>
<td>My school allocates time for teachers to work on developing new curriculum.</td>
<td>284</td>
<td>2.75</td>
<td>.90</td>
</tr>
<tr>
<td>Training on Competency-Based Education organized by the Ministry of Agriculture in the past few years was very helpful.</td>
<td>258</td>
<td>2.62</td>
<td>.72</td>
</tr>
<tr>
<td>Current teacher professional development programs conducted at my school are adequate in enabling teachers to implement new curriculum in the classroom.</td>
<td>316</td>
<td>2.49</td>
<td>.80</td>
</tr>
</tbody>
</table>

*Note.* 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree; 2.60 ≥ agree, 2.60 < disagree.
The mean values for 14 items ranged from 3.56 to 2.49. Data showed that respondents tended to agree with the first 13 items. Only one item received a mean value below 2.50.

The item “Teachers need high quality in-service training activities to keep updated in instructional methods” received the highest mean score ($M = 3.56$), followed by “The current reforms emphasizing competency-based education is in the right direction” with a mean value 3.50. The other eight items received means above 3.00, and these means ranged from 3.44 to 3.03. Four items received mean scores that fell between 2.96 to 2.49. The respondents tended to disagree with the statement “Current teacher professional development programs conducted at my school are adequate in enabling teachers to implement new curriculum in the classroom” as it was rated the lowest mean ($M = 2.49$) among 14 items.

**Working Conditions and Competency-Based Education**

To identify teachers’ working conditions and their perceptions toward competency-based education, 21 items were presented in the instrument. Table 2 contains means and standard deviations regarding these 21 items.

<table>
<thead>
<tr>
<th>Table 2</th>
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<tbody>
<tr>
<td><strong>Perceptions toward Working Conditions and Competency-Based Education</strong></td>
</tr>
<tr>
<td>Work Conditions/Competency-Based Education</td>
</tr>
<tr>
<td>Competency-based education is an effective system for each school to adopt.</td>
</tr>
<tr>
<td>I support curriculum reform.</td>
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<tr>
<td>I believe training is a very powerful tool to prepare me for innovative teaching.</td>
</tr>
<tr>
<td>I can use competency-based education if I am properly taught.</td>
</tr>
<tr>
<td>I am not interested in new teaching methods.*</td>
</tr>
<tr>
<td>I plan to try some new methods in my teaching next semester.</td>
</tr>
<tr>
<td>There are very limited new teaching materials that I can use in my class.</td>
</tr>
<tr>
<td>I have too much work at the present time.</td>
</tr>
<tr>
<td>I understand the concept of competency-based education.</td>
</tr>
<tr>
<td>I usually get instructional support from peers.</td>
</tr>
<tr>
<td>I incorporated new ideas from competency-based education in my teaching.</td>
</tr>
<tr>
<td>I feel my school would support me to introduce new ideas.</td>
</tr>
<tr>
<td>I know how to develop a new curriculum.</td>
</tr>
<tr>
<td>I don’t have autonomy in my teaching.*</td>
</tr>
<tr>
<td>I am satisfied with my teaching performance.</td>
</tr>
<tr>
<td>I don’t have time to try a new curriculum.*</td>
</tr>
<tr>
<td>I have access to the Internet to obtain new materials for my teaching.</td>
</tr>
<tr>
<td>I want to try something new in my teaching but don’t feel prepared to do so.</td>
</tr>
<tr>
<td>I don’t know how to use competency-based education in my teaching practice.*</td>
</tr>
<tr>
<td>I get extra salary for developing new curriculum materials.</td>
</tr>
<tr>
<td>My teaching heavily depends on a textbook.</td>
</tr>
</tbody>
</table>

*Note. 1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; 2.60 ≥ agree, 2.60 < disagree. *Items reverse coded.*
The mean values for all 21 items ranged from 3.42 to 2.52. The item “Competency-based education is an effective system for each school to adopt” received the highest mean value ($M = 3.42$), followed by “I support curriculum reform” with a mean value of 3.35. Another seven items received mean values above 3.00, and these means ranged from 3.24 to 3.00. The respondents tended to disagree with four reversed coded items: “I am not interested in new teaching methods” ($M = 3.15$), “I don’t have autonomy in my teaching” ($M = 2.88$), “I don’t have time to try a new curriculum” ($M = 2.81$), and “I don’t know how to use Competency-based education in my teaching practice” ($M = 2.69$). The respondents tended to slightly agree with the items “My teaching heavily depends on a textbook” ($M = 2.52$) and “I get extra salary for developing new curriculum materials” ($M = 2.58$). These two items were rated as the lowest mean values among 21 items.

### Important Factors in Curriculum Reforms

To identify the most important factors that contribute to curriculum reforms, 13 factors were included in the instrument. The respondents were asked to choose three factors they perceived as the most important factors that affect the process of curriculum reform. A multiple response table was used to determine the top factors among 13 factors (SPSS Inc. 1998). Table 3 shows the frequencies of each factor rated by the respondents.

<table>
<thead>
<tr>
<th>Factor</th>
<th>$f$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge and skills of teachers</td>
<td>266</td>
<td>77.6</td>
</tr>
<tr>
<td>New facilities and equipment</td>
<td>167</td>
<td>48.7</td>
</tr>
<tr>
<td>Attitudes of teachers</td>
<td>161</td>
<td>46.9</td>
</tr>
<tr>
<td>Autonomy of making needed decisions</td>
<td>91</td>
<td>26.5</td>
</tr>
<tr>
<td>Administrative support</td>
<td>82</td>
<td>23.9</td>
</tr>
<tr>
<td>High quality teaching materials</td>
<td>74</td>
<td>21.6</td>
</tr>
<tr>
<td>Students’ interest in new curriculum</td>
<td>74</td>
<td>21.6</td>
</tr>
<tr>
<td>Administrative incentive</td>
<td>73</td>
<td>21.3</td>
</tr>
<tr>
<td>Flexibility in teaching time assigned</td>
<td>38</td>
<td>11.1</td>
</tr>
<tr>
<td>Technical assistance</td>
<td>30</td>
<td>8.7</td>
</tr>
<tr>
<td>Time to prepare and teach new curriculum</td>
<td>25</td>
<td>7.3</td>
</tr>
<tr>
<td>Peer support</td>
<td>8</td>
<td>2.3</td>
</tr>
<tr>
<td>Community support</td>
<td>7</td>
<td>2.0</td>
</tr>
</tbody>
</table>

*Note. N = 343. Percentages do not equal 100 because respondents were asked to select at least three factors.*
The respondents rated the knowledge and skills of teachers (77.6%), new facilities and equipment (48.7%), and attitudes of teachers (46.9%) as the top three factors needed in curriculum reforms. Another five factors also received relatively high responses. They were: administrative support (23.9%), high quality teaching materials (21.6%), administrative incentives (21.3%), students’ interest in new curriculum (21.6%), and autonomy of making needed decisions (26.5%).

The four factors thought to be less important by respondents were: flexibility in teaching time assigned (11.1%), technical assistance (8.7%), peer support (2.3%), and community support (2.0%).

Conclusions and Discussions

Demographics

The results indicated that most teachers surveyed were middle aged with more than ten years teaching experiences and most desired to update their knowledge and skills. These teachers represent the main force of agricultural education in the reform movement. They are experienced and capable of changes. They are also technically trained and should know how to work within the system to promote changes. Moreover, these teachers appear to be interested in change as they continue to participate in professional development activities. Therefore, policies should be devised to use their talents and experiences in reforming the agricultural educational system.

Policies and Resources

In the past, local agricultural schools had no opportunity to develop school policies. All policies were developed in the central government and were passed down to schools for implementation. In this study, the respondents indicated that policies, resources, and management strategies began to form to strengthen teacher professional development programs and activities in agricultural schools. This is a major step forward for autonomy at local schools. However, teachers also thought that these policies and resources were not sufficient to address the problems and challenges that they face to complete the reform process. In addition, most respondents believed that teachers deserved high quality in-service training to keep updated and they need to play a larger role in curriculum development.

The respondents indicated that the adoption of competency-based education during past years was the correct approach. However, teachers perceived that current training and professional development opportunities were inadequate in helping them to implement new curriculum initiatives. They also supported the idea that agricultural universities should provide pre-service training for agricultural teachers.

This study found that teachers perceived that it is important for high quality and timely in-service training and professional development activities to sustain reform efforts. Therefore, policies, resources, and management strategies should be formulated to strengthen both the quality and quantity of teacher training and professional development programs.

Working Conditions and Competency-Based Education

In general, respondents perceived their working conditions related to reforms were unfavorable. Teachers indicated that they were overloaded by a heavy teaching load and beset with inadequate technical and administrative support. They also encountered obstacles due to insufficient equipment and funding. However, teachers expressed support regarding reform initiatives and they were positive about the
prospects of using competency-based education in agricultural schools. Despite the inadequacy of administrative and technical support, teachers were willing to participate in the reform movement. The problems and difficulties teachers faced in their work did not seem to discourage them and they still believed the reform was important. Moreover, they perceived training was a very powerful tool to assist teachers for innovative teaching.

In fact, the results have challenged a traditional Chinese concept that teachers are not interested in reforms and they are unwilling to devote time to new curriculum development and teaching methods. It appears these teachers in this study would be interested in carrying out reform initiatives if they were properly taught and supported by administration and resources.

**Important Factors in the Process of Curriculum Reform**

The top three factors affecting curriculum reform process rated by the respondents were knowledge and skills of teachers, new facilities and equipment, and attitudes of teachers. These results again confirmed the findings from other similar studies that the knowledge, skills, and attitudes of teachers, resources, and administrative support were critical to the success of educational reforms (Cuban, 1993; Klein, 1991).

**Implications and Recommendations**

In this era of educational reforms, “teachers are being asked to assume new roles and adopt new practices that emphasize teaching for understanding” (Anstrom & Barrera-Capistran, 1995, ¶ 1) and creativity rather than a routine driven by traditionally accepted practices. As teachers have been put in the forefront of the educational reform movement, teacher training and professional development activities have become an essential function to prepare teachers to implement curriculum and instructional innovations. In addition, teachers’ enthusiasm, willingness, and motivation found in this study can be an important contribution to the success of reform efforts. Thus, it is critical to devise new strategies and allocate resources to explore all possible opportunities to enhance reform efforts.

Administrators should seize this opportunity and move quickly forward to develop professional development opportunities, and at the same time, improve working conditions for teachers. Both administrative and technical support should be put in place for teachers to fulfill their potential to improve students’ learning through innovative curriculum and instruction.

It is strongly recommended that teachers be given the opportunities and support to attend professional development programs, which should increase their current knowledge base and enable them to successfully implement curriculum innovations. In addition, universities should begin pedagogy training for vocational agricultural teachers. Until teacher education in agriculture is a part of higher education, any reform efforts in teacher training would be merely a temporary solution.
References


What should be Included in an International Agriculture Undergraduate Course?

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Abstract
The purpose of this study was to identify the topics and teaching methods appropriate in a beginning international agriculture undergraduate course. A three round Delphi procedure was used to solicit expert opinions regarding important topics and effective teaching methods to deliver an international agriculture course for U.S. undergraduate students. The results revealed that the highest rated topics needed to be included in the international agriculture course were: role of agriculture in economic development; globalization and the implications/affect on agriculture; the role of culture in agricultural international development; definition of a developing country and a developed country; why a world-view is important to today’s agricultural producers and leaders; and agricultural extension and education systems in different countries. The top five teaching methods suggested by the panel of experts included experiential learning; presentations and dialog with those who have worked long term in relevant countries; field studies/trips to view various agricultural practices (one-three weeks); internships; and field trips to a country. Educators might consider the directions provided by this panel of experts when they develop coursework in international agriculture.

