

ABSTRACT

LAKAI, DONA. Identification of Competencies Needed by Extension Agents in North Carolina Cooperative Extension. (Under the direction of Dr. K.S.U. Jayaratne).

The Cooperative Extension Service was established under the Smith-Lever Act of 1914 with a mission to spread useful and practical information in agriculture, home economics, and related subjects to improve people's lives. In this era of globalization, competency is an issue of concern to any field of professionals and their clients. Competency is an integrated set of skills, knowledge, and attitudes that allow one to effectively carry out the activities of a given work to the standards expected in the employment. The Blue Ribbon Commission introduced seven core competencies and 20 sub-competencies for Extension agents in North Carolina Cooperative Extension (NCCE) in 1999. The purpose of this study was to determine the current level of NCCE agents' competencies and the new competencies they need to develop to be successful in the NCCE. The study also identified the barriers that prevent Extension agents from acquiring competencies, and determined educational delivery methods to help Extension agents develop desired competencies. This was a descriptive survey research conducted online with 274 randomly selected Extension Agents. There was a 66% response rate.

The findings of the study indicate that the current level of competency for Extension agents in NCCE varies from moderate to high in all 42 items listed in the survey. Multiple regression analysis confirmed that Extension agents' years of Extension experience and age were major determinants of their overall Extension competency level. The experienced Extension agents were more competent compared to less experienced Extension agents. Extension agents' competency levels did not vary with gender, level of education, whether

they were affiliated with any professional association, job position and the area of job responsibility. The research revealed that emotional intelligence, interpersonal skills, flexibility for adapting to changing environments and ability to manage resources were the most significant new competencies for Extension agents to be successful in NCCE.

Increased work load, lack of time, lack of funding, increased in personal costs related to acquiring competency and lack of incentives for acquiring competency were identified as the major barriers limiting Extension agents acquiring desired competencies. Stress management, extension program evaluation, extension program marketing and conflict management were identified as the most important training needs for building Extension agents' competencies. The next most important training needs were building competency for enabling Extension agents to use new communication technology, interpret research findings, develop leadership skills and nurture leadership skills among others and apply NCCE organizational procedures and policies.

In-service training was listed as the most appropriate opportunity to acquire competency, while small group, face to face training workshops were considered as the most effective educational delivery method. In-service training opportunities should be provided to help Extension agents develop competency in stress management, Extension program evaluation, Extension program marketing, and conflict management. Also, in-service trainings are needed to develop new competencies such as emotional intelligence, interpersonal skills, flexibility for adapting to changing environments and ability to manage resources for Extension agents to be successful in current context. When in-service trainings are provided it is important to give priority for the new agents since they are at the lowest level of competency compared to more experienced agents.

Since this study was conducted with the North Carolina Cooperative Extension Agents, the findings are limited to the NCCE Extension agents. A further study with a multi state sample is needed to determine the current state of Extension competencies and desired new competencies for making a broader recommendation.

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Identification of Competencies Needed by the Extension Agents in North Carolina
Cooperative Extension

by
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DEDICATION

This thesis is dedicated to my loving and supportive husband, Christopher, and my family. Without the consistent patience and encouragement of my husband this thesis could not have been completed. Thank you for loving me unconditionally! To my Mom and Dad who brought me into this world, taught me how to live life as God intended, and instilled in me valuable foundational values. Thank you.

BIOGRAPHY

Dona Lakai has worked as an extension agent with the Department of Agriculture (DOA) Malaysia since 1999. She received her B.S. (Hon.) in Agricultural Science from the Universiti Pertanian Malaysia in 1994. She has twice been awarded with the 'Excellence Service Award' by the Ministry of Agricultural and DOA Malaysia for her outstanding services. The Public Service Department of Malaysia awarded her a two-year study leave and scholarship in 2008 to get her Master's in Extension Education at North Carolina State University (NCSU), Raleigh. She hopes this experience will give her valuable insights into the agricultural extension profession.

