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Competencies and Experiences Needed by Entry Level International Agricultural Development Practitioners

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Abstract

The use of competencies within extension can be an effective way of training and developing extension practitioners (Stone, 1997). In preparation for careers in tomorrow's agricultural sector, the National Research Council (2009) recognized the need to expose college students to international perspectives. The purpose of this study was to determine the competencies and experiences that entry level agricultural development practitioners need in order to successfully work in an international setting. A modified Delphi method was used to achieve this purpose. A panel of experts in international agricultural development from non–government organizations, government organizations, and academic institutions were selected through snowball sampling (Goodman, 1961). The panelists agreed on 26 competencies and 7 experiences that entry level agricultural development practitioners working internationally should have before entering the profession. The results of this study should be used when planning, designing, and implementing agricultural extension education programs at the university level.

Keywords: Competencies, International Agricultural Development, Modified Delphi Method, Extension Education

Introduction

Competency-based management systems have been shown to act as frameworks to provide structure for employees to increase their skills as well as meet organizational goals (Martone, 2003). Lindner, Dooley, and Wingenbach (2003) defined competencies as the collective "knowledge, skills, and abilities" (p. 53) of the individual. Stone (1997) posited that competencies are an effective means of training and developing extension practitioners. The National Research Council (2009) recognized the need to expose undergraduate agriculture students to international perspectives in preparation for their future agricultural careers. Shinn, Wingenbach, Briers, Lindner, and Baker (2009) indicated the importance of international agricultural and extension education in the university curriculum to produce graduates who will effectively meet the needs of their stakeholders.

To be successful in the field of agricultural extension, the college graduate must rely on the knowledge and skills that he or she has acquired throughout an educational program (Lindner & Dooley, 2002) as well as life experiences (Lindner et al., 2003). Shinn et al. (2009) identified 12 knowledge domains that were deemed important when educating doctoral level agricultural extension professionals. The domains included:

(a) agricultural/rural development; (b) agricultural/biophysical systems; (c) change and technology adoption; (d) delivery strategies; (e) human resource development; (f) instructional design/curriculum development; (g) learning theory; (h) organizational development; (i) philosophy, history, and policy; (j) planning, needs assessment, and evaluation; (k) research methods and tools; and (l) scholarship and communications (p. 67).

The knowledge domains identified by Shinn et al. (2009) concur with and expand on the knowledge domains identified in other research. However, the knowledge domains identified were for doctoral level agricultural extension professionals and may not be as applicable to entry level agricultural development practitioners working internationally. Harder, Place, and Scheer (2010) identified 19 competencies that U.S. Cooperative Extension professionals will need by the year 2015. The competencies were grouped into two major groups that included: (a) extension program development and (b) core interpersonal skills (Harder et al., 2010). However, competencies identified by Harder et al. focused on extension professionals in the United States. A more complete picture of the competencies needed by international entry level agricultural development professionals is still not available. This study will add more to our understanding.

Theoretical Framework

Human capital theory was used due to its assertion that as people gain knowledge and skill through education, their capacity to successfully help society increases (Sweetland, 1996). Sweetland posited that both "individuals and society derive economic benefits from investments in people" (p. 351). Therefore, human capital theory recognizes various types of education via which it can be applied (Sweetland, 1996). The education categories include formalized education (Cohn & Geske, 1990), informal education (Schultz, 1981), on-the-job training (Mincer, 1974), and vocational education (Corazzini, 1967).

This theory recognized the importance of education and training in contributing to the good of society, including the sector of international agricultural development.

In addition, this study took into consideration McClelland's (1973) recommendation for a shift from intelligence tests and a "move toward criterion sampling based on job analysis" (p. 9). Criterion sampling would allow for individual competencies to be measured and would also measure improvement or advancement within a particular competency (McClelland, 1973). In an effort to ensure that the criterion sampling did not become too specific for one job, McClelland suggested four general categories that may be used to organize competencies: (a) Communication skills, (b) Patience, (c) Moderate goal setting, and (d) Ego development.

Purpose and Objectives

The purpose of this study was to determine what entry-level agricultural development practitioners needed to successfully work in international settings. The specific objectives were to:

1. Identify global *competencies* that entry-level international agricultural development practitioners should obtain before entering the profession.
2. Identify global *experiences* that entry-level international agricultural development practitioners should have before entering the profession.