Keywords: Internationalized Curriculum, Undergraduate Education, International Agriculture Course, International Topics, Teaching Methods
**Background**

It has become increasingly obvious to many scholars and administrators, and also to business communities within universities, there is a need to be more engaged in international education. Some suggest that higher education should completely reform the curriculum to include more global content somewhat like the changes that took place within the writing across the curriculum movement. Frequently, internationalization of the curriculum is referred to as a process of preparing students to work in an increasingly interdependent world. Maidstone (1995) suggested that the rationale to integrate global topics and themes in higher education included the following four points: globalization of the curriculum needs to take place because of the emergence of a worldwide political economy, greater interdependency among nations, changes in international security, and demographic changes in society (Maidstone, 1995). Still others believed that internationalization of the curriculum is a required part of the students’ undergraduate experience. Maidstone (1995, p. 7) stated, “The realization before us now is that the question is not whether international/intercultural education should be a significant part of our colleges; without it what we call 'education' is incomplete and insufficient for our contemporary and future needs.”

Recently a Harvard University curricular review suggested that a significant emphasis now should be placed on internationalization of the curriculum. Harvard University, a leader in international education, with nearly 60% of senior students participating in international programs as part of their college experience, is now stressing the need for more internationalization of the curriculum. Platt (2004) in a review of the proposed changes indicated that Harvard University needed significant reforms so that undergraduates leave with a greater international knowledge and experience and stronger foreign language skills. Part of the rationale for increased international study is that today one in six U.S. jobs is directly tied to international trade. Ultimately, we need graduates who are globally competent so they can work expertly in other cultures and countries (Platt, 2004). According to Acker & Scanes (2000), multinational companies want to hire graduates who have cross-cultural experiences and language skills. Moreover, most scholars believed that the understanding of diversity gained through international experiences helps students bridge the cultural gap.

Colleges of agriculture in particular have struggled to involve students directly in international study abroad programs. According to the Chronicle of Higher Education (2000), only about one percent of students that studied abroad in the 1999 school year were agriculture students. Given the importance of food production systems in developing countries, and the need for cultural knowledge and global contextual understanding, it is surprising that the number of agricultural students participating in study abroad programs is not much higher (Bruening & Frick, 2004).

*What is an internationalized curriculum?*

Adding relevant international examples in coursework represents the first level of student academic international awareness. Stand-alone international courses provide students with a wide range of learning opportunities. Students who study abroad suggest a greater commitment of students to international learning. However to many, a fully actualized internationalized curriculum means that students should demonstrate a positive attitude toward other cultures, understand and articulate the
interrelationship between countries, and possess the ability to work effectively in a global setting.

What is internationalized curriculum? How is it defined? Bremer and van der Wende (1995) defined internationalized curriculum as: “Curricula with an international orientation in content, aimed at preparing students for performing (professionally/socially) in an international and multicultural context, and designed for domestic students and/or foreign students” (p. 10). This is a general description of suggested international content. What specific topics should be included in the curriculum to provide students with the knowledge needed to be effective in international agriculture? What are the most pressing topics that all students studying international agriculture should learn? What are the most important strategies to teach these concepts to students? What activities would best help students learn about international agriculture?

**Purpose and Objectives**

The purpose of this study was to identify the topics and teaching methods appropriate in a beginning international agriculture undergraduate course. The objectives of this paper were to:

1. describe the topics which need to be included in an international agriculture course;
2. identify the most effective teaching methods to deliver international agriculture content; and
3. propose the essential topics and teaching methods for faculty to consider when developing international programs and activities in agriculture.

**Methods, Procedures and Instrumentation**

The Delphi procedure is designed for the systematic solicitation of expert opinion. There are three characteristics that distinguish it from interpersonal group interaction: anonymity, iteration with controlled feedback, and statistical group response (Martino, 1983). This method is based on a structured process for collecting and distilling knowledge from a group of experts by means of a series of questionnaires interspersed with controlled opinion feedback (Adler & Ziglio, 1996). It represents a useful communication device among a group of experts and thus facilitates the formation of a group judgment. This method has been widely used to generate forecasts in technology, education, and other fields (Dunham, 1996).

The Delphi method used in this study consisted of three rounds. Sixty professionals with extensive experiences in international agriculture from the membership list of Association for International Agricultural and Extension Education were identified to participate in this study (AIAEE, 2003). In the first round, a survey with open-ended questions that solicited topics and teaching methods in international agriculture curriculum was sent to the panel of 60 members. Twenty-eight individuals responded to the first round. The second round questionnaire was developed based upon the responses obtained from the first round, in which the respondents were asked to rate the topics and teaching methods for a 15-week introductory international agriculture course. Twenty-eight individuals responded to the first round. The second round questionnaire was developed based upon the responses obtained from the first round, in which the respondents were asked to rate the topics and teaching methods for a 15-week introductory international agriculture course. Twenty-three people returned the second round survey. After analysis, the items with a mean score of three or higher were selected to form the third and final round of surveys. In the final round, individual surveys were prepared for each panelist, and the respondents were given the opportunity to
re-evaluate and change their original answers from the round two when comparing to the group means for each item. There were twenty-three responses to the final round.

A four-point Likert scale was used in the questionnaires for round two and three. They were: 4 = very important, 3 = important, 2 = somewhat important, and 1 = not important. “Don’t know” and “Not applicable” were also used in the questionnaires.

Data were analyzed using Statistical Package for Social Sciences. The means and standard deviations were computed to summarize the data.

Results/Findings

In an open-ended question survey for the first round, the panel members were asked to identify four to seven most important topics that they believed undergraduate students should study in an introductory international agriculture course. They were also asked to propose three to five of the most effective teaching methods to deliver an international agriculture course.

Round one of the survey generated 97 topics and 63 teaching methods to deliver international agricultural curriculum. The 97 topics reflected a wide range of interests from gender to social, economic, culture, technology, extension, rural poverty and health dimensions.

The 97 topics and 63 teaching methods captured from the round one formed the round two survey, in which the participants were asked to rate each item on a Likert scale (1-4) according to its degree of perceived importance.

After analyzing the responses from round two, 50 topics and 41 teaching methods with a mean value of three or higher were selected to form the third and final round of this survey. In round three, the participants were asked to confirm their responses from round two.

Topics in International Agriculture Curriculum

Table 1 and Table 2 present the results from the third and final round. All items selected had mean values of 3.30 or higher. Table 1 contains the means, standard deviations, and rank of the topics suggested by the respondents that should be included in an international agriculture course.

The item “Role of agriculture in economic development” \( (M = 3.61) \) had the highest mean value among 16 highest rated topics, followed by the item “Globalization and the implications/affect on agriculture” \( (M = 3.57) \). The items “The role of culture in agricultural international development” and “Definition of a developing country and a developed country” had the same mean value of 3.52. Two items that were ranked fifth were “Agricultural extension and education systems in different countries” and “Why a world-view is important to today’s agricultural producers and leaders” \( (M = 3.48) \).

The panel members placed an emphasis on the culture as three items among the 16 highest rated topics dealt with the cultural issues. These items were “The role of culture in agricultural international development” \( (M = 3.52) \); “Cultural perspectives on GMOs, pesticide use, etc.” \( (M = 3.30) \) and “Understanding and appreciation of cultural differences between one’s own culture and contrasting cultures” \( (M = 3.43) \). In addition, the term globalization and its impact as well as implications on agricultural development were also frequently mentioned by the respondents.
### Table 1

*Highest Rated International Agricultural Topics*

<table>
<thead>
<tr>
<th>Topic</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of agriculture in economic development</td>
<td>23</td>
<td>3.61</td>
<td>.58</td>
<td>1</td>
</tr>
<tr>
<td>Globalization and the implications/affect on agriculture</td>
<td>23</td>
<td>3.57</td>
<td>.66</td>
<td>2</td>
</tr>
<tr>
<td>The role of culture in agricultural international development</td>
<td>23</td>
<td>3.52</td>
<td>.59</td>
<td>3</td>
</tr>
<tr>
<td>Definition of a developing country and a developed country</td>
<td>23</td>
<td>3.52</td>
<td>.67</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural extension and education systems in different countries</td>
<td>23</td>
<td>3.48</td>
<td>.59</td>
<td>5</td>
</tr>
<tr>
<td>Why a world-view is important to today’s agricultural producers and leaders</td>
<td>23</td>
<td>3.48</td>
<td>.67</td>
<td>5</td>
</tr>
<tr>
<td>Understanding and appreciation of cultural differences between one’s own culture and contrasting cultures</td>
<td>23</td>
<td>3.43</td>
<td>.84</td>
<td>7</td>
</tr>
<tr>
<td>Definition of development: our own agricultural development and aiding the development of other nations</td>
<td>23</td>
<td>3.39</td>
<td>.66</td>
<td>8</td>
</tr>
<tr>
<td>Agricultural development approaches in developing countries</td>
<td>23</td>
<td>3.39</td>
<td>.78</td>
<td>8</td>
</tr>
<tr>
<td>Importance of agricultural development and training role of extension field workers</td>
<td>23</td>
<td>3.35</td>
<td>.71</td>
<td>10</td>
</tr>
<tr>
<td>Contemporary issues impacting agriculture globally (i.e. GMO’s)</td>
<td>23</td>
<td>3.35</td>
<td>.65</td>
<td>10</td>
</tr>
<tr>
<td>Strategies affecting the relative success of agricultural development projects</td>
<td>23</td>
<td>3.30</td>
<td>.64</td>
<td>12</td>
</tr>
<tr>
<td>Women in agriculture (especially in developing countries)</td>
<td>23</td>
<td>3.30</td>
<td>.56</td>
<td>12</td>
</tr>
<tr>
<td>Participatory and rapid rural appraisal methods and techniques with field experience</td>
<td>23</td>
<td>3.30</td>
<td>.64</td>
<td>12</td>
</tr>
<tr>
<td>Globalization: how the current system works and how markets for agricultural commodities fit the big picture of globalization</td>
<td>23</td>
<td>3.30</td>
<td>.70</td>
<td>12</td>
</tr>
<tr>
<td>Cultural perspectives on GMOs, pesticide use, etc.</td>
<td>23</td>
<td>3.30</td>
<td>.56</td>
<td>12</td>
</tr>
</tbody>
</table>

*Note.* $M \geq 3.30$. Scale: 4 = very important, 3 = important, 2 = somewhat important, and 1 = not important.

