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# Towards a Competency–based Extension Education Curriculum: A Delphi Study

Amy Harder, Assistant Professor
*University of Florida*
Nick T. Place, Associate Dean & Associate Director
*University of Maryland*
Scott D. Scheer, Associate Professor & State Extension Specialist
*The Ohio State University*

*The purpose of this study was to determine the competencies entry–level Extension professionals will need in 2015. A Delphi panel of nationally recognized Cooperative Extension experts was developed to collect data. The 12 panelists reached consensus on 19 competencies. There were two key groupings among the competencies: extension program development process and core interpersonal skills. Cooperative Extension should examine ways to align its efforts with the competencies identified from this study in order to pro–actively plan for a successful future.*

Keywords: cooperative extension, competencies, extension education, delphi

## Introduction

What knowledge, skills, and abilities are essential to success as an Extension professional? Is it the ability to develop programs, communicate well with stakeholders, or reach diverse audiences? What about skills in organizational leadership, knowledge of program evaluation, or the ability to manage time? The answer to these questions is "yes" – except for when it is "no." It all depends on where a person looks to find the answer.

There are many competency models used in Cooperative Extension. For example, Texas AgriLife Extension has the YES! Model (Stone & Coppernoll, 2004), Michigan State University Extension (2008) developed a Core Competency Initiative, and North Carolina State University Cooperative Extension (n.d.) similarly identified Core Competencies. 4–H even has its own competency model commonly referred to as the 4–H PRKC (Stone & Rennekamp, 2004). There is considerable variance in the existing models. Some models (e.g. Core Competency Initiative) have as few as 19 competencies outlined, while the 4–H PRKC includes over 200 competencies. The variance makes it difficult to determine which competencies Extension professionals really need to be proficient in to perform their jobs well.

The identification of competencies needed by Extension professionals is particularly relevant for academic extension education programs to ensure their curricula adequately prepare students to enter the profession following graduation. Scheer, Ferrari, Earnest, and Connors (2006) proposed 10 core competency areas for extension education curricula: (a) Extension knowledge, leadership, and management; (b) technology; (c) communications; (d) program planning, implementation, and evaluation; (e) applied research; (f) diversity and pluralism; (g) marketing and public relations; (h) theories of human development and learning; (i) risk management; and (j) community development process and diffusion. The core competency areas were identified using the work of Cooper and Graham (2001), Levine (as cited in Scheer et al.), and common requirements for employment in Cooperative Extension (Scheer et al.).

A national follow–up study by Harder, Mashburn, and Benge (2009) found Extension education curriculum most frequently included courses related to Extension knowledge,

leadership, and management; theories of human development and learning; program planning, implementation, and evaluation; and applied research (at the graduate level). The remaining six core competency areas identified by Scheer et al. (2006) were found to be severely underrepresented in the curricula (Harder et al., 2009). It is unclear if the underrepresented core competency areas are an indication that the curricula need to be revised, because there is little agreement among the models as to the importance of the underrepresented core competency areas. This study sought to seek consensus on the competencies required of entry–level Extension professionals.

## Theoretical Framework

In the business world, the development of individual and organizational competencies is a priority for companies that want to gain and protect a competitive advantage (Vakola, Soderquist, & Prastacos, 2007). Similarly, public organizations are challenged to respond to external pressures. According to Bryson, Ackermann, and Eden (2007), "An important key to success for public organizations is identifying and building strategic capacities to produce the greatest public value for key stakeholders at a reasonable cost" (p. 702). Extension can focus on building its own strategic capacities as a means for meeting the anticipated challenges of the future and ensuring its relevancy as a public organization.

The competency approach to human resource management enables organizations to develop their capacity through the identification of knowledge, skills, and abilities essential to success (Vakola et al., 2007). Athey and Orth (1999) defined a competency as "a set of *observable* performance dimensions, including *individual* knowledge, skills, attitudes, and behaviors, as well as *collective* team, process, and organizational capabilities, that are linked to *high performance*, and provide the organization with *sustainable competitive advantage* [italics original]" (p. 216). Maddy, Niemann, Lindquist, and Bateman (2002) recommended core competencies be integrated into Cooperative Extension to increase its professional value and ability to deliver relevant programming.