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CHAPTER I

“Extension work is a philosophy... And the satisfaction that one gets in seeing the improvement in the standard of living of the people served is the most satisfying remuneration that anyone can experience”

Ira O. Schaub, 1953 (para 3)

INTRODUCTION

Extension services were established more than 100 years ago to facilitate a link for farmers to new knowledge and technology in order to increase agricultural production. Extension services were first introduced in the United States through the city libraries, and by the Farmer Institute’s experimental station staff in Massachusetts (Seevers, Graham, & Conklin, 2007). Extension work gradually expanded to the rural populations in other parts of the United States, which contributed to a national system, because 50% of the U.S. population lived in rural areas nearly a century ago (United States Department of Agriculture, 2010). The Smith-Lever Act was passed by the U.S. Congress in 1914, and the Cooperative Extension Service (CES) was established (Seevers et al., 2007). The term *cooperative* referred to its three funding sources: federal, state, and local governments (Graham, 1994). After its creation, CES became tremendously embedded in American society. It serves as an educational outreach network of the land-grant colleges and the United States Department of Agriculture (USDA), which is “a vast network of interdependent yet relatively independent institutions throughout all the states and territories” (Boone, 1988, p. 11). It is dedicated to developing the agricultural system, and that requires continuous adaptation due to changing technology and demographics. Programs vary within states and local regions as CES

responds to local needs and issues (Graham, 1994). The program areas of CES are agriculture and natural resources, family and consumer sciences, 4-H and youth development, and community development (Seevers et al., 2007).

The mission of CES was to distribute useful and practical information in agriculture, home economics, and related subjects to improve people's lives (Graham, 1994). According to Seevers et al. (2007), CES accomplishes its mission through the use of three conceptual models: (a) the technology-transfer model, wherein CES is the link between the land-grant college research and the client; (b) the problem-solving model, wherein alternative solutions to group problems identified by clients are proposed and evaluated by CES, and appropriate action is taken; and (c) the imparting-knowledge model, wherein skills are taught and information delivered in various formats. Consequently, CES's mission has expanded as has the cooperation between it and other agencies (Seevers et al., 2007). Collaboration has been needed to address emerging and unfamiliar issues that provide a new set of challenges to CES. Its clients have also become more knowledgeable as their access to information through the advancement of technology has increased. According to Patton (1988), CES needs to develop "an organizational structure, a culture, and a mission that can have an impact on critical issues of the information age" (p. 490).

Since its establishment, CES has been involved in educating people to help them improve the quality of their lives and their ability to self-actualize. According to Graham (1994), the CES organization is considered the "largest network of out-of-school non-formal education" in the world (p. 415). The strengths of CES are its ability to transmit research-based information and the involvement of its clients in determining, planning, and

implementing programs that meet their needs. Rogers (2003) also acknowledged that the agricultural Extension system is “the government agency that has been far the most successful in securing users’ adoption of its research results” (p. 165).

The Extension Services have always been linked to a two-way process of technology transfer. There are laws and policies that are still in effect today that were implemented in the US to promote the involvement of research universities in technology transfer (Rogers, 2003). The transfer of technology from the research center to the user has been a significant challenge for Extension agents as new knowledge and technologies are developed daily. Extension agents’ inability to demonstrate the linkage between the economic value and production advantages of new technology is a common factor that has hindered the adaptation of new agricultural technology (Barao, 1992). According to Petrzelka, Padgitt, and Wintersteen (1999), it is important for CES to reflect and evaluate its subject matter, audiences, and methods while moving into the 21st century. The Extension Committee on Organization and Policy (ECOP) agreed with their claim:

Globalization of the financial, service, manufacturing and agricultural sectors is having a profound influence on all facets of American society. Today, seemingly unrelated decisions and events occurring throughout the world can rapidly and profoundly impact public institutions, private lives and communities.

(ECOP, 2002, p.3).

This shows an urgent need for CES to be more flexible and become an adaptable organization to connect people to the wealth of knowledge in research institutions. The

findings of ECOP (2002) challenged CES to fully exploit the outstanding capability of the land-grant colleges to respond to the needs of more diverse communities.

The Extension system has been a catalyst for change for 100 years but the needs, technologies, and clients involved with it have expanded. Change is also occurring in all facets of the US as the population diversifies and urbanizes. United States (U.S.) society is dominated by technological advancement and global economics. As the urban population increases, there is also an increasing need for CES to implement programs that meet the needs of urban clients (SeEVERS et al., 2007). Graham (1994) stated that the flexibility of CES allows for change to keep its feasibility and uphold the mission of the Smith-Lever Act.