### Teaching Methods in International Agriculture Curriculum

Table 2 presents the means, standard deviations, and rank regarding teaching methods proposed by the respondents to deliver an international agriculture course. Two items “Experiential learning” and “Presentations and dialog with those who have worked long term in relevant countries” were rated as the most effective methods to teach international agriculture curriculum. These two items had a mean value of 3.61 and were the top rated teaching methods. The item “Field studies/trips to view various agricultural practices (one-three weeks)” ($M = 3.60$) was rated as the third most effective teaching method. The fourth and fifth items in the ranking were “Internship” ($M = 3.57$) and “Field trip in a country” ($M = 3.55$).
Table 2  

*Highest Rated International Agriculture Teaching Methods*

<table>
<thead>
<tr>
<th>Teaching Method</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiential learning</td>
<td>23</td>
<td>3.61</td>
<td>.58</td>
<td>1</td>
</tr>
<tr>
<td>Presentations and dialog with those who have worked long term in relevant countries</td>
<td>23</td>
<td>3.61</td>
<td>.72</td>
<td>1</td>
</tr>
<tr>
<td>Field studies/trips to view various agricultural practices (one-three weeks)</td>
<td>20</td>
<td>3.60</td>
<td>.68</td>
<td>3</td>
</tr>
<tr>
<td>Internships</td>
<td>21</td>
<td>3.57</td>
<td>.60</td>
<td>4</td>
</tr>
<tr>
<td>Field trip in a country</td>
<td>22</td>
<td>3.55</td>
<td>.74</td>
<td>5</td>
</tr>
<tr>
<td>Case study exercises where students must assume a different way of thinking</td>
<td>23</td>
<td>3.52</td>
<td>.51</td>
<td>6</td>
</tr>
<tr>
<td>Attending international conferences such as AIAEE</td>
<td>22</td>
<td>3.50</td>
<td>.67</td>
<td>7</td>
</tr>
<tr>
<td>Case studies of various international agriculture settings (must be inclusive of different types of agricultural systems)</td>
<td>23</td>
<td>3.48</td>
<td>.67</td>
<td>8</td>
</tr>
<tr>
<td>Faculty exchange program (a week to 4 month)</td>
<td>21</td>
<td>3.48</td>
<td>.75</td>
<td>8</td>
</tr>
<tr>
<td>Current event discussions</td>
<td>22</td>
<td>3.45</td>
<td>.86</td>
<td>10</td>
</tr>
<tr>
<td>Study abroad (one month-one semester program)</td>
<td>20</td>
<td>3.45</td>
<td>.76</td>
<td>10</td>
</tr>
<tr>
<td>Presentations and dialog with people from relevant countries</td>
<td>23</td>
<td>3.43</td>
<td>.73</td>
<td>12</td>
</tr>
<tr>
<td>Student exchanges (short-term reciprocal)</td>
<td>21</td>
<td>3.43</td>
<td>.75</td>
<td>12</td>
</tr>
<tr>
<td>Student group activities, including nominal group process, collaborative projects, etc.</td>
<td>22</td>
<td>3.41</td>
<td>.85</td>
<td>14</td>
</tr>
<tr>
<td>Debate/discussion on current issues in world agriculture where each student represents a country selected during the course</td>
<td>23</td>
<td>3.35</td>
<td>.78</td>
<td>15</td>
</tr>
<tr>
<td>Presentations or panels of international agriculture. Leaders or graduate students who are experienced professionals in agriculture from other countries</td>
<td>23</td>
<td>3.35</td>
<td>.83</td>
<td>15</td>
</tr>
<tr>
<td>Readings/materials/websites that permit students to experience points of view from another country concerning an agricultural issue</td>
<td>23</td>
<td>3.30</td>
<td>.77</td>
<td>17</td>
</tr>
</tbody>
</table>

*Note.* $M \geq 3.30$. Scale: 4 = very important, 3 = important, 2 = somewhat important, and 1 = not important.

**Discussion**

The direction that the panel of experts provided helps the profession identify important topics that could be taught in an introductory international agriculture course. Key topics included economic development, globalization, knowledge of culture, and definitions of development. Variations of these four themes can also be found in several of the other sixteen topics. The development of extension and training is also an important topic. Developing the students’ world view, information regarding the impact of GMO’s, women’s role in international agriculture and participatory methods complete the list of topics. While these topics are wide-ranging and may not fit a single course, these suggested topics initiate and invite a dialogue of what it means to be a globally educated person in an introductory international agricultural course.

Four out of the top five rated international teaching methods focused on direct active learning of students in international settings. The top rated methods
were internships, field trips, and study abroad. The panel of experts believed that these types of experiences enhance learning far beyond the traditional lecture methods that tend to dominate delivery techniques used in higher education. The second ranked item was information that students could obtain from people who worked for long periods of time in relevant foreign settings.

One national strategy on international education presented by the American Council on Education called for the increase of study and internships abroad. This study indicated that study abroad greatly enhances students’ foreign language abilities, cross-cultural skills, and understanding of other cultures. Study abroad is also considered as an essential experiential component of international education (ACE, 2002). Acker and Scanen (2000) indicated that study abroad in a non-English speaking environment provides valuable ways for students to gain experiences they need to make progress in seeing how others live, work, and learn.

Given the strong recommendations from so many sources, it is somewhat surprising that this panel of experts collectively rated short-term faculty exchanges higher than student study abroad short and long-term programs. Perhaps this is an indication that the panel perceived that faculty really need to leave the country before they are qualified to teach about international agriculture. Engberg and Green (2002) noticed that the commitment of the university presidents and senior leaders in international education is necessary, but insufficient to achieve the major changes needed in higher education. The curriculum change is the domain of the faculty. Higher education institutions need to provide opportunities for faculty to travel in order to conduct research, meet with colleagues, or accompany students. Once the faculty has developed firsthand international experiences, their interest and enthusiasm could grow and literately enhance international curriculum development as well as student study abroad. Furthermore, perhaps the limited support given by international biased faculty for student study abroad begins to explain why student participation in study abroad is so low. If these internationally oriented educators only rank study abroad at a ten then it is perhaps more understandable why so few colleges of agriculture students study abroad.

Various case studies methods were also highly rated teaching methods. In addition, attendance at international conferences such as the AIAEE conference was a highly ranked method. The focus of the most highly ranked items was on direct and active student learning experiences.

Implications
Clearly the dialogue within higher education has been toward more inclusion of global issues and topics. In agriculture, there are numerous unique opportunities to teach about the impact of globalization within a dynamic context. Food and fiber systems remain critical problems throughout the world. Food security and poverty impact more than a billion people on a daily basis. Increasing relevance is being placed on the threats of terrorism to food systems in and out of the U.S. These are major world problems that directly impact colleges of agriculture and the expertise of its faculty. Faculty should seize the opportunity to develop relevant courses that teach students how to solve these problems in an active way. The direction provided by this panel of experts can lead to the development of coursework that could have an impact on the inclusion of important global topics and teaching methods used in colleges of agriculture.
References


Case Study Research in Agricultural and Extension Education: Strengthening the Methodology

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Abstract

This paper approaches the case study design as a strategy for research in agricultural and extension education. Case study is defined, throughout the paper, based on three intrinsic characteristics: specificity, intensity, and multiplicity of sources of evidences. A typology is suggested for case studies considering the study’s purpose, the number of cases and the researcher’s interest. The study analyzes some aspects that allow evaluating the methodological consistence of case studies as related to its transferability, the subjectivity in the data collection and analysis processes, and its dependability and credibility.

Keywords: Case Study, Research Methods, Qualitative Research, Triangulation
Introduction

Qualitative research in general and case study in particular has been labeled by some academic circles as “soft research” as related to its methodological rigor. Etling (1997) recommends that reviewers of the Journal of International Agricultural and Extension Education should not disqualify philosophical and case study articles because the research methodology is weak, recognizing such a label in some circles inside our profession. This poses a double challenge for agricultural education researchers: case studies must be designed and implemented in a way that inspires: 1) confidence in the scientific community with respect to its conclusion validity and; 2) recognition from the external public (financial agencies, supporters, general public) with respect to its relevance (Ponte, 1994).

Criticisms of case study in the literature have concentrated on three aspects: lack of methodological rigor, difficulty in generalization, and the time spent in the realization of the research. (Bressan, 2000; Gil, 1999; Ponte, 1994; Stake, 1995; Tellis, 1997a; Yin, 2003). With regards to the lack of methodological rigor, the subjective nature of the data collected and the use of mistaken evidence to influence the results are among the primary aspects of concern. The fact that many researchers are tempted to extrapolate the results of the study without being supported from the data collected is an other point of criticism (Goode & Hatt, 1969). Also, it is often alleged that case studies take an overwhelmingly amount of time to conduct and result in thick documents that are sometimes difficult to read (Bressan, 2000; Gil, 1999; Yin, 2003).

However, it is the difficulty in generalizing that has worried some scholars the most. Since case studies do not rely on the probability theory (it works with unitary cases purposefully chosen, as opposed to randomly chosen samples), they do not offer a basis for scientific generalizations in the way they have been traditionally understood by the positivist tradition – issuing ‘general laws’ applied to a specific population and possible to be objectively verified. In fact, it is not the intent of case studies to be generalized or objectively verified, as shown throughout this paper.

Depending on the audience, such criticisms might place the credibility of case study as a research method at a brink. However, they may be minimized by adopting criteria that strengthen the methodological consistency of case studies. Methodological criteria are instrumental and constitute the “necessary condition for scientific competence because few things scream more incompetence than methodological negligence” (Demo, 1995, p. 59).

Merriam (1998) and Yin (2003), pointed out that case studies allow researchers to retain the holistic and meaningful characteristics of real-life events. To Yin (2003), a case study “investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p. 13). In other words, case study research is appropriate when one deliberately wants to cover contextual conditions, but when the relevant behaviors cannot be manipulated (Yin, 2003). Unlike experimental, survey, or historical research, in case studies any and all methods of gathering data, from testing to interviewing, can be used (Merriam, 1998). Indeed, case studies are expected to combine qualitative with quantitative methods. This grants to case studies a character of interdisciplinary research, since the researcher is required to know a wide variety of methodological procedures from
different knowledge areas and philosophical approaches.

Agricultural education as a discipline has some premises that converge with some of the major building blocks of case study as a research methodology. Barrick (1989) asserts that agricultural education involves application in real settings and serves as the bridge between agricultural science and other disciplines. “Agricultural education blends the applied sciences of agriculture with the applied behavioral sciences of education,” (p. 46) with footings of biological and physical sciences, psychology, and sociology, which gives to it an interdisciplinary and applied science character (Barrick, 1989; McCormick, 1989; Williams, 1991). Williams (1997) assumes that agricultural education researchers are expected to use an interdisciplinary approach. Application in real settings and the interdisciplinary character are two major tenets in which agricultural education and case study research methodology converge.

Research in agricultural and extension education often take place in settings in which relevant behaviors cannot be manipulated. Buriak and Shinn (1993) identified four research problem areas for agricultural education: knowledge base for teaching and learning, curricula and program planning, delivery methodologies, and program relevance and effectiveness. In all these areas, the context is of paramount importance, which is another convergent precept between agricultural education and case study research methodology. Accordingly, case study is a research method suitable for most agricultural and extension education situations, which takes place in real settings, requires an interdisciplinary approach, and calls for a properly portrayed context in order to allow the readers to make connections between the study and their own (cross-country) experience.

**Purpose**

The purpose of this paper is to provide tools that contribute to strengthen the methodological consistency of case study as a research method. Specifically, this bibliographic study aims:

1) To characterize, define, and typify case study as a research method, and;
2) To identify quality criteria that allows evaluating the methodological consistence of case studies.

**Defining Characteristics of Case Studies**

It is critical to know what characterizes an object of study, before constructing a definition. Therefore, before defining case study it is necessary to know its constituent elements.

**Specificity**

The quintessence of case study is its specificity. Case studies are particularistic, devoted to investigate, deliberately and intensely, a particular, unique situation (Ponte, 1994). Stake (1995), Creswell (1998), Merriam (1998) and McMillan (2002) consider case study as a bounded system, taken as an object, rather than a process. Most authors agree (Creswell, 1998; Lazzarini, 1997; Ponte, 1994; Stake, 1995; Tellis, 1997a; Trochim, 2003; Yin, 2003) that case studies are best applied to situations in which the object cannot be studied out of the context in which it occurs naturally, since in most cases it is not possible to clearly distinguish between the limits of the object and the context.

The specificity of case studies can be analyzed through the object and the time dimensions. The object represents the situation, event, program, phenomenon, community or individual of interest to the researcher. It should be bounded for place and context. The place represents the geographical environment in which the case takes place. The context refers to the social,
economic, historical, cultural, and environmental conditions prevailing during the study’s period. Contextual conditions should deserve careful consideration by the researcher, since they are essential to the comprehension of the object of study as well as to make the study’s results transferable to similar situations.