Methods

This study used a modified Delphi method due to its acceptance and ability to identify a consensus from a panel of experts (Dalkey, 2002; Dalkey, 1969; Helmer, 1966; Stufflebeam, McCormick, Binkerhoff, & Nelson, 1985). The Institutional Review Board from the University of Florida approved the methods used for this study. The critera for membership on the panel were twofold: (a) the panelist must have been currently involved in international agricultural extension through a nongovernmental organization, government organization, or an academic institution and (b) the panelist must have had experience working with entry-level agricultural extension practitioners in an international context. Initially, 17 panelists were purposively selected in order to ensure that potential panelists met the criteria for panel membership and were deemed experts in the field. In addition, the snowball sampling method (Goodman, 1961) was used to identify five additional panelists in order to meet Dalkey's (2002) recommendation of having 13 panelists to ensure a reliability coefficient of 0.9. A total of 22 agricultural extension professionals were identified and invited to participate in the study through the use of electronic mail. A total of 13 experts representing nongovernmental organizations, government organizations, and academic institutions from around the world agreed to participate. Panelists resided in Asia, Central America, Europe, North America, and South America, but also represented considerable experience and prolonged engagement (including former residency) with extension in Africa. Panelists represented several different nationalities, although nearly half were from the United States. The panel was split nearly evenly between male and female participants ranging widely in age.

The online survey tool, Qualtrics, was used to collect three rounds of data for this study. Electronic notifications were sent to each panelist and included a link to the questionnaire. The timing of the pre-notice, notice, and follow-up electronic mailings were constructed based on Dillman, Smyth, and Christian's (2009) recommendations.

Round 1

Round 1 of the study consisted of one open-ended question: "What competencies and experiences would college students need before they graduate to prepare them to work in the field as an entry-level international agricultural development practitioner?" Pre-notice, notice, and follow-up electronic mailings were sent to each participant to encourage participation (Dillman et al., 2009). The responses to the introductory question were analyzed and categorized using the constant–comparative method (Glaser & Straus, 1967). Responses that were deemed to have the same meaning as responses provided by other panelists were combined into one response. The response statements were then dichotomized into competencies and experiences. Twelve of thirteen panelists responded (92%) and suggested 42 competencies and 18 experiences.

Round 2

Round 2 was composed of a 60-statement instrument based on the competencies and experiences identified in Round 1. A five-point rating scale was used to allow the participants to rank their level of agreement or disagreement. The ratings include: 1 – *strongly disagree*, 2 – *disagree*, 3 – *neither disagree nor agree,* 4 – *agree,* and 5 – *strongly agree* for each competency and experience. The participants were also given the opportunity to reword any of the competencies and experiences or suggest additional competencies and experiences. Pre-notice, notice, and follow-up electronic mailings were sent to panelists to encourage their participation (Dillman, et al., 2009). Thirteen panelists (100%) responded to both the competencies and experiences sections of the questionnaire. After completion of Round 2, the competencies and experiences were analyzed to determine which competencies and experiences would be included in Round 3. It was determined *a priori* that the competencies and experiences rated by two-thirds of the panelists as *agree* or *strongly agree* would advance to Round 3. If the panelists did not achieve a two-thirds consensus, the competency or experience did not advance to the next round. A two-thirds consensus has been used in past research in the agricultural education field (Harder et al., 2010; Martin, Fritzsche, & Ball, 2006; Shinn et al., 2009). The panelists agreed on 32 competencies and 10 experiences. One additional competency and two additional experiences were added to *Round 3* based on panelist recommendations from *Round 2*. Additionally, fifteen competencies were reworded based on the recommendations from the panelists.

Round 3

Round 3 comprised 32 competencies and 10 experiences. Panelists were given a dichotomous scale and instructed to indicate the level at which they *disagreed* or *agreed* with each. In Round 3, panelists were also presented with any rewordings or additional competencies or experiences that were suggested during Round 2. In addition, panelists were presented with the descriptive statistics from Round 2. In order to adhere to stringent consensus rate, the researchers deviated from the two-thirds consensus rate used in previous research (Harder et al., 2010; Martin, Fritzsche, & Ball, 2006; Shinn et al., 2009). It was determined *a priori* that an 80% agreement rate would determine that the competency or experience would be retained and identified as a needed competency or experience for entry-level international agricultural development practitioners. Again, participants received pre-notice, notice, and follow-up electronic mailings to encourage participation (Dillman

et al., 2009). Twelve out of thirteen participants (92%) responded to Round 3.