The competency approach was originally developed by the renowned psychologist, David McClelland (1973). It was McClelland's assertion that the traditional means of predicting workplace success based on intelligence alone was insufficient. The measurement of competencies was offered as a superior method of assessing potential for success. The competency approach was undergirded by four primary assumptions: (a) performance measures should be observable, (b) criteria should relate to life outcomes such as occupations and education, (c) competencies should be described and defined realistically, and (d) clearly articulated information on how to develop competencies should be made public (McClelland, 1973, 1998). More simply, McClelland advocated for an approach to employee assessment based on measurements of actual job performance instead of intelligence and trait factors (Athey & Orth, 1999). Whereas intelligence and trait factors are largely considered inherent, competencies can be learned and developed (Athey & Orth, 1999). The implications of the competency approach for organizational development are clear; organizations that identify the skills, knowledge, and abilities needed to achieve their goals, and work to develop those competencies in their employees through training and education, will achieve increased capacity.

## Purpose of Study

The purpose of this Delphi study was to determine the competencies entry–level Cooperative Extension professionals will need in 2015. The objectives of the study were to:

1. Describe the original, non–duplicated competency statements generated by the Delphi panelists.
2. Describe the Delphi panelists' level of agreement with the generated competency statements.

## Methods

Cornish (2004) listed the use of a Delphi panel as an acceptable method for futuring. According to Linstone and Turoff (2002), "Delphi may be characterized as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a

complex problem" (p. 3). Opportunities for individuals to anonymously provide input, receive aggregated feedback from the group, and revise their views are characteristic of the group communication process (Linstone & Turoff, 2002).

There is little agreement regarding the ideal number of panelists for a Delphi study (Powell, 2003). According to Ludwig and Starr (2005), "the validity of a Delphi study depends not on the number of participants polled, but rather on the expertise of the panel who participate" (p. 316). This is a more contemporary view than the one offered by Dalkey (2002), who concluded a representative panel of 13 members would provide a reliability coefficient of .90. Previous research (Powell, 2003; Rowe & Wright, 1999) found the accuracy of a Delphi panel was increased when the panel consisted of experts.

Two methods were used to ensure the panelists for this study had the appropriate expertise in Cooperative Extension. First, the state directors of Cooperative Extension in all 50 states were solicited by mail and asked to nominate two Extension experts internal to their states and two external Extension experts. Only the directors of 1862 Extension programs were included to prevent states with multiple land–grants from being overrepresented. Extension experts were identified as "county or state faculty; agents/educators, specialists, or directors; [who] may specialize in any program area. An Extension expert should be well–regarded within his/her own state and/or program area, and have a working understanding of Extension issues at the national level" (A. Harder, personal communication, January 14, 2008). A self–addressed, stamped envelope was included to encourage the state directors to respond.

Thirty–three state directors responded, resulting in 117 nominations. Duplicate nominations were tracked to identify the individuals commonly regarded as Extension experts. Ten potential panelists received multiple nominations through this method. Seven of the potential panelists were state directors, two were specialists, and one was an associate dean. Three of the potential panelists were female and seven were male. The primary program expertise of the potential panelists included 4–H youth development, agricultural economics, agriculture, natural resources, family and consumer sciences, family economics, animal science, and program development.

Goldstein (in Linstone & Turoff, 2002) recommended the inclusion of a panelist from each field when multiple fields of expertise are represented in a study. Elected officers from each of the agent/educator associations (NAE4–HA, NACAA, NACDEP, NEAFCS, and ANREP) were invited to serve as panelists to further ensure equitable representation of all programmatic areas. Panel experts should have credibility with the target audience (Powell, 2003). Inviting elected officers from each agent association addressed any concerns about credibility and resulted in the addition of three female and two male potential panelists. Each had program expertise reflective of the organizations they represented.

The final list of potential panelists contained the names of 15 individuals. These individuals were mailed a personalized invitation explaining the purpose of the study and requesting the participation of the recipient. Directions for opting out of the study were provided. An informed consent form and a return envelope were included. The mailed invitation resulted in ten acceptance letters. The remaining five participants were contacted by the researchers via the telephone. The second contact resulted in the participation of two additional panelists.

The classic Delphi study has four phases which serve to take the broad quantity of data provided by panelists in the early rounds and gradually pare it down to a concise summary in the final round (Linstone & Turoff, 2002). This study emulated the design used by Shinn, Briers, and Baker (2008). It had four multi–segmented rounds that were conducted using SurveyMonkey.