From the time dimension perspective, contemporaneity is the defining characteristic of case studies. By studying contemporary events or phenomena, case studies permit the use of two types of evidence which are not always possible in other types of studies: direct observation and interviews with people directly involved in the phenomenon or event. Contemporaneity is, therefore, the primary characteristic that distinguishes case studies from historical studies (Merriam, 1998; Yin, 2003). In addition, we need to establish a “when” – with a beginning and an end – for data collection. Establishing the “when” means to define the finite character of the study. If the “when” cannot be clearly defined, then the event or phenomenon is not bounded enough to qualify as a “case” (Merriam, 1998).

Intensity

The role of intensity as a characteristic of case studies is to allow a rich, deep, vigorous and complete description, that clearly illustrates the complexity of the case under study (Merriam, 1998). The researcher is expected to go deep in the design of the theoretical-contextual basis of the study as well as in the data collection and analysis processes. Together, such stages (theoretical-contextual base, data collection and analysis), should produce a holistic view of the case (Creswell, 1998). Intensity can be approached from the theoretical-contextual, the data collection, and the data analysis perspectives.

The theoretical-contextual basis is considerably more important in case studies due to the fact that they deal with situations where the object cannot be studied out of the context in which it naturally occurs (Yin, 2003). This requires, on the one hand, a detailed description of the social, economic, historical, cultural, and environmental context and, on the other hand, a well-founded theoretical framework.

The theoretical-contextual basis is especially relevant given the fact that case studies do not attempt to provide us with statistical generalizations (generalizing for populations). For Yin (2003), “A fatal flaw in doing case studies is to conceive of statistical generalization as the method of generalizing the results.... This is because your cases are not ‘sampling units’ and should not be chosen for this reason” (p. 32). For him, “a previously developed theory is used as a template with which to compare the empirical results of the case study” (Yin, 2003, p. 32-33). He also argues that the researcher should always attempt to search for analytical generalizations (generalizing for theories) when conducting a case study. Nevertheless, case studies findings do not call for broad claims but to make the results transferable to other contexts, through a reader-driven process named transferability. As a result, the researcher should provide elements for the readers to make informed judgment about whether they can transfer the findings to their own situation. A detailed account of the environment surrounding the research must be provided through a thick theoretical-contextual framework in order to allow transferability to occur.

The data collection process is greatly facilitated if the theoretical-contextual basis is consistently formulated. Key aspects that have emerged from the theoretical-contextual basis should necessarily be included in the instruments of data.
collection. What is important to keep in mind is that the data collection process should be designed and conducted in a way that the nature of the data collected allows multi-perspective analyses. Triangulation of data and methods is a keystone strategy for multi-perspective analyses.

Stake (1995) emphasizes the need to construct a data collection plan, or protocol (Yin, 2003). A data collection protocol has the potential to increase the level of confidence on the collected data and in turn contribute to increase the trustworthiness of the study. A data collection protocol should necessarily include: 1) objectives, questions and/or study propositions; b) definition of the study object; c) the most relevant aspects of the theory or theories that guide the study; d) the field procedures to be adopted, and; e) primary or main questions that will be dealt with during the process of data collection.

The third perspective to be taken into consideration is the process of data analyses. For Yin (2003) data analysis is the most difficult aspect when conducting case studies because it depends on three factors that are not always present at the same time: a) the capacity of the researcher to think with rigor; b) the quantity, type and quality of the data available for analysis, and; c) the capacity to consider alternative interpretations for the same data.

Data analysis is a process of giving meaning to impressions. The search for meaning, according to Stake (1995), corresponds to the search for patterns, for consistency within certain conditions, which he calls pattern-matching. For him, these patterns will be known in advance drawn from the research questions or will emerge unexpectedly during the analysis. We add to Stake’s (1995) point that such patterns may emerge from a well elaborated theoretical-contextual framework, which reinforce its importance for methodological consistence of case studies.

Analyzing data is, by itself, an intense process. In case studies, the level of intensity (and complexity) is usually higher than in other studies because it has to comprise multiple perspectives. During the analysis, the researcher has to consider not only the perspective of the actors who are directly involved in the phenomenon/situation being studied, but also the perspectives of social, cultural, and economic groups that are part of the context, besides the interactions between these perspectives (Tellis, 1997). Moreover, two peculiarities of case studies affect the data analysis process, making it even more intense: 1) the large amount – and variety – of data, and 2) the existence of information that may seem contradictory and incompatible with each other (Merriam, 1998).

**Multiplicity of Sources of Evidences**

Case studies require the use of multiple sources of evidences. In human and social science research, each and every situation is multidimensional; it is imperative case study research to use the widest variety of data sources, in order to cover as many dimensions as possible within the case. Fulfilling the requirement of multiple sources of evidence implies understanding the importance of obtaining data of different nature to allow multiple perspectives analyses. The use of multiple sources of evidences means to work with both qualitative and quantitative data collected through diverse strategies – interviews, surveys, experiments, and so on. For Creswell (1998) and Yin (2003), the most important point for methodological rigor in case studies, is the use of multiple sources of evidence. Any findings from a case study will be more credible if it has been based on different sources of information, following a “corroborative” model (Yin, 2003).
The use of multiple sources of evidence imposes to the researcher interested in conducting case studies a challenge to know how to carry out different data collection techniques. Yin (2003) points out that unfortunately many graduate programs place too much emphasis on one single data collection technique to the detriment of others. This prevents students from becoming familiar with a variety of techniques that would allow them to conduct their studies using triangulation of data and methods, which would confer greater methodological rigor. Over-emphasizing only one type of research – experiments, surveys, qualitative techniques, etc – may give the student the wrong impression that there is only one (scientifically correct) way to do research.

Documents, archival records, interviews, direct and participant observation, and physical artifacts are evidence sources listed by Yin (2003) as appropriate for case studies. Creswell (1998) indicates interviews and observations as central strategies in the process of data collection. Stake (1995) recommends the use of surveys. In this sense, case studies possess a hybrid character in regards to the sources of evidence, since it uses a variety of data collection techniques and strategies, comprising from experiments to document analysis, including surveys, quasi-experimental and non-experimental designs, interviews, observations and physical artifacts.

Gathering evidences from multiple sources creates the ideal condition for triangulating data and methodologies, which has been increasingly used in contemporary research (not only in case studies) and is recognized as a valuable strategy to increase the confidence and the credibility of a case (Ary, Jacobs, & Razavieh, 1996; Babbie, 2001). Triangulation is the process of confronting data and methodologies in search for convergence and contrasts. Methodological possibilities resulting from triangulation include examining convergences from different perspectives of the same phenomenon (complementarity), discovering paradoxes, contradictions, and new perspectives (discovery), and amplifying study breadth (expansion) (Greene, Caracelli, & Graham, 1989).

**Case Study Defined**

Case study is an intensive study of an individual, group of individuals, institution, program, company, phenomenon, situation or complex contemporary question, bounded for the object, context, and time, based on detailed data obtained from multiple sources of evidences and analyzed through a combination of methods that favor the understanding of the object of the study in a multi-dimensional way.

Case studies are appropriate “when a ‘how’ or ‘why’ question is being asked about a contemporary set of events, over which the investigator has little or no control” (Yin, 2003, p. 9). While in experimental and quasi-experimental designs significant behaviors are manipulated to concentrate on few variables, in case studies the phenomenon is studied immersed in the real situation in which it occurs, without manipulating any significant behavior.
A Typology for Case Study

A careful review of the literature allows us to categorize case studies in twelve types, according to a matrix based on three aspects, as illustrated in Figure 1. Such a matrix was constructed from typologies adopted by Stake (1995) and Yin (2003).

For Yin (2003), case studies can be classified according to its purpose, as being exploratory, descriptive, and explanatory, depending on the type of study question and the control the researcher has on the events. The borders between exploratory, descriptive and explanatory case studies are not sharply defined; actually, these purposes are often superposed on part or on the whole study (Yin, 2003).

A case study is exploratory when its purpose is to explore a phenomenon or a situation of interest within its context, under multiple perspectives, to formulate propositions, hypotheses or suggestions for further studies. Exploratory case studies do not present “a priori” propositions; “this is the condition in which a topic is the subject of ‘exploration’” (Yin, 2003, p. 22). The goal of descriptive case studies is to describe the phenomenon or situation in the context in which it occurs, from multiple perspectives. Like exploratory studies, descriptive studies do not usually construct “a priori” propositions.

Case studies are characterized as explanatory as they attempt to explain the phenomenon or situation of interest, by comparing and contrasting it with existing theory (or theories) or by contributing for the construction of a new theory. This is a kind of causal relationship different from those traditionally associated with the positivist paradigm; in this case, the phenomenon or situation is “explained” from the perspective of one or more existing theories, corroborating it or contributing in the creation of an alternative vision.

Case studies can be typified as related to the number of cases (Bressan, 2000; Merriam, 1998; Stake, 1995; Yin, 2003), as single or multiple cases. A case study is single when examining only one case that represents: 1) an important test of a certain theory; 2) a rare or unique circumstance; 3) a typical or representative manifestation of a certain phenomenon or...
situation; 4) a revelatory phenomenon or situation before inaccessible to scientific study, or; 5) a longitudinal study in which the same case is studied using two or more different points in time (Yin, 2003).

A case study is multiple when it involves the examination of more than one similar case. However, studies involving multiple cases do not follow the sampling logic: case studies (even multiple-case designs) are not probabilistic. They follow the replicability logic. This means that cases are selected taking into consideration the context in which they occur, in order to: a) obtain similar results (literal replication), or; b) obtain contrasting results for predictable reasons due to changes that occurs in one or more contextual conditions (theoretical replication) (Yin, 2003).

Multiple case studies offer the researcher the possibility to conduct cross-case analysis, a powerful tool to make the findings more robust (Yin, 2003). For Merriam (1998, p. 194-195), in multiple case studies “there are two stages of analysis – the within-case analysis and the cross-case analysis.... Once the analysis of each case is complete, cross-case analysis begins. A qualitative, inductive, multi-case study seeks to build abstractions across cases.” For Yin (2003), cross-case analysis can be performed considering cases previously conducted by different researchers or cases that are part of the same study. The more cases involved in a cross-case analysis, the more consistent the findings.

Both single and multiple case studies can involve the examination of one or more units of analysis. The unit of analysis defines what the “case” is and it is related to the way the study question or questions are defined. Therefore, if the individual is the case of interest (the individual is the unit of analysis), you can have a case in which there are three, four, or more individuals (in the same context, place and time) and still treat it as a single case study with multiple units of analysis.

The third aspect in the typology of case studies refers to the interest the researcher has in the case. According to Stake (1995), a case is intrinsic when the researcher has particular interest in a situation or phenomenon, previous to the study. Intrinsic case is defined by anticipation – the case is given. The researcher is not interested in studying the case in order to learn about a certain problem or other similar, but rather to learn about that particular case (Stake, 1995). Most evaluation research using case study methodology is intrinsic case studies. On the other hand, there are circumstances in which the researcher wants to answer a particular question, and believes that by studying a certain case (or multiple cases) he or she will be able to clarify the issue. These are the so called instrumental case studies, devoted to understand phenomena or situations that transcend the specific case.

Concluding Remarks
It is important to highlight some points that ensure greater methodological rigor and are able to tackle the most frequent criticisms against case studies:

1. The research problem, expressed in the form of question, objective, or purpose statement, should be carefully outlined, comprising the study purpose clearly bounded for object and time. It should contemplate the specification of the type of case study that will be conducted and the unit of analysis. The written composition of the research problem also deserves special attention: a clear and objective problem statement gives the reader and the researcher the necessary clarity about the aims of the study.
2. The indissociability between the object of study and its context is one of the tenets of case studies. Consequently, it requires a detailed description of the context within which the object is inserted, including the following five aspects whenever possible and pertinent: economic, social, cultural, historical and environmental. It is necessary to be careful linking the object to its context during the whole description, avoiding the risk of inserting information that does not contribute to the aims of the study.