Results

Round 1 and Round 2

An open-ended question was used to construct a list of competencies and a list of experiences needed by entry-level agricultural development practitioners who aspire to work internationally. The open-ended question consisted of, "What competencies and experiences would college students need before they graduate to prepare them to work in the field as an entry-level international agricultural development practitioner?" From the open-ended question, panelists provided 42 potential competencies and 18 potential experiences in Round 1. The panelists' competencies are presented in Table 1 and the experiences are listed in Table 2. In addition, the competencies and experience findings from Round 2 were included in Table 1 and Table 2, respectively.

During Round 2, the panelists were given the opportunity to review and rate the level to which they disagreed or agreed with each one of the 42 competencies (see Table 1) and 18 experiences (see Table 2) identified in Round 1. Round 2 resulted in 11 competencies being dropped due to achieving less than two-thirds agreement and 31 competencies were retained for Round 3. The competencies excluded from Round 3 were: (a) Speak a foreign language, (b) Discuss the principles of change theory and processes, (c) Discuss the principles of delivery strategies, (d) Discuss history, (e) Discuss contextual applications, (f) Discuss the principles of ethics, (g) Discuss the principles of learning theory, (h) Discuss the importance of networking skills, (i*)* Discuss the principles of curriculum development, (j) Discuss the principles of instructional design, and (k) Discuss the principles of philosophy. Fifteen competencies were reworded after the completion of Round 2 and one additional competency was added for Round 3: *Discuss how socio-political issues affect agricultural development.* Therefore, 31 competencies were presented to the panelists in Round 3.

In addition, 10 experiences were dropped after Round 2*:* (a) Successfully complete at least a 3 month internship, (b) Interact with people of different cultures within the United States, (c) Work with people involved in financial budgeting, (d) Complete a participatory rural appraisal training, (e) Practice data recording, (f) Participate in a research organization, (g) Complete a study abroad experience, (h) Complete a gender training session, (i) Work with people involved in conflict resolution, and (j) Work with people involved in economic decision making. Two additional experiences were added after Round 2: *Work with people involved in an evaluation project* and *Work with people involved in managing a project.* Therefore, 10 experiences were presented to the panelists in Round 3.

Table 1. Percent of Consensus of Proposed Competencies: Delphi Round 1 and Round 2

Competencies Identified in Round 1 and Round 2	Round 2 (*N* = 13) Agree or Strongly Agree %
1. Exhibit an interest in working with people	100.00[a]
2. Describe cultural sensitivity in regards to international agricultural development	100.00[a]
3. Describe how natural resource management affects international agricultural development	92.31[a]
4. Describe how the agricultural sciences (crops, livestock, environmental science, and economics) affect international agricultural development	92.31[a]
5. Describe commonly used research methods	92.31[a]
6. Discuss socio-cultural-political issues within international agricultural development	92.31[a]
7. Discuss program planning techniques	92.31[a]
8. Work well with others	92.31[a]
9. Discuss diverse cultural contexts with international agricultural development	92.31 [a]
10. Discuss community development	92.31
11. Demonstrate communication skills	92.31
12. Exhibit good listening skills	92.31
13. Exhibit flexibility	92.31
14. Discuss the principles of a needs assessment	92.31
15. Describe how agribusiness management affects international agricultural development	84.62[a]
16. Describe agricultural development issues locally	84.62[a]
17. Describe agricultural development issues globally	84.62[a]

18. Identify their technical area of expertise	84.62[a]
19. Embrace diversity	84.62[a]
20. Explain local farming systems used in the area in which they are working	84.62
21. Exhibit organizational skills	84.62
22. Exhibit patience when working with people	84.62
23. Exhibit the ability to synthesize material quickly	84.62
24. Discuss the principles of rural development	84.62
25. Describe agricultural development issues regionally	76.92[a]
26. Demonstrate writing skills	76.92
27. Discuss community cultures	76.92
28. Create presentations	69.23
29. Discuss the principles of organizational development	69.23
30. Discuss the principles of program planning	69.23
31. Exhibit critical thinking skills	69.23
32. Speak a foreign language	61.54
33. Discuss the principles of change theory and processes	61.54
34. Discuss the principles of delivery strategies	61.54
35. Discuss history	61.54
36. Discuss contextual applications	61.54
37. Discuss the principles of ethics	53.85
38. Discuss the principles of learning theory	46.15
39. Discuss the importance of networking skills	38.46
40. Discuss the principles of curriculum development	30.78
41. Discuss the principles of instructional design	23.01
42. Discuss the principles of philosophy	23.01

[a] The statement was reworded after Round 2.