In the last two decades, CES has experienced major transformational changes in terms of programs, finances, and personnel (ECOP, 2002). The rapidly globalizing economy and increasingly complex clients have created major concerns and shifting priorities for CES. Regardless of priorities, the effectiveness of the Extension programs greatly depends on the delivery approach and competencies of the Extension agent. Rasmussen (1989) acknowledged that it is “the men and women at the county level—the local agriculturist, home economist, 4-H leader, community and rural specialist—who actually carry the university to the people” (p. 7).

Meier (1989) warned that CES must change if it is to keep pace with current trends, achieve national prominence, and regain its dominance in providing receptive educational programs of the highest excellence to its public. The answer to whether CES will stay important, in major part, lies within the competency of each of the Extension professionals (Bull, Cote, Warner, & McKinnie, 2004).

The North Carolina Cooperative Extension (NCCE) was formally established in 1914 (NCCE, 2005). North Carolina State University (NCSU), North Carolina Agricultural and Technical State University, the USDA, and county governments, comprise a dynamic Extension system for North Carolina in the form of the NCCE. It partners with communities to deliver education and technology that enhance the lives, land, and economy of North Carolinians (NCCE, 2005). It gives leadership to statewide programs in 100 counties and also to the Cherokee Indian Reservation. Each county government assists in providing facilities for the county Extension center's field faculty who reside in each of the 100 county centers and one Indian reservation. The foundation of the NCCE has been helping people put knowledge to work so they can improve their lives. The NCCE achieves this task by providing people with learning opportunities that permit them to get an advantage from research-based knowledge.

The effectiveness of an Extension organization is determined by the ability of its Extension agents to design, deliver, and evaluate effective educational programs, because they are directly serving the needs of the people. Their ability to perform Extension tasks is a function of their job competencies. According to Swanson (1996), high value should be placed on core competencies in business and industry, primarily referring to their knowledge and expertise in these fields.

In 2002, ECOP challenged Extension leadership to prepare its administrators, faculty, and staff to value diversity and accept that change is necessary for the viability of the organization. The committee suggested that the Extension system must allocate resources to ensure that all employees spend at least 10% of their time in training and professional

development that enhance competencies relative to engagement and critical issues. With the ECOP initiated Extension training and competency development trend, many states started to set up their own competency standards, including North Carolina.

Statement of the Problem

In this era of globalization, a knowledgeable and skilled individual can play a vital role in the success of an organization. According to SeEVERS et al. (2007), future Extension professionals need to be more skillful and futuristic to serve the needs of diverse audiences. For CES to remain competitive and relevant in the 21st century, Extension agents must learn new knowledge and skills. For this purpose, the NCCE introduced a standard for core competencies in 1999 for its Extension agents. The competency standard of 1999 was well prepared, but it was not embedded into the reward system, and there was no matrix to measure its accomplishment or contribution to the NCCE (Lanny Hass, personal communication, November 3, 2009). Recently, a sub-competency study for Administrative County Leaders in NCCE has been conducted by Owen (2004), but there was no recent study to determine the competency levels of the Extension Agents in NCCE. It is important to identify Extension agents' current levels of competency to determine whether there is any competency gap and plan in-service training programs to help them develop needed skills.

The existing competency standards for North Carolina Extension agents were developed and introduced by the Personal and Organizational Development (POD) unit of the NCCE in 1999. The competency standards need to be redefined based on current needs and new situational changes, such as global marketing and technological changes (Lanny

Hass, personal communication, November 3, 2009). However, there has not been any research to identify the desired competencies after establishing NCCE competency standards a decade ago. The Extension programming environment has changed over the last decade due to urbanization and changes in socio-economic structure and technology. This situation can create a gap between what was defined as the desired competency standards in 1999 and desired competencies in current context.

To be a successful Extension agent today, one must be competent not only in technical matters, but also in areas such as management, programming, communication, human relations, and leadership (Gonzalez, 1982; Graham, 2009; Reynolds, 1993; Stone & Coppernoll, 2004).