3. The theoretical-contextual framework, represented by the description of the object of study, context and a strong theoretical support from an exhaustive revision of the literature, should be constructed in a way that harmonizes the research problem with the criteria of data collection and analysis. The theoretical-contextual basis is justified by the research problem, and in turn, justifies the outline of the data collection and analysis processes. Clarity in writing, cohesion and objectivity of the information, and depth in its construction, are important for methodological rigor, related to the theoretical-contextual framework.

4. The theoretical-contextual framework has additional importance in case studies because it allows, if well founded, transferability and analytical generalizations, which is one of the main targets of criticism by some sectors of the academic community. A thick contextual description provides the readers with the basis to transfer the findings to their own situation.

5. It is important to reinforce the compulsory need to the use of multiple sources of evidence, comprising both quantitative and qualitative data. Cross-case analysis is of paramount importance for strengthening conclusion validity of case studies. This is a critical point to face the criticisms related to the subjective nature of the data collection process and to the extrapolation of results without support of collected data. Case study research is essentially a mixed method approach, which favors the use of triangulation of data, methods and researchers as a tool for enhancing its methodological consistency. Triangulation is a strategy that should be used in a universal way in case studies, in the search for complementarity, discovery and expansion. The use of multiple source of evidences analyzed through methodological triangulation, and the possibility of cross-case analysis are decisive for increasing credibility and trustworthiness of case studies.

References


Abstract

This paper presents results indicating that perceived organizational support (POS) and organizational justice (procedural and distributive) are complementary concepts in explaining the job satisfaction of extension personnel from two Agricultural Development Programs in Nigeria. 229 extension personnel returned completed surveys (i.e. 88.07% responses). Results of a hierarchical moderated regression analysis showed that POS and organizational justice (procedural and distributive) explained unique variances in job satisfaction. POS moderated the relationships between job satisfaction and perceptions of distributive and procedural justice. Findings from this study suggest that the job satisfaction could be enhanced through ensuring that the extension personnel perceive managerial actions and behaviors as being just and equitable.

Keywords: Extension Personnel, Job Satisfaction, Perceived Organizational Support, Organizational Justice, Nigeria
Introduction

Most of the extension activities in Nigeria today are being undertaken by an Agricultural Development Program (ADP) in each of the 36 States and the Federal Capital Territory (FCT). The training and visit (T & V) system forms the operational framework by which the ADPs attend to the extension needs of the resource-poor farmers in the country. Most of the country’s food and fibre come from the farms of the resource-poor farmers. Since the withdrawal of funding support by the World Bank in the mid ‘90s, the ADPs have been bedeviled by problems of self-sustenance. This is because funding support from owner states to the ADPs is either not adequate or that funds are not released on time (Apantaku, Sodiya, Apantaku, & Fakoya, 2000). This situation has led the ADPs to redefine their modes of operation, the inability to service faulty equipment or acquire new ones, delay in the payment of salaries and allowances, embargo on recruitment of new staff and trainings, and infrequent promotion exercise (Apantaku, et al., 2000; Omotayo, Chikwendu, & Adebayo, 2001).

Aftermath of expiry of financial support to the ADPs from the World Bank, several studies were undertaken to examine the wellbeing of extension personnel and the role performance of the ADPs. Few of the studies include: extension personnel’s levels of burnout, job satisfaction, and work situations (Agunga, Ojomo, & Na, 1997), job stress among extension personnel (Adesope & Agumagu, 2003), agricultural technology development and dissemination (Arokoyo, 1998), awareness and attitudes of extension personnel to HIV/AIDS (Ladebo, 2004). But no study till date has addressed the organizational influences of organizational support and justice on job satisfaction of extension personnel in the ADPs. This study becomes necessary because it is possible that the policy measures undertaken by the management of the ADPs in reaction to the poor finances could have been unilateral without due consultations with members or adequate information circulated widely within the organization expressing the need for adoption of the policies. This could have led to the perception by members that the organization is insensitive to staff wellbeing and is only striving at protecting itself and management. All these issues are being addressed in this study as perceived organizational support and justice.

Conceptual Framework

The notion that employees often engage in social-exchange relationships with their employers in profit-oriented organizations is well documented in literature (Kreitner, Kinicki, & Buelens, 2002; Yoon & Thye, 2002), but much less is known about such employee-employer relationships in the agriculture work-domain, most especially among employees like the extension personnel and their extension organizations. Based on the works of Blau (1964), the social exchange theory indicates the extent an employee and organization hold an implicit agreement concerning mutual obligations or socio-emotional expectations toward each other and are not specific in nature. It is believed that positive beneficial and equitable actions directed at employees by an organization can induce employees based on Gouldner’s (1960) norm of reciprocity, to reciprocate the benevolent actions through positive work attitudes and improved performance. A balanced social-exchange relationship between an employee and his/her organization has equally been shown to improve an organization’s wellbeing.

Most times, social-exchange relationships have been studied through the frameworks of perceived organizational support (POS) and organizational justice. In
fact, Yoon and Thye (2002) demonstrated that POS is empirically related to aspects of organizational justice. In a recent study, Schmiesing, Safrith, and Gliem (2003) examined the influence of perceptions of organizational justice (procedural, distributive, systemic, and interactional) on job satisfaction of Ohio State University’s extension personnel. The findings of Schmiesing, et al., (2003) show that the justice constructs were important to job satisfaction of the studied extension personnel. This present study differs from that of Schmiesing, et al., (2003) because it examined the complementary roles of POS and organizational justice (distributive and procedural) in explaining the job satisfaction of extension personnel in a developing nation like Nigeria.

Organizational justice refers to the extent an individual perceives that s/he is treated fairly at work (Kreitner, et al., 2002). Three distinct types of justice have been identified in literature: distributive, which is defined as the perceived fairness of how resources and rewards are allocated. Procedural justice refers to the perceived fairness of the process and procedures being used to make decisions. Because procedural justice can provide substantial benefits to an organization, it is believed that the employees affected by the decisions should have an opportunity to express their views (that is, have a voice in the decision making process). Interactional justice refers to the extent employees’ perceive that they are treated with respect and dignity by authority figures during the decision making process (Colquitt, et al., 2001; Kreitner, et al., 2002). Our focus in this study is on distributive and procedural justice (voice). Studies examining distributive and procedural justice in profit-oriented organizations indicate that both constructs are related to important individual and organizational outcomes like job satisfaction, trust in management, organizational commitment, organizational citizenship behaviors, absenteeism, turnover intentions, and turnover (Brashear, Brooks, & Boles, 2004; Colquitt, et al., 2001; Kreitner, et al., 2002; Yoon & Thye, 2002).

Turning to POS, the theory posits that employees have general beliefs concerning the extent an organization supports employees, considers their opinions, goals, and values employees’ performance (Eisenberger, Cummings, Armeli, & Lynch, 1997). Extant literature indicates that employees who perceive that the organization values their contributions and well-being are much likely to reciprocate the beneficial actions through positive job attitudes like being more affectively attached to the organization and satisfied with his/her job (Eisenberger, et al., 1997; Yoon & Thye, 2002). The concept of job satisfaction refers to an employee’s affective response toward various aspects of his/her job (Kreitner, et al., 2000). This perspective on job satisfaction reflects an employee’s perceptions about certain aspects of the job relative to his/her values. Empirical evidence suggests that apart from fairness perceptions, everyday work experiences like autonomy, variety, workload, and trust in a supervisor are also considered to have strong impact on job satisfaction (Cunningham & MacGregor, 2000; Yoon & Thye, 2002). A satisfied employee finds his/her job less stressful, regularly attends work, is committed to the organization, readily engages in prosocial behaviors, does not consider leaving his/her job, and is likely to have improved job performance (Kreitner, et al., 2002).

Taken together, it is being proposed in this study that when extension personnel perceive their organization as making equitable resource allocation, designing fair procedures for decision making, equitably rewarding staff performance (e.g.
promotions based on merit and as at when due), and generally supportive of members well-being, they are likely to react emotionally by exhibiting increased satisfaction with their job. Further, it is conceivable that POS will interact with distributive and procedural justice to predict job satisfaction. That is, when an extension agency is highly supportive of members’ well-being, the relationships between job satisfaction and perceptions of distributive and procedural fairness will be quite strong than when the extension agency is perceived to be less supportive of members.

**Purpose and Objectives**

The purpose of this study is to examine the relative variance contributions of POS and perceptions of distributive and procedural justice to the job satisfaction of extension personnel. The specific objectives are to: (a) examine the distinctiveness of job satisfaction, POS, distributive and procedural justice constructs through an exploratory maximum likelihood factor analysis (MLF); (b) Determine respondents’ levels of agreement concerning job satisfaction, POS, and perceived distributive and procedural justice; (c) Examine the relative variance contributions of POS and perceived organizational justice (distributive and procedural) to job satisfaction; and (d) Examine the moderating influence of POS on the relationships between job satisfaction and distributive and procedural justice.

**Methodology**

**Sample**

The data set used in this study is part of a large data based on a wide range of organizational experience variables elicited from extension personnel. Two ADPs located in southwest of Nigeria were purposively selected for data collection. The authors obtained authorization for the study from managers of the ADPs and participation by the extension personnel in the study was voluntary. Surveys were administered to the extension personnel during their fortnightly zonal meetings by the authors. The questionnaires were administered on 104 personnel in the first ADP and 88.46% (92) responses were obtained. 156 personnel were administered questionnaires in the second ADP and 87.82% (137) returned useable surveys. The overall response rate achieved was 88.07% ($n=229$). Zonal managers facilitated the data collection exercise by granting the extension personnel some time before the commencement or at the end of meetings to complete the surveys. Because over 80.0% response rate was achieved therefore, non-response error is not a threat to the external validity of the study findings (Lindner & Wingenbach, 2002).

**Measures**

**Job Satisfaction:** An overall measure of respondents’ job satisfaction was indexed using a six-item scale (Brayfield & Rothe, 1951). The internal consistency reliability (Cronbach $\alpha$) for the scale was 0.85.

**Perceived Organizational Support (POS)** was assessed using a seven-item scale (Eisenberger, et al., 1997) ($\alpha = 0.87$).

**Distributive Justice** was assessed by using a six-item scale adapted from Masterson (2001) ($\alpha = 0.94$).

**Procedural Justice**: This relates to the degree an employee has a voice during decision-making and is constantly notified about decisions. The construct is measured by employing a three-item scale (Beehr, Walsh, & Taber, 1976) ($\alpha = 0.62$). Responses on the scales’ items were ordered using Likert five-point ratings from strongly disagree (1) to strongly agree (5). Scale scores were computed by summing across responses to items in a scale.

**Personal Factors:** These are age and tenure measured in actual number of years,
and sex was coded as male = 1 and female = 2. Marital status was assessed as: single = 1 and married = 2. Educational qualification received the ranks of OND = 1, BSc/HND = 2, and MSc = 3.

Data Analysis

This study is correlational in design and objectives three and four were examined using a hierarchical moderated regression procedure. A hierarchical moderated regression procedure allows for testing the variance contribution of the interaction term beyond that earlier explained by the control and predictor variables (Cohen & Cohen, 1983). The interactions of POS/distributive justice and POS/procedural justice were formed and tested. Because of possibility of interaction terms being correlated with variables from which they were formed, the means of predictors were centered on zero before creating the interaction terms (Aiken & West, 1991).