Table 2. Percent of Consensus of Proposed Experiences by: Delphi Round 1 and Round 2

Experiences Identified in Round 1 Round 2	Round 2 (*N* = 13) Agree or Strongly Agree %
1. Successfully work within a different cultural setting	84.62
2. Complete a development course	84.62
3. Interact with people of different cultures outside the United States	84.62
4. Work with people involved in designing a project	84.62
5. Successfully live within a different cultural setting	76.92
6. Successfully complete an agriculturally based work experience	76.92
7. Successfully complete a field experience in a developing country	76.92
8. Successfully complete a field experience with an agricultural development practitioner	69.23[a]
9. Successfully complete at least a 3 month internship	61.54
10. Interact with people of different cultures within the United States	61.54[a]
11. Work with people involved in financial budgeting	61.54
12. Complete a participatory rural appraisal training	53.85
13. Practice data recording	53.85
14. Participate in a research organization	50.00
15. Complete a study abroad experience	46.15
16. Complete a gender sensitivity training session	46.15
17. Work with people involved in conflict resolution	38.46
18. Work with people involved in economic decision making	38.46

[a] The statement was reworded after Round 2.

Round 3

The panelists were given one final opportunity to agree or disagree with the competencies or experiences. It was determined *a priori* that an 80% agreement rate would determine that a competency or experience would be retained from Round 2. The competency results for Round 3 have been presented in Table 3, and the experiences are presented in Table 4. Round 3 began with 32 competences and resulted in five competencies failing to reach consensus of agreement amongst the panelist: (a) Explain local farming systems used in the area in which they are working, (b) Discuss the principles of organizational development, (c) Create presentations, (d) Discuss community cultures, and (e) Identify with a technical area. As a result, 27 competencies were retained from this study.

In Addition, Round 3 started with 10 experiences and resulted in three experiences: (a) Successfully complete an agriculturally based work experience, (b) Successfully complete a field experience with an agricultural development practitioner in either the United States or internationally, and (c) Work with people involved in designing a project. The reduction of experiences resulted in seven experiences.

Table 3. Percent of Consensus for Proposed and Retained Competencies: Delphi Round 3 (n =12)

Competencies	**Agree %**
1. Explain global agricultural development issues	100.00
2. Explain how natural resource management affects agricultural development	100.00
3. Discuss how socio-cultural issues affect agricultural development	100.00
4. Apply program planning techniques	100.00
5. Demonstrate communication skills	100.00
6. Work well with practitioners, researchers, and policy makers	100.00
7. Exhibit good listening skills	100.00
8. Exhibit flexibility	100.00
9. Discuss the principles of a needs assessment	100.00
10. Appreciate and understand cultural difference	100.00
11. Exhibit critical thinking skills	100.00
12. Explain how agribusiness affects agricultural development	91.66

13. Explain how knowledge of agricultural sciences affects agricultural development	91.66
14. Discuss how socio-political issues affect agricultural development	91.66[a]
15. Discuss culturally sensitive topics that they may encounter as they implement agricultural development projects	91.66
16. Exhibit patience when working with people	91.66
17. Exhibit the ability to synthesize material quickly	91.66
18. Explain local agricultural development issues	83.33
19. Explain regional agricultural development issues	83.33
20. Apply commonly used research methods	83.33
21. Discuss community development approaches and techniques in providing rural advisory services	83.33
22. Exhibit organizational skills	83.33
23. Demonstrate writing skills	83.33
24. Exhibit interest in other people	83.33
25. Discuss different cultural perspectives of agricultural development	83.33
26. Discuss the principles of rural development	83.33
27. Discuss the principles of program planning	83.33
28. Explain local farming systems used in the area in which they are working	75.00
29. Discuss the principles of organizational development	75.00
30. Create presentations	66.66
31. Discuss community cultures	66.66
32. Identify with a technical area	58.33

[a] New competency that was added after Round 2

Table 4. Percent of Consensus for Proposed and Retained Experiences: Delphi Round 3 (n =12)