Globalizing economic and technological advancements has forced Extension to review the competencies Extension agents need to perform their current jobs effectively and efficiently. Extension agents have to adapt to the changing environment and needs of the population they serve. This situation indicates the need to determine the current areas of competency of Extension agents and identify the new competencies necessary for them to effectively serve the needs of diverse clients in the 21st century. A greater understanding of the competencies needed by existing and newly hired Extension agents is important for organizational development (Owen, 2004).

Thus, the goals of this research project were to determine the current level of competencies of Extension agents in the NCCE and the barriers that limit their ability to develop desired competencies. As new challenges and concerns have arisen, it is also

necessary to examine additional skills needed by Extension agents to fulfill their job responsibilities effectively and to be successful in the current context.

Purpose and Objectives of the Study

The purpose of this study was to determine the current level of North Carolina Cooperative Extension agents' competencies and the new competencies they need to develop to be successful in the NCCE. More specifically, the study aims to achieve the following objectives:

1. Determine the current levels of competency for Extension agents in the NCCE.
2. Determine whether the competency levels vary with the demographic characteristics of Extension agents.
3. Identify needed new competencies of Extension agents in the NCCE.
4. Determine the barriers that hinder Extension agents from acquiring needed competencies.
5. Identify training needs of Extension agents for building the desired competencies.

Assumption

This study assumes that the Extension agents will be truthful in their responses to the research instrument.

Limitation

Findings of this study are limited to Extension agents in North Carolina Cooperative Extension. Results of this study are based on self reported competencies. This can be a limitation if the above mentioned assumption is violated.

Significance of the Study

To stay relevant in the 21st century, CES must be prepared to change (ECOP, 2002). For this purpose, Extension has to reassess the competency standards established in 1999 and identify needed changes for the current context. This study will determine the Extension agents' present levels of competency and new competencies needed to be effective in the 21st century. The findings of this study will lead to identifying the in-service training needs of Extension agents to improve their current competency levels. This information will be useful for North Carolina Cooperative Extension to plan in-service training programs.

In addition, this study is significant for the researcher's job as an extension agent in the Department of Agriculture in Malaysia, because the study can be replicated in Malaysia. Recently, a new extension delivery approach was introduced in Malaysia based on the current needs of diverse clientele and technological advances. This situation might have contributed to some changes in needed competency levels of Malaysian Extension agents. This study can be replicated in Malaysia to identify extension agents' current levels of competency and needed competencies to face new challenges in the 21st-century. In addition to being useful for NCCE, this study is significant to the Extension Service in Malaysia.

Definition of Terms

Competency: The International Board of Standards for Training, Performance, and Instruction (ibstpi[®]) defines competency as “a set of related knowledge, skills, and attitudes that enable an individual to effectively perform the activities of a given occupation or job function to the standards expected in employment” (Russ-Eft, Bober, de la Teja, Foxon, & Koszalka , 2008; p. 17). Maddy, Niemann, Lindquist, & Bateman (2002) defined competency in Extension education programs “as the basic knowledge, attitudes, skills, and behaviors that contribute to excellence in Extension education programs” (p. 1).

Extension agents: The field Extension personnel employed by the North Carolina State Cooperative Extension service at the county level.

Extension system: The composite of state and territorial Extension programs and the Cooperative State Research, Education and Extension Service of the United States Department of Agriculture (ECOP, 2002).

CHAPTER II

REVIEW OF LITERATURE

This chapter focuses on a review of the literature on professional competencies with special reference to Extension. An understanding of what professional competency means and the role it can play in the success of an organization will be established in this literature review. The methods that have been used for developing competency standards in organizations, the studies that have been used to determine needed changes in competency standards, and the barriers and rewards of competency acquisition, will also be discussed. Finally, the importance of professional development programs in attaining competencies will be addressed.

Definitions and Determination of Competencies

Determining areas of needed competency and helping employees become proficient in those areas are issues of major concern and challenge for many professional fields and consumers of their services. Over the last decades, establishing competencies has become a widespread practice in many organizations (Bartram, Robertson, & Callinan, 2002; Cavallo & Brienza, 2001; Olsen, Bhattacharya, & Scharf, 2006; Stone, 1997). The effectiveness of an organization depends on its capability to attain and efficiently use existing resources to achieve its goals. Focusing on competencies helps organizations effectively communicate the responsibilities, knowledge, and skills needed for positions to their employees. It generates highly knowledgeable and proficient employees who are the most valuable resources for an

organization. The success of the organization depends greatly on their knowledge and abilities (American Society for Training & Development, 2006).