Results

Profile of the Extension Agents

The demographic profile of the respondents was: 79.9% were male, average age was 37.45 (SD = 5.83) years. The ages varied between 25 years to 56 years. The mean tenure in the organizations was 8.38 (SD = 4.86) years, and 74.2% had BSC/HND degree and others had MSc (16.2%) and ordinary national diploma (OND) (9.6%). Eighty-three percent of the sample was married.

Objective One

This objective sought to examine the factorial independence of job satisfaction, POS, distributive and procedural justice constructs through an exploratory MLF analysis. As indicated in Table 1, the results of MLF analysis indicated a four-factor solution after being rotated using the Varimax procedure. All scale items mapped on their expected factors and item loadings greater than/or equal to ±0.30 were retained on a factor. The four-factor solution explained 59.63% variance in scores and goodness-of-fit index indicated that the four-factor solution was a good fit to the data ($\chi^2$ (df 132) = 364.05; p < .0001). Factor I has six items representing distributive justice and a sample item is “I am fairly rewarded considering the responsibilities I have.” Factor II represents POS and contains seven items and a sample item is “This organization really cares about staff well-being.” Factor III is made up of job satisfaction items and an item is “I feel fairly well satisfied with my job.” The fourth factor relates to procedural justice (two items) and a sample item is “Decisions in work are usually made without consulting the staff who are to effect those decisions.” By this result the factorial independence of the constructs was confirmed.
Table 1

*Results of Maximum-likelihood Factor Analysis of Study Variables (N = 296)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>FI</th>
<th>FII</th>
<th>FIII</th>
<th>FIV</th>
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<tbody>
<tr>
<td>I am fairly rewarded for the effort I put into my work</td>
<td>.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am fairly rewarded for the work I have done well</td>
<td>.84</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I am fairly rewarded in view of my job experience</td>
<td>.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am fairly rewarded taking into account the amount of education and training I have had</td>
<td>.82</td>
<td></td>
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</tr>
<tr>
<td>I am fairly rewarded for the stresses and strain of my job</td>
<td>.81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am fairly rewarded considering the responsibilities I have</td>
<td>.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This organization is always willing to help its employees if they need special help</td>
<td>.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help is available from my organization when any staff has a problem</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This organization really cares about staff well-being</td>
<td>.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This organization cares about extension personnel’s opinions</td>
<td>.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This organization shows very little concern for its staff</td>
<td>.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This organization would forgive an honest mistake on the part of the extension personnel</td>
<td>.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If given the opportunity, this organization would take advantage of its staff</td>
<td>.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most days I am enthusiastic about my job</td>
<td>.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find real enjoyment in my job</td>
<td>.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like my job better than the average person does</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel fairly well satisfied with my job</td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would not consider taking another kind of job</td>
<td>.54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am seldom bored with my job</td>
<td>.32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decisions in work are usually made without consulting the staff</td>
<td>-.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>who are to effect those decisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am usually not aware about important decisions in this organization</td>
<td>-.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>7.32</td>
<td>2.98</td>
<td>1.40</td>
<td>.81</td>
</tr>
<tr>
<td>Percent variations (%)</td>
<td>34.89</td>
<td>14.20</td>
<td>6.67</td>
<td>3.85</td>
</tr>
</tbody>
</table>

*Note.* FI = Distributive justice; FII = Perceived organizational support; FIII = Job satisfaction; FIV = Procedural justice.

**Objective Two**

This objective sought to describe the extension personnel’s levels of agreement or disagreement concerning job satisfaction, POS, and perceived distributive and procedural justice. The assessment of respondents’ agreement was based on a five-point scale of strongly disagree (1) to strongly agree (5). In Table 2, the overall ratings showed that the respondents moderately agreed to the views that their organizations were supportive ($M = 2.98$; $SD = .84$), and there were distributive ($M = 3.19$; $SD = .96$) and procedural fairness ($M = 3.29$; $SD = .81$) in the organizations. Similarly, the overall rating on job
satisfaction showed moderate agreement \((M = 3.54; SD = 1.03)\). This implies that the studied extension personnel were moderately satisfied with the job. Bivariate relationships between job satisfactions, POS, distributive and procedural justice are presented in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>(M)</th>
<th>(SD)</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Distributive Justice</td>
<td>3.19</td>
<td>.96</td>
<td>.12</td>
<td>-.82</td>
<td>.94</td>
<td>.94</td>
<td>.94</td>
<td>.94</td>
</tr>
<tr>
<td>2. Procedural Justice</td>
<td>3.29</td>
<td>.81</td>
<td>.04</td>
<td>-.64</td>
<td>.25**</td>
<td>.62</td>
<td>.62</td>
<td>.62</td>
</tr>
<tr>
<td>3. Perceived Organizational Support</td>
<td>2.98</td>
<td>.84</td>
<td>-.19</td>
<td>-.01</td>
<td>.31**</td>
<td>.47**</td>
<td>.47**</td>
<td>.87</td>
</tr>
<tr>
<td>4. Job Satisfaction</td>
<td>3.54</td>
<td>1.03</td>
<td>-.19</td>
<td>-.28</td>
<td>.41**</td>
<td>.34**</td>
<td>.49**</td>
<td>.85</td>
</tr>
</tbody>
</table>

Note. Cronbach alpha in bold in diagonal.

* \(p < 0.05\)
** \(p < 0.01\)

Objectives Three and Four

These objectives sought to determine the relative variance contributions of POS and organizational justice (distributive and procedural) to job satisfaction, and the extent to which POS moderates the job satisfaction-distributive/procedural justice relationships. In Table 3 are the results of hierarchical moderated regression analyses. In the first analysis, the block of distributive and procedural justice were entered on first step and it explained 23.3% variance \((\Delta R^2, p < .001)\) in job satisfaction, and POS increased the explained variance by 9.5% \((p < .001)\) on the second step. Job satisfaction was significantly and positively related to POS (\(\beta = .36, p < .001\)), distributive (\(\beta = .34, p < .001\)), and procedural justice (\(\beta = .25, p < .001\)).

In order to ascertain the relative strength of the two predictors at explaining variance in job satisfaction, a usefulness analysis was performed (Darlington, 1968) (see Table 3B). To this effect, a second regression analysis was performed. POS was entered on first step and it explained 24.5% variance \((\Delta R^2, p < .001)\) in job satisfaction. The entry of the block of distributive and procedural justice explained additional 8.3% variance \((\Delta R^2, p < .001)\) in the criterion. Job satisfaction was significantly and positively related to POS, distributive and procedural justice (Table 3B). These results indicate that the initial entry of either POS or block of justice variables would explain the most variance in job satisfaction. The variation between explained variances of POS and justice (distributive and procedural) (24.5% vs 23.3%) when either was entered on first step was relatively insignificant. Either way, both perceptions of justice (distributive and procedural) and organizational support are important to job satisfaction.

To examine the moderating influence of POS on the job satisfaction-distributive and procedural justice relationships, the interaction terms of POS/distributive justice and POS/procedural justice were entered to the model on the third step. The block of interaction terms explained 2.7% variance \((\Delta R^2, p < .01)\) in job satisfaction in the two separate analyses. Job satisfaction was related to POS/distributive justice (\(\beta = .14, p < .01\)), and POS/procedural justice (\(\beta = .15,\)
\( p < .01 \) interactions. The significant interactions between POS and distributive/procedural justice indicates that at higher levels of POS, the relationships between job satisfaction and distributive and procedural justice are much stronger than at lower levels of POS.

Table 3

*Results of Hierarchical Moderated Regression of Job Satisfaction on Predictors (N = 296)*

<table>
<thead>
<tr>
<th>A: Variable</th>
<th>( \beta )</th>
<th>( SE )</th>
<th>( \Delta R^2 )</th>
<th>( R_{overall} )</th>
<th>( F_{overall} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Distributive Justice (DJ)</td>
<td>.34***</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Procedural Justice (PJ)</td>
<td>.25***</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. POS</td>
<td>.36***</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step III (Terms)</td>
<td></td>
<td></td>
<td>( .095*** )</td>
<td>.596</td>
<td>31.99***</td>
</tr>
<tr>
<td>4. DJ x POS</td>
<td>.14**</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. PJ x POS</td>
<td>-.15**</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B: Step I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. POS</td>
<td>.49***</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step II</td>
<td></td>
<td></td>
<td>( .245*** )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Distributive Justice (DJ)</td>
<td>.27***</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Procedural Justice (PJ)</td>
<td>.10*</td>
<td>.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step III</td>
<td></td>
<td></td>
<td>( .027** )</td>
<td>.596</td>
<td>31.99***</td>
</tr>
<tr>
<td>4. DJ x POS</td>
<td>.14**</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. PJ x POS</td>
<td>-.15**</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* POS = Perceived Organizational Support.
* \( p < 0.05 \)
** \( p < 0.01 \)
*** \( p < 0.001 \)

**Discussion**

Several findings emerged from this study. First, job satisfaction, POS, distributive and procedural justice are distinct constructs based on the exploratory MLF analysis performed to determine their factorial validity. Second, the extension personnel reported moderate agreement to the views that the distributive and procedural practices of their organizations were fair and the organizations were supportive of staff well-being. However, the respondents were only moderately satisfied with the job and this may have negative implications for the respondents’ and extension organizations’ wellbeing.

Third, the results of a hierarchical moderated regression indicated that the POS and justice constructs explained unique variances beyond each other in job satisfaction. This implies that the POS and justice (distributive and procedural) are complementary concepts that have explanatory power in job satisfaction of extension personnel. The relationships between job satisfaction and distributive and procedural justice were stronger when the respondents had higher levels of perceptions of POS than at lower levels. This implies
that extension personnel are likely to view the actions and practices of their organization as being fair and equitable when the organization also attempts to support and promote staff welfare.

Based on the usefulness analysis, the relative similar effect sizes of POS and justice (distributive and procedural) could be understood within the context of recent findings from profit-oriented organizations, which suggests that the distributive and procedural justice are antecedents to POS (Yoon & Thye, 2002). This implies that an organization that is perceived to be fair in its practices and decisions would likely be viewed as being supportive of employees’ well-being by members. Therefore, it is not surprising that both POS and justice (distributive and procedural) predicted job satisfaction in the present study, and this is in consonance with past research that is rooted in social exchange theory of employment (Brashear, et al., 2004; Eisenberger, et al., 1997; Yoon & Thye, 2002). Further, the ability of distributive and procedural justices to explain job satisfaction in the present study also is in agreement with the findings of Schmiesing, et al., (2003).

**Recommendations and Limitations**

The literature on job satisfaction suggests the importance of keeping on the job an employee who is satisfied with his/her job. Higher levels of job satisfaction have been known to impact positively on employees’ and organization’s well-being (Kreitner, et al., 2002). Therefore, it is imperative that efforts are made by extension managers to ensure that their extension personnel are satisfied with the job and this could be achieved through: (a) ensuring that extension personnel perceive managerial actions and behaviors as being just and equitable; (b) Clearly specifying decision making guidelines and widely disseminating the information throughout the extension organization; (c) Allowing extension personnel a voice during decision-making process; (d) The provision of supportive leadership and supervision to extension personnel by managers and supervisors; and (e) The provision of adequate and on timely basis too, socio-economic rewards in terms of salaries, fringe benefits and trainings by the management.

Some of the limitations of this study are highlighted. First, the study data were obtained from two out of 36 ADPs in the country and calling into question the generalizability of the findings. However, the findings confirmed results of earlier studies and hypotheses that are firmly grounded in theory. Second, the study design is cross-sectional and causal interpretation of the results cannot be made. Longitudinal or experimental designs are needed to provide causal relationships between the variables. Third, it is possible that the correlations between the predictors and criterion were due to common method error. However, the results of the maximum likelihood analysis that determined the factorial distinctiveness of the constructs suggest that common method error may not be a threat to the internal validity of the results.