In Round 1, panelists were asked to develop their vision of Cooperative Extension in 2015. Based on the definition provided by McLean (2006), panelists were instructed that a good vision statement specifies what the organization will do or be, who it will do it for, and what values will be used to meet the vision. The development of a vision for the year 2015 was designed to orient the panelists' thinking toward the future, thereby minimizing the threat of backward thinking identified by Athey and Orth (1999). A similar approach to visioning and competency identification was used by the North Carolina Cooperative Extension Service's Blue

Ribbon Commission on Staff Development and Training (1999), Shinn et al. (2008), and Shinn, Wingenbach, Briers, Lindner, and Baker (2009).

In Round 2, panelists were asked to identify the competencies believed to be essential for entry–level Extension professionals in 2015. A competency was defined as the knowledge, skills, and abilities an applicant would need to possess in order to be considered a strong candidate for employment. Entry–level Extension professionals were defined as county agents/educators; this operational definition excluded paraprofessionals (e.g. program assistants).

The qualitative data generated from Round 2 was used to generate individual competency statements. Panelists indicated their level of agreement with the competency statements in Round 3 using a six–point rating scale (1 = *Strongly Disagree*, 2 = *Somewhat Disagree*, 3 = *Slightly Disagree*, 4 = *Slightly Agree*, 5 = *Somewhat Agree*, 6 = *Strongly Agree*). The level of consensus a stem statement or competency needed to achieve was determined *a priori*. At least two–thirds of the respondents had to rate an item as "agree" or "strongly agree" in order for it to progress to the next round. This standard for consensus is consistent with past research in agricultural and extension education (Martin, Fritzsche, & Ball, 2006; Shinn et al., 2008; Shinn et al., 2009). Panelists were asked to confirm their agreement with the remaining competency items in Round 4. During the confirmation rounds, the means for each item from the preceding rounds were presented to the panelists. The same *a priori* definition for consensus was applied to determine the final competencies.

The data were collected between June and August 2008. Three reminders were e–mailed to increase the response rate in the first three rounds. Four reminders were e–mailed during Round 4. Rounds 1, 2, and 4 had a 100% response rate, while Round 3 had a 75% response rate.

## Findings

Four rounds were conducted with a Delphi panel to determine the competencies entry–level Extension professionals will need in 2015. The findings have been presented, by round, in the subsections that follow. The vision statements generated in Round 1 have been excluded from this manuscript in order to focus on the competency findings.

The panelists generated 25 original, non–duplicated competency statements in Round 2. The number of competency statements was reduced in Rounds 3 and 4 (see Table 1). There were 24 competency statements in Round 3 that reached the level of agreement necessary to move to Round 4. Panelists strongly agreed communication skills were essential for entry–level employees. The only competency statement dropped from Round 3 was knowledge of land–grant university and extension system. There were 19 competency statements that achieved the *a priori* level of agreement necessary for consensus in Round 4. Competency statements dropped from Round 4 were: (a) educational methodology; (b) entrepreneurship development; (c) fiscal management; (d) integrate extension, research, and teaching; and (e) IT skills.

Table 1
*Selected Responses for Rounds 3 and 4 Competency Statements by Percentage*

| | Response Options (%) | | | |
|---|---|---|---|---|
| | Round 3 | | Round 4 | |
| Statement | Agree | Strongly Agree | Agree | Strongly Agree |
| Able to utilize technology for program delivery | 55.6 | 44.4 | 36.4 | 54.5 |
| Accountability | 22.2 | 66.7 | 36.4 | 45.5 |
| Applied research skills | 44.4 | 33.3 | 45.5 | 18.2 |
| Communication skills including speaking and writing skills | 0.0 | 100.0 | 18.2 | 81.8 |
| Cultural sensitivity | 44.4 | 33.3 | 36.4 | 27.3 |
| Develop extramural funding | 66.7 | 22.2 | 72.7 | 9.1 |
| Educational methodology | 88.9 | 0.0 | 45.5 | 9.1 |
| Entrepreneurship development | 44.4 | 22.2 | 54.5 | 9.1 |
| Fiscal management | 55.6 | 11.1 | 36.4 | 9.1 |
| Integrate extension, research, and teaching | 44.4 | 33.3 | 18.2 | 36.4 |
| Interpersonal skills | 22.2 | 77.8 | 27.3 | 72.7 |
| IT skills | 44.4 | 22.2 | 27.3 | 18.2 |
| Knowledge of land–grant university and extension system[a] | 44.4 | 11.1 | – | – |
| Organizational leadership development | 33.3 | 44.4 | 54.5 | 36.4 |
| Personal leadership development | 33.3 | 44.4 | 45.5 | 45.5 |
| Problem–solving | 44.4 | 44.4 | 36.4 | 45.5 |
| Professionalism | 22.2 | 77.8 | 36.4 | 54.5 |
| Program evaluation | 44.4 | 44.4 | 45.5 | 36.4 |
| Program implementation | 44.4 | 55.6 | 54.5 | 45.5 |
| Program planning | 44.4 | 55.6 | 72.7 | 27.3 |
| Relationship building | 22.2 | 77.8 | 27.3 | 72.7 |
| Self–management | 33.3 | 66.7 | 63.6 | 27.3 |
| Teaching skills | 44.4 | 55.6 | 54.5 | 45.5 |
| Technical/subject matter expertise | 44.4 | 44.4 | 72.7 | 18.2 |
| Volunteer development | 33.3 | 33.3 | 45.5 | 18.2 |