Traditionally, the development of competencies is based on job responsibilities, but Langdon and Marrelli (2002) argued that it is more significant to generate competencies based on the needed outcomes from the job. Identification of job competencies “through a combination of techniques and models” is widely practiced by organizations (Marrelli, 1998, p. 8). Stone (1997) described competencies as the application of knowledge, technical skills, and personal characteristics that are designed around the abilities individuals and groups need to give effective job performances and use in making human resource decisions. Professional competencies are essential to perform jobs well, and most organizations expect their employees to use certain professional tools to help their clients. In an effort to precisely define competency, Zemke (1982) interviewed several experts in the profession and concluded that

Competency, competencies, competency models, and competency based training are all Humpty Dumpty words meaning only what the definer wants them to mean. The problem comes not from malice, stupidity or marketing avarice, but instead from some basic procedural and philosophical differences among those racing to define and develop the concept and to set the model for the way the rest of us will use competencies in our day-to-day training. (p. 28)

Zemke continued by classifying competencies into three categories: administrative, technical, and personal competencies.

According to Langdon and Whiteside (2004), the general definition of competency includes only skills, knowledge, and attributes. But Bartram, Robertson, and Callinan, (2002) defined competencies as “sets of behaviors that are instrumental in the delivery of desired results or outcomes” (p. 7). Based on this definition, the Great Eight Competencies of work performance were developed to promote effectiveness in 21st century organizations. The Great Eight Competencies are (a) leading and deciding, (b) supporting and cooperating, (c) interacting and presenting, (d) analyzing and interpreting, (e) creating and conceptualizing, (f) adapting and coping, (g) organizing and executing, and (h) enterprising and performing (Bartram et al, 2002). However, Klein (1996) argued that a competency can also be considered behavioral when it involves only visible behaviors without any judgment, theory, or explanation.

Dubois as cited in Teodorescu (2006) defined competency as “those characteristics—knowledge, skills, mindsets, thought patterns, and the like—that when used whether singularly or in various combinations result in successful performance” (p. 28). McLagan (1997) suggested that competencies can be viewed in six different ways: (a) job tasks, (b) results of work efforts, (c) outputs, (d) knowledge, skills, and attributes, (e) qualities that describe superior performers, and (f) bundles of attributes. With so many different ideas of what competency stands for, it is critical for organizations to define the right competency for each role to obtain the results they are looking for.

Stone and Bieber (1997) reported that “linking individual competencies that lead to superior performance to the strategic directions of the organization will help us anticipate the new knowledge, skills and behaviors needed in the future in order to respond to complex

problems faced by our clientele” (para. 1). Liles and Mustian (2004) confirm this notion that competencies, to be effective, need to be developed to support the mission and goals of the organization. A continuous development of competencies is necessary for professionals to stay in touch with the socioeconomic and technological changes in their fields. Therefore, Mulder (2001) identified the roles of competency in an organization as (a) organizational strategy, (b) personnel management, (c) training and development, (d) the link between education and labor, (e) professional development, and (f) regional training or economic structure policies.

There have been many different results from research groups that have studied competencies in recent years. Competency-based approaches for training and development have been widely used and evidences of achievement have been established in the corporate sector for over two generations (Liles & Mustian, 2004).

In a global study at Johnson & Johnson’s consumer companies, Cavallo and Brienza (2001) found that the most outstanding managers had significantly higher emotional competency compared to the others. Goleman (1998) defines emotional competency as “a learned capability based on emotional intelligence that results in outstanding performance at work” (p. 24). It is critical for leaders to show emotional competency in order to successfully influence the effectiveness of others on the job (Goleman, 1998). That finding was supported by Ayers and Stone (1999) who determined that “successful people . . . have high-level critical thinking skills, technical expertise, and, most importantly, emotional maturity/emotional intelligence” (para. 7).