**References**


Commentary

Communication for Rural Development: Challenge to Diffuse Development Information on Non-agricultural Rural Needs

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6 – 9 September 2004
FAO Rome, Italy

Abstract

The challenge in this paper is to the international community and development organizations to consider the establishment of systems for diffusing development information on non-agricultural rural needs. I argue that at the same time as there is a need for agricultural knowledge and information systems for rural development (AKIS/RD), there is also an increasingly obvious need for RKIS/RD, or (non-agricultural) rural knowledge and information systems for rural development. AKIS/RD is intended to set forth a shared vision for an integrated approach to agricultural education, research and extension. [See the FAO/World Bank (2000) document “AKIS/RD: Strategic vision and guiding principles” for a full description of the system’s priorities and program.] As part of a RKIS/RD I suggest that community RKIS/RD centers employing communication extension and Information and Communication Technologies (ICT) specialists could play a major role in organizing and developing rural program messages and services. Leeuwis (2004) recently informed the “extension” community that Wageningen University has changed the name of its Extension Department to Communications and Innovation, emphasizing in part the social learning role of extension.

Keywords: Communication, Agricultural Extension, Livelihoods, Innovations, Agricultural Knowledge Systems
Introduction

This paper is not about the important contribution of communication support services and technologies employed in agricultural education, research and extension and related agricultural knowledge support systems. Rather, it calls for a parallel or separate system of coordinated rural knowledge and information networks aimed at diffusing development information on non-agricultural subjects, i.e., subjects other than those generally covered by agricultural education, research and extension.

Agricultural services, though sometimes inefficient and even ineffective in some countries are nonetheless in most cases established and functioning, and increasingly pluralistic alliances for extension are being developed. However, except for international communication efforts [FAO is a leader in seeking to connect extension, research, and farmers more closely—through programs such as AgroWeb, VERCON, FarmNet, and the FAO/DFID/ODI joint study on “livelihoods approaches to information and communication in support of rural poverty elimination and food security” (www.odi.org.uk)] and business development services already launched in some countries, non-agricultural services to the rural sector are generally lacking [Publications on promoting rural non-farm employment also draw attention to traditional supply-led project approaches that tend to “emphasize production without due consideration to growth prospects, to what the market really wants, and to what buyers are prepared to pay” (Wandschneider & Davis 2003, p. 7)]. There is a growing awareness that “equating rural areas with agriculture in much development thinking is, and probably always was, false” (Bezemer & Lerman, 2003, p. 2). The approach many development agencies have used in the past incorporating agriculture and rural development under a single office of “ARD” was a pragmatic recognition that these are often closely related but not synonymous.

Extension communication for non-agricultural rural development is needed to promote micro-enterprise development, employment generation, rural community coalitions, and generally address social issues (such as health, nutrition and the environment). In the poorest nations, such as Niger, current employment activities among the poor tend to be limited to crafts, street trade and service occupations (Möller, 1998). In a study of rural livelihoods in Armenia, Bezemer and Lerman (2003) argue that while poverty alleviation programs should first of all include households’ access to resources for food production, such programs should secondly provide “support to local NGOs, credit unions, producer organizations, water use associations, churches and other groups [that] may have positive effects on the income generating capacity of their members,” (p. 14) and thirdly generate sources of wage employment, such as commerce, services and industry. More to the point, Escobar, Reardon and Berdegué (2002) propose employment strategies that support local markets, business advisory services, credit access, and the development of viable rural economic organizations (such as cooperatives and community-based organizations) and innovative and flexible institutional coalitions. To advance these diverse strategies requires accompanying informational and knowledge development services.

Rural household income is often independent of agriculture. Farmers are relying less on their farm income in economically emerging countries such as Ireland (Phelan, Frawley, & Wallace, 2002), but also in developing countries. Labor-intensive non-farm growth appears to have
been central to development in East and South East Asia (IFAD 2001). Haggblade, Hazell and Reardon (2002) note that non-agricultural sources of income are 30% in developing Asia, 40% in rural households in Africa, and 40% in Latin America. Their conclusion: “a prosperous rural nonfarm economy can contribute to both aggregate economic growth and improved welfare of the rural poor” (Haggblade, Hazell, & Reardon, 2002, p. vii).

**Present Pathways Out of Poverty**

Emphasis in the rural sector is strong on agriculture but less committed to rural needs in general. Yet rural development encompasses much more than agriculture, as numerous authors have argued in examining the livelihoods of rural individuals and communities (see AgREN and Neuchâtel papers on sustainable livelihoods). There are in fact various pathways out of poverty for people in rural areas. De Janvry and Sadoulet (2002) cite pathways other than the agricultural path, namely:

1. **The multiple-activity path.** Agriculture is often a part-time endeavor for farmers who are frequently involved in multiple activities. The household’s off-farm activities are usually undertaken to generate liquidity for farm expenditures.

2. **The assistance path.** This path applies to the structural poor caught in poverty traps who need permanent income transfers to reach the poverty line, and to households in transitory poverty who need access to safety nets to avoid decapitalization of productive assets and irreversible adjustments to shocks. (De Janvry & Sadoulet, 2002, p. 7)

3. **The exit path.** The exit strategy has been the dominant path in reducing rural poverty in Latin America. Rural flight and migration are major trends. Remissions by migrants in Latin America have been estimated at several billion US dollars per annum (J. Berdegué, statement made at FAO seminar on Territorial Rural Development May, 2003). *The Economist* (June 26-July 2, 2004, p. 40) claims that US$13 billion dollars were remitted in 2003 to Mexico’s economy alone.

Another pathway out of poverty, not cited by de Janvry and Sadoulet, is the **micro-enterprise path.** The micro-enterprise path differs from the multiple-activity path in that it covers rural people who own or manage small businesses, some of which of course relate to agriculture, such as, food and merchandise stores, processing services, storage facilities, etc., as pointed out above (Haggblade, Hazell, & Reardon, 2002). Often enough, people thus employed are better off than those entirely dedicated to agricultural development. The United National Capital Development Fund (UNCDF) works to reduce poverty in the least developed countries through innovative approaches in both local governance and micro-finance initiatives. Other efforts in this domain are sorely needed.

The above-mentioned pathways out of poverty are not necessarily mutually exclusive. Identifying which path offers the greatest promise is important for designing differentiated rural development interventions that can best help poor households escape poverty. Agriculture and natural resources, as Carney (1998) points out, “might provide the basis for their [rural people’s] survival but it may well be that the best prospects for significant livelihood improvement lie outside the natural
resources sector in the generation of off-farm income” (p. 8).

Whatever path rural people choose to improve their well-being and to escape poverty, they will be forced to innovate and adopt changes to their livelihood systems. New ideas, methods, inputs, and linkages are needed not only to enhance productivity and improve competitiveness, but also to undertake wholly new activities that demand improved access to knowledge and information. Micro-enterprise development and rural public employment (i.e., through labor-intensive rural public works projects) are valuable approaches to rural development (Ravallion, 1990; Echeverría, 1998). There are also new challenges due to population increases, health issues, environmental and natural resource management pressures, and stricter market requirements that require rural peoples to have more access to knowledge and information.

Strategies for Non-Farm Rural Development

Strategies for advancing non-farm rural development require support by information and knowledge-building systems. Rural knowledge and information systems for rural development (RKIS/RD) are needed and could be built on existing networks [For example, with the assistance of Tacis, such centers already exist in Mongolia (J. G. Richardson, personal e-mail, July 12, 2004).] by becoming part of local, regional and national centers working with relevant agencies and organizations. Managed well, such systems would seek to promote the public good in rural areas by providing information to assist rural people in confronting their multi-sectoral needs and prepare rural people to pursue pathways out of poverty other than, or in addition to, the pathway provided by agriculture. As for governance, these RKIS/RD systems would perhaps be constituted as independent authorities with respect to content and range of programs because of the need for specialized services and flexible approaches for the varied clientele.

One type of independent authority might be formed as part of community centers. Such community RKIS/RD centers would require professional extension and communications staff possessing or able to work with other specialists with skills and knowledge needed for the specific programs in which they work. Advances in technology make it possible for rural development community RKIS/RD service centers to meet the multi-sectoral needs of rural people in a cost-effective manner.

De-linking from agriculture, RKIS/RD systems might at first have difficulty finding, or establishing, an institutional “home” and in linking their services to relevant public, private, and community programs. This is likely to be the case since rural development tasks range broadly and would cover diverse topics, such as information and assistance for job skills preparation, micro-enterprise development, nonformal literacy education, family planning, nutrition, health, waste management, environmental conservation, and other rural, non-agricultural areas.

Certainly, it cannot be assumed that agricultural extension specialists would be capable of assuming responsibility for the variety of specialized rural development knowledge and information topics. Although FAO has promoted extension agents working on population programs and HIV/AIDS, the success of these programs is still unclear. Recently FAO/SDRE (2003) proposed that governments consider the establishment of communications policies that—while supporting agricultural extension for rural development—would also recognize the need for broader-based rural services aimed at diffusing non-
agricultural information and advice to rural people.

The Challenge

The challenge in promoting communications support for rural development inevitably lies in ensuring the sustainability of the systems established, especially their financial sustainability (WSIS, 2003). Few governments have yet proven willing and able to provide adequate funding for critical agricultural extension services, and non-agricultural communications programs may present an even less compelling claim on public resources. For this reason RKIS/RD systems will need to quickly prove their worth and incorporate as soon as possible user financing or co-financing for services.

I suggest three goals for RKIS/RD. First is to organize networks of rural knowledge and information centers for rural development that would respond to observed and expressed rural development needs – in short, an interactive system of a participatory nature, based on local demands as well as observed problems would be the goal. At the local level of course the system might find that there is strong interest in both agricultural and non-agricultural issues, and would shape its programs accordingly as with a telecenter or local radio station that includes all types of information.

Second is to develop appropriate ICT programs, which continually seek funds to install and maintain new information and communication technologies, especially computers with Internet access. Technological communication advances hold great promise for the future, but in most cases, radio would likely be the main ICT – “the one to watch” (http://www.comunica.org/1-2-watch/). Whatever the medium, the message should possess interactive features and provide actionable feedback mechanisms.

The third goal is to establish mechanisms for linkages with public and private sector agencies and organizations, institutes and centers. RKIS/RD systems will need to be in constant connection with its end-users, as well as with appropriate government ministries, institutes and educational bodies, and with private entities—especially non-governmental organizations that provide the kinds of services broadcast by locally accessible ICTs.

Conceptual Framework

What would constitute a full-fledged agricultural and rural development knowledge and information system? Figure 1 depicts two knowledge and information services, AKIS/RD and RKIS/RD. Eventually in some countries specific subject-areas might develop their own unique services, such as health has done already in various countries.
In some countries, unique services might eventually develop for specific subject areas. Venezuela is an example of a country that has moved from a strictly agricultural information system to one for broader rural development concerns due to local demands and interests. With respect to the United States, McDowell (Rivera & Alex, 2004) argues strongly for diverse content of extension programs. Ultimately, one might expect an umbrella of rural services to enhance the quality of rural life.

Serving the Rural Needs of the Rural Sector’s Under-Served

Communication for rural development has an important role and an unusual opportunity to respond to the needs of rural people pursuing the various pathways out of poverty. In organizing RKIS/RD systems, communication extension specialists could draw on relevant information resources and also direct interested clientele to resources that might provide further information, training, instruction or other assistance. In New York, for example, an information line (311) has been initiated that anybody with a problem, interest or concern can call and be directed to the appropriate resource for information. While this may not yet be possible in developing countries, it suggests what can be done by way of providing practical information and channeling users to appropriate services.