*Note*. [a]At least two–thirds of the respondents had to rate an item as "agree" or "strongly agree" in order for it to progress from Round 3 to Round 4.

## Conclusions

Nineteen core competencies were identified by the expert panel. There were two key groupings among the core competencies (see Figure 1). The first grouping broadly relates to the extension program development process and includes: program planning, implementation and evaluation; teaching skills; and accountability. Secondly, there was strong emphasis on core interpersonal skills including: self–management, problem–solving, communication, cultural sensitivity, professionalism, and relationship building. Additionally, extension educators need to have applied research skills and be able to attain extramural funding. Furthermore, they need to be grounded in a technical/subject matter area and volunteer development.

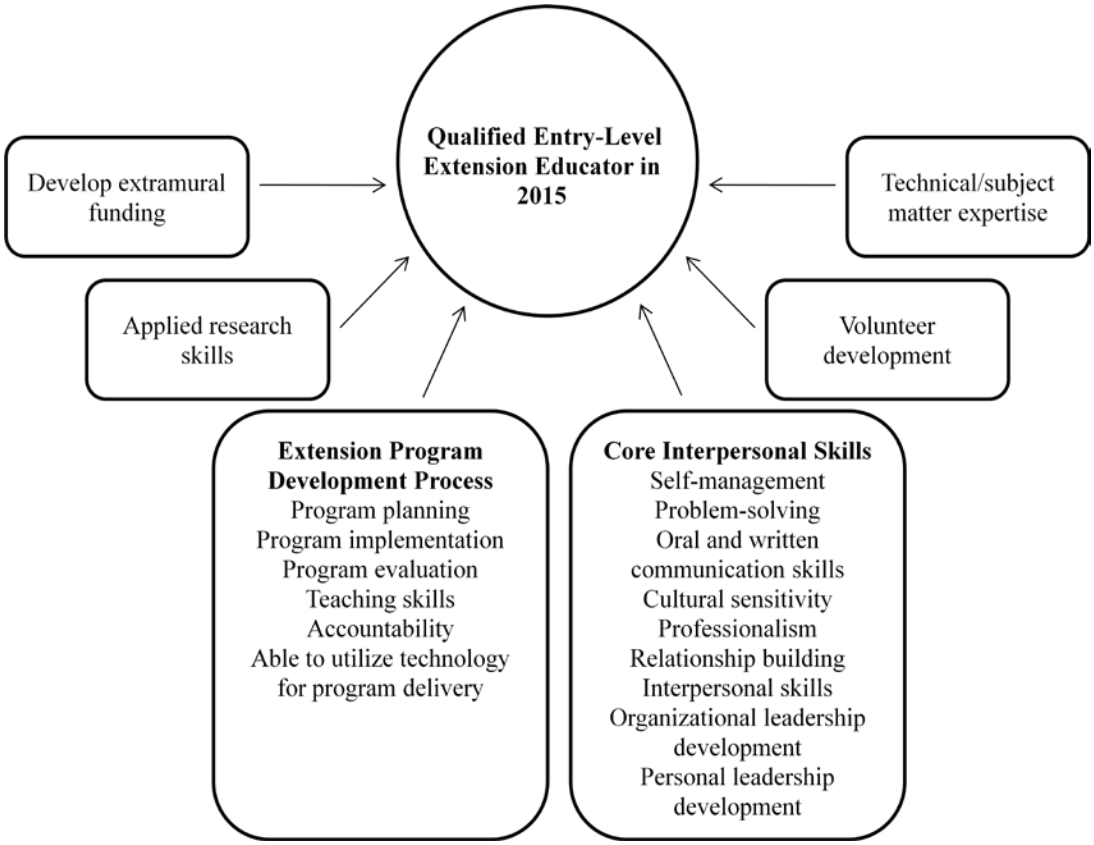


*Figure 1*. Model of entry–level Extension educator competencies.