Experiences	Agree %
1. Successfully work within a different cultural setting	91.66
2. Successfully complete a field experience in a developing country	91.66
3. Complete a development course	91.66
4. Have enjoyed living in a different cultural setting	83.33
5. Interact in person with people of different cultures outside the United States	83.33
6. Work with people involved in managing a project	83.33
7. Work with people involved in evaluating a project	83.33
8. Successfully complete an agriculturally based work experience	75.00
9. Successfully complete a field experience with an agricultural development practitioner in either the United States or internationally	75.00[a]
10. Work with people involved in designing a project	66.66[a]

[a] A new competency added after Round 2

Conclusions, Recommendations, and Implications

Professionals in the field of international agricultural development involved in nongovernmental organizations, government organizations, or academic institutions agreed on 27 competencies and seven experiences that are critical in preparing college students for entry-level positions in international agricultural development. The findings suggest that job preparedness for entry-level agricultural development practitioners consists of some combination of competency development and experiences prior to working internationally. Those individuals who are charged with preparing the next generation of entry-level international agricultural development practitioners should use this list to develop appropriate educational programs and experiences. As educators develop future international agricultural development practitioners, society will benefit through the knowledge and skill development that will take place through formal education at the tertiary level (Sweetland, 1996). The identified competencies and experiences should be used to objectively assess the students as to the extent to which the desired competencies and experiences have been either organized or occurred. Extension educators and future employers should then provide the student/employee with the appropriate

knowledge and skills to fully meet the goals of the desired competency. It is important to note that the competency and experience list should not be used as a set of criteria which the student must fully meet in order to begin their careers as international agricultural development practitioners. Instead the competencies and experiences should be used as guides by which extension educators and employers strive to provide students with the appropriate knowledge, skills, and experiences to successfully fulfill their job responsibilities and improve society.

The competencies and experiences retained from this study signify the type of knowledge, skills, and experiences that international agricultural development professionals deem important. The retained competencies and experiences reflect a need or value for a practitioner who is competent and up to date on agricultural development issues, capable of working in culturally diverse situations, capable of viewing the world from different cultural perspectives, able to work well with people, and an effective communicator. International agricultural development employers are looking for future practitioners who are well-rounded individuals competent within the field of agricultural development, capable of learning quickly, and able to effectively work on a team as well as with culturally diverse people.

The extensive list of competencies and experiences produced in this study reaffirms the call of Shinn et al. (2009) for universities to produce graduates who meet the needs of stakeholders. The findings of this study also fit into the knowledge domains developed for doctoral graduates in the field (Shinn et al., 2009). In accordance with Harder et al. (2009), the identified competencies and experiences should be integrated into university curriculum in order to provide students a research-based curriculum that will effectively prepare them to work as international agricultural development practitioners. In addition, findings align with McClelland's (1973) call to use competencies to evaluate and assess learners' advancement or improvement within a competency.

Interestingly, the panelists only came to a consensus on 32 of the 60 proposed competencies and experiences. The lack of consensus raises the question of whether or not some competencies and experiences are more valued than others. In accordance with Shinn et al. (2009), panelists may have failed to reach consensus due to the uniqueness of the proposed competency or experience, and may have agreed upon statements that are applicable to all international agricultural development situations. McClelland (1973) warned against developing competencies that are too specific to a particular job. However, panelists may have failed to reach consensus regarding competencies and experiences due to the breadth of international extension work that has been conducted. In addition, consensus may have been hampered by the pragmatic nature of people within the field of international agricultural development. The panelists may have viewed particular competencies and experiences as irrelevant or less useful when completing a particular type of international extension work, and therefore the panelists may have viewed some of the proposed competencies and experiences as less relevant.

Future research needs to be conducted to determine the extent to which the identified competencies and experiences are being addressed in current training programs in professional agricultural development. After the universities and colleges identify which competencies and experiences are currently being organized through their curriculum, research should be done to identify how the programs implement the competencies and

experiences into students' programs of study. This would serve as a best practices guide and aid agricultural extension programs in producing entry-level agricultural development practitioners based on the prescribed competencies and experiences. Implementing the identified competencies and experiences into comprehensive agricultural education and extension programs will help to build the capacity of agricultural development organizations and allow them to better serve their clientele (Liles, 2004). Additionally, future research should be conducted to determine whether the needs of international agricultural development practitioners vary depending on the region in which international development is being conducted.

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