The Taskforce for Public Health Workforce Development adopted 68 core competencies in 8 domains for public health practices in the US (Tilson & Gebbie, 2004). The domains were in analytic and assessment skills, basic public health service, cultural competency, communication, community dimensions of practice, financial planning and management, leadership and systems thinking, and program development and planning. It required every level of public health personnel to display the core competencies appropriate to their works.

While in a focus group study of agricultural science teachers, Roberts, Dooley, Harlin, and Murphrey (2007) identified 47 competencies or traits of a successful agricultural science teacher. The competencies were divided into the group of instruction, student organization, supervised experience, program planning and management, school and community relations, personal traits, and professionalism. The competency “working with diverse groups” identified later was not included in any of the previous categories.

Cultural competency has been identified as an important competency for service providers, professionals, and organizations to work effectively across cultures (Olsen et al., 2006).

According to Gander (2006), existing competency tools do not constantly measure the behavior gap of employees over time. It is important to do so because the requirements or standards are changing with time. Gander (2006) developed a measurement tool called the Outcome Proficiency Indicators Scale (OPIS) that statistically monitors any changes in expertise levels of individuals or groups. Most organizations have a well defined competency list but usually lack the ability to measure, enhance, and fulfill those competencies (Langdon

& Whiteside, 2004). Competencies are traditionally developed based on existing high achieving qualities in the organization, but they may not produce the same outcomes in the future (Gayeski, Golden, Andrade, & Mason, 2007). Therefore, it is vital for any organization to continuously evaluate, identify, and improve their competencies to be successful in the changing environment.

Competency development is a highly participatory process, and many competency models have been developed for different professions (Stone, 1997; Stone & Bieber, 1997). In this study, the term ‘competency’ refers to a combined set of knowledge, skills, and attitudes that facilitates an individual’s effective performance of the activities of a given job to the standards expected in that organization.

Competency Models

Competency models are developed for a job or a group of jobs using various methods. Marrelli (1998) defined a competency model as “the organization of identified competencies into a conceptual framework that enables the people in an organization to understand, talk about, and apply the competencies . . . an organizing scheme” (p. 42). Competency models are developed because they are powerful decision-making tools and can be used for self-evaluation and self-development. Therefore, a core competency model for a job will assist an organization in hiring the best individual for a particular job (Grigoryev, 2006). The competency model will provide a framework for linking strategies of the organization to individuals and performances.

The International Board of Standards for Training, Performance, and Instruction's (ibstpi[®]) competency model consists of three important components: domains, competencies, and performance statements that involve four phases of development (Russ-Eft, Bober, de la Teja, Foxon, & Koszalka, 2008). Cochran (2009) developed the Ohio State University Extension Competency Model, which represents a set of core competencies for any job in Extension, now and in the future. It recognizes 14 core competencies: (a) communication, (b) continuous learning, (c) customer service, (d) diversity, (e) flexibility and change, (f) interpersonal relationships, (g) knowledge of Extension, (h) professionalism, (i) resource management, (j) self-direction, (k) teamwork and leadership, (l) technology adoption and application, (m) thinking and problem-solving, and (n) understanding stakeholders and communities. Extension's human resource departments can use performance standards to assess knowledge gaps for planning professional development programs.

Competency in Extension

Demographics changes, evolving technologies, and the global market create new challenges for Extension. Extension needs to proactively recognize when change is necessary, respond, manage it effectively, and adapt instantly. In the Extension Committee on Organization and Policy (ECOP) "Vision for the 21st Century" report (2002), one of the recommendations for Extension was to meet those changing needs "by building an organization that empowers, encourages, and supports shared leadership and proactive decision-making by individuals who have the most relevant information and who operate at a level close to the issues" (p. 6).

A major concern for Extension is determining which professional competencies are most needed by the organization and committing resources to acquire, develop, and utilize them. According to Stone and Bieber (1997), competency is not a new concept for Extension, which has long looked to better its performance. McCormick (1959), as cited in Gibson (2003) stated that as early as 1959, the National Committee on Extension Administrators had identified nine competencies that were imperative for Extension educators' success. But rapid and continuous changes and challenges in agricultural technology require Extension professionals to constantly develop and improve their capabilities (Trede & Whitaker, 2000). The success of Extension programs is determined mostly by the ability of Extension agents to improve their competencies, because the overall Extension process is dependent on Extension agents' ability to transfer new knowledge