The competencies identified by the Delphi panel were largely consistent with the competency areas proposed by Scheer et al. (2006) but less so with the courses Harder et al. (2009) found commonly included in extension education curriculum. Consistent with both previous works was the emphasis on applied research; leadership; program planning, implementation, and evaluation; and teaching. Competencies consistent with only the Ohio State model were communication skills, problem–solving, cultural sensitivity, and the ability to utilize technology. Technical/subject matter expertise, volunteer development, and the ability to develop extramural funding were not explicitly outlined by either Scheer et al. (2006) or Harder et al. (2009).

Recall that McClelland (1998) outlined four primary assumptions to using the competency approach: performance measures should be observable, criteria should relate to life outcomes such as occupations and education, competencies should be described and defined realistically, and clearly articulated information on how to develop competencies should be made public. The competencies identified in this study clearly satisfy the need for criteria to relate to life outcomes. The remaining three assumptions should be achievable if some additional time is devoted to articulating: how an entry–level applicant to Cooperative Extension can demonstrate he/she possesses each competency, the definitions of each competency, and how individuals can develop the competencies needed for employment.

## Implications

The aforementioned core competencies were identified as the most important for Extension educator success. Highly effective educators must exhibit strong people skills and be able to work collaboratively with diverse people and groups. They need to be self–starters who are

innovative and creative towards addressing critical issues facing constituents. Educators must understand and practice the program development process from needs identification to evaluation.

Other areas of emphasis include the effective use of technology, applied research, and extramural funding. These competencies have been important for some time; however they are now taking on increased importance. Technology continues to rapidly change and this affects professional development as well as educational delivery to clientele. Applied research takes on added emphasis particularly among institutions utilizing tenure–based Extension systems. Educators must be able to use applied research as a means to demonstrate and educate clientele on new methods and practices. Extramural funding is increasingly important as traditional sources of funding have not kept pace and in many cases are decreasing. Educators need to be equipped to pursue major and minor grants, seek funds from foundations, solicit support from program partners, and pursue resources through contracts, fees, memberships, etc.

It is critical to utilize the core competencies as guides for hiring and training of Extension educators. As suggested by McLelland (1973), the core competencies provide a basis for screening potential employees for Cooperative Extension and planning professional development opportunities. Since many new Extension educators may not come into their positions with all of these requisite competencies, Extension organizations need to have a means to assess actual needs and delivery of effective professional development programming. Extension can increase its capacity by improving the competency level of its educators (Maddy et al., 2002).

The core competencies are not only relevant for state Extension systems, but for academic extension education programs. Universities can provide a research–based curriculum that highlights the 19 core competencies identified in this study. This is an important advancement in extension education, as this study helps to resolve some of the conflict between what Harder et al. (2009) observed and Scheer et al. (2006) proposed. Additionally, the inclusion of the core competencies in extension education curriculum will enable the identification of extension education programs as one way to develop competencies, as required according to McClelland's (1973, 1998) assumptions for the competency approach.

## Recommendations

The recommendations from this study are best viewed through the lens of Cornish (2004) who made it clear that to be successful in the future, organizations must plan now, not later. Extension systems should critically assess their professional development activities and hiring practices as guided by the 19 core competencies necessary for successful Extension professionals. It is also recommended that academic extension education programs do the same with curriculum reviews and updates. Future research should use the competencies from this study as a framework for examining the career preparedness of extension education graduates, competencies commonly held by pre–entry Extension applicants, and competency levels of current Extension employees.

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AMY HARDER is an Assistant Professor of Extension Education in the Department of Agricultural Education and Communication at the University of Florida, PO Box 110540, Gainesville, FL 32611, amharder@ufl.edu

NICK PLACE is an Associate Dean and Associate Director of Extension at University of Maryland Extension, 1202 Symons Hall, College Park, MD 20742, nplace@umd.edu

SCOTT D. SCHEER is an Associate Professor and State Extension Specialist in the Department of Human and Community Resource Development and 4-H Youth Development at The Ohio State University, 204A Ag. Admin. Bldg., 2120 Fyffe Road, Columbus, OH 43210, scheer.9@osu.edu