Inventing the future of the rural sector demands new thinking about the role of rural development needs and goals.
of communication in rural development. The next information revolution, according to Drucker (2004) will ask, “What is the meaning of information, and what is its purpose?” To respond must inevitably lead to a redefinition of the tasks to be done with the help of information, and with it, to redefining the institutions that do these tasks. The concept of RKIS/RD provides a framework that promises to incorporate multi-institutional alliances and stimulate practical actions aimed at fostering the realization of rural aspirations. The challenge then is to the international community and its development organizations, including governments, the private sector, and international organizations, to formulate actionable plans that promote a new approach to communication for rural development.

Acknowledgement
Thanks to Gary Alex, Subramaniam Janakiram, and John G. Richardson for reading and commenting on this paper.

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Abstract

Armenia is an ancient land that once belonged to the former Soviet Union. A series of catastrophic events including independence from Russia in 1991 caused economic disaster for this small country. Many development projects have been started during the past fourteen years that have helped Armenia rebound from economic crisis. This article gives an overview of one of these successful projects. The information in this article comes from the author’s experience leading the USDA MAP Goat Industry Development Project (GIDP) from February 2002 to July 2004. The GIDP is a model for future projects in developing countries and became successful through dedicated specialists and by following basic Extension principles.

Keywords: Dairy, Goat, Development, Armenia, Cooperative, Youth, Cheese
Introduction

The Goat Industry Development Project (GIDP) is an agricultural development project funded and administrated by the United States Department of Agriculture’s Marketing Assistance Project (USDA MAP) and United States Embassy in Armenia. The GIDP has been operating since 1999 but the overview detailed in this commentary will cover the project from February 2002 to July 2004. The overall Goat Industry Development Project has the broad objective of assisting Armenian agriculture in developing an independent and economically viable dairy goat production, product manufacturing, and marketing industry through technology transfer and funding assistance (Memon, 2001). The GIDP headquarters is called the Armenian Improved Dairy Center or (ARID) Center and is based in the village of Yeghagnadzor, Vayots Dzor region of the Republic of Armenia. The ARID Center is a research, breeding, and extension center that houses all the specialists assigned to administer and implement the Goat Industry Development Project. The ARID Center is the hub of the Goat Industry Development Project wheel. The project traditionally has one administrator from the United States and the rest of the staff are Armenian specialists. United States scientists and consultants are periodically contracted to provide specific technical assistance for the project. These administrators and consultants are generally chosen from land grant universities in the United States and have extensive animal science and/or extension backgrounds. Specialists of the ARID Center are assigned to provide technical assistance, determine funding needs, provide veterinary services, form and implement cooperatives, and provide all assistance possible to over 1,000 farmers living in 15 different villages located throughout Armenia. The author along with providing integral goat husbandry technical expertise to Armenian specialists, organized, implemented and administrated all areas of the ARID Center and Goat Industry Development Project from February 2002 until July 2004.

Country Overview

The Republic of Armenia is located in southwest Asia and is bordered by the countries of Turkey, Iran, Azerbaijan, and Georgia. Armenia was part of the former Soviet Union and gained their independence in 1991. Armenia is a small country comparable to the size of Maryland and has a population of 3 million people. Armenia is an ancient land where Noah and his ark are fabled to have landed on Mt. Ararat (Avakian, 2000). Mt. Ararat is now located within the boundaries of Turkey but is still a symbol of the Armenian culture and can be seen looming over Yerevan, the capital of Armenia. A series of events including deadly earthquakes, trade embargoes, the collapse of the Soviet Union, and an on-going conflict with neighboring Azerbaijan has crippled the Armenian economy. Enormous amounts of aid from countries all over the world has slowly helped the Armenian nation to recover. The rural areas of Armenia still suffer from severe poverty. The Armenian landscape is one of rugged, high mountains with very little precipitation. The Vayots Dzor region where the GIDP is based is the most rugged and dry region of Armenia and suitable only for grazing goats and sheep, and growing small vineyards for wine making.

Extension Principles

The GIDP is a development project with success coming from many sources but the overall success of this project is owed to basic Extension principles. There are three basic Extension principles that were followed in administrating and
implementing this project. These principles are: reaching people where they are; teaching people to determine their own needs; and teaching people to help themselves (Prawl, 1984).

**Project Overview**

This project can be divided into four major areas and in each area the three basic Extension principles were applied. These areas were: creating an improved breed of goat; developing and implementing farmer milk cooperatives; developing and implementing milk collection centers and goat cheese factories; and developing and implementing youth goat clubs. This project was a massive undertaking that began from a small band of goats. Through Extension principles and dedicated Armenian specialists this project grew from being insignificant to becoming nationally and internationally respected.

*Improved Goats*

The indigenous Armenian goat is a unique breed of goat with no real breed name other than indigenous goat. The Armenian goat consists of many breeds of goats being crossbred and interbred for thousands of years to end up with what exists today. The goat that exists today throughout Armenia is small framed, has thick, long hair; and produces on average one liter of milk per day. This is a goat that has evolved to subsist on very little nutrition and is a hardy goat that can survive the harsh landscapes of Armenia.

The primary goal of this project was to improve the dairy operations for goat farmers, which in turn would provide income. In order to do this the indigenous goat had to be improved so that milk production could be increased. USDA MAP imported four breeds of goats from the United States to Armenia in the year 2000. These breeds were Saanen, Toggenburg, Alpine, and Nubian. Both bucks and does were imported. These breeds were housed at the ARID Center in Yeghegnadzor and genetic improvement programs began in 2001. Early on it was found that these imported goats could not survive the harsh village life.

To ensure our imported goats housed at the ARID Center would not die when placed in the villages a system was devised in 2002 where imported bucks housed at the ARID Center would be taken to a particular village and the buck would be left in the village for no more than two months during the breeding season. Specialists from the ARID Center along with the author would provide all the technical information necessary to the farmer receiving the buck so that the highest nutrition and care would be provided. With this system farmers were able to use ARID Center bucks to crossbreed with their indigenous does. Farmers also increased their overall goat husbandry skills by having ARID Center specialists give hands-on demonstrations and technical assistance.

Within two years of beginning this system of crossbreeding, there was a ninety percent conception rate in village does. Furthermore, milk production in the new crossbred does increased to two and a half liters per day compared to the one liter per day being produced by indigenous goats. Breeding programs increased from being in one village in 2002 to fifteen villages by the summer of 2004. Farmers were receiving more milk per goat which meant more income for the farmer. These new crossbred goats not only had increased milk production but maintained the hardiness and disease resistance of the indigenous goat. The new crossbred goat being produced in the villages was named “Yegheg” goat meaning goat from the reeds in honor of the Yeghegnadzor region. This is the name now used for all goats produced by crossing...
ARID Center imported bucks with indigenous does and subsequent offspring.

**Milk Cooperatives and Cheese Factories**

In 2001 USDA MAP financed the first goat cheese factory in a remote village called Goghtanik located about 30 kilometers from the ARID Center location. Genetic improvement of the goats of this village had started also in 2001 and the milk from the village goats began to be sold to the new cheese factory. The cheese factory then started producing exotic goat cheeses such as Armenian buried cheese, Feta in buckets, and Feta in oil. The project started off slowly but then in 2002 expansion of the GIDP Project began. Expansion started by creating goat milk cooperatives in villages that were located in close proximity to the Goghtanik village cheese factory. USDA MAP through the ARID Center funded the construction of milk collection centers. USDA MAP also equipped the centers with milk cooling tanks, milking machines, sanitation materials, and in general all materials needed to maintain these collection centers in three surrounding villages. The ARID staff under the leadership of the author then went to work conducting extensive educational seminars on how to properly use this equipment, how to form and operate a proper cooperative, and how to fiscally manage a cooperative and cheese factory. By the end of the summer of 2002 a system had been devised where each village collected their goats into a cooperative herd during the summer months. This cooperative village herd was then turned over to herdsmen and milkmaids that were hired by the cooperative board of directors. The goats were taken to the mountain pastures to graze during the day then brought back to the village milk collection center to be milked morning and evening. The goats are held in pens at the collection center during the night. Each morning and night the milk would be put into the milk cooling tank for refrigeration and once a day a transport truck would pick up the milk from each village milk collection center and deliver it to the cheese factory. During the winter the goats are turned back to their owners to be cared for.

This first cooperative consisted of four total villages. The name of this first goat milk cooperative became Golden Goat and the name of the cheese factory Golden Goat Plus. The cooperative is owned by the village farmers and the cheese factory is owned by a private investor. All villages in the cooperative are administrated by a general cooperative board of directors consisting of elected board members from each of the four villages. The role of the goat milk cooperatives are to provide an avenue for village farmers to pool their milk, provide transportation of the milk to the cheese factory, and then to serve as the financial and lobbying organization so that a fair sale price is received from the cheese factory. The cooperatives also serve as a tax shelter for village farmers to protect them from high government taxes associated with owning businesses.

The first milk cooperative and cheese factory proved to be successful. With this success, in the winter and spring of 2003 the ARID staff went to work duplicating and expanding the goat milk cooperatives and cheese factories. By the end of 2003 three more cooperatives consisting of eleven more villages had been created. Four more goat cheese factories were also created to service the newly formed cooperatives. USDA MAP under the recommendations and leadership of the author provided funding in the form of grants, loans, leasing programs, and credit clubs for these cooperatives and cheese factories to be implemented.

A great difficulty was found in creating and maintaining high quality milk
and cheese in impoverished villages to meet export market qualifications. In 2003 pasteurizer machines were imported into Armenia so that all the goat cheese produced would be pasteurized. This was the first time in Armenia these standards had been implemented.

**Youth Clubs**

In 2002 youth clubs in six different villages with ten youth participating from each village were organized by the author. These youth clubs were patterned after the 4-H youth program in the United States. The fundamental principle of “learning by doing” (Wessel & Wessel, 1982) served as the driving force behind this new program. The ARID Center purchased and donated one doe and her kid to each of these sixty youth so that they could start their own goatherds. The youth sell the milk from these goats to the local goat cheese factories that were created. They use this income to save money for a college education or to simply get a start in life. An annual goat show comparable to a youth livestock show in the U.S. was organized where these youth came together to exhibit their goats. Prizes were given to all and this was an opportunity for the youth to have fun. Each year this show receives national press coverage. The ARID Center employs a youth club coordinator to maintain this program in partnership with the Armenian Agricultural Academy (AAA), which is located in the capital of Yerevan. Each goat club has a club leader that works with the ARID Center youth coordinator and Academy specialists in implementing programs.

**Conclusion**

The success of this project was in the fact that so much was accomplished in a short period of time. In 2001, only five tons of goat cheese was being produced. In 2003, twenty-five tons were produced and in the year 2004 that amount was expected to double. The USDA MAP marketing team helped acquire export markets in Russia, Republic of Georgia, and the United States so that farmers have the avenues to sell their products.

In July of 2004, the project consisted of over 1,000 farmers and 4,000 goats in fifteen different villages throughout Armenia. Over seventy-five new jobs were created and this project became the second largest source of cash income for this section of Armenia second only to the Army and government. For the most part this project was the only source of employment and income in these villages.

The cooperative farmers involved in this project received cash income by selling their milk to the cheese factory. This was the first time since the collapse of the Soviet Union fourteen years ago that these farmers have received a cash income. An average goat farmer with ten goats involved in the project will make a net profit of thirty-three dollars per month. The more goats they have the more income they receive. This amount of income may not sound like much until one considers that the average monthly salary for the Vayots Dzor region is twenty-five dollars per month if a person has a job. The most important aspect of the entire project was that farmers were taught how to help themselves and to become self sufficient. There are many development and extension projects that succeed and fail. Through hard work, dedicated specialists, and by following time proven Extension principles, the Goat Industry Development project proved to be a project that succeeded and one that will continue to provide economic stimulus to the farmers of Armenia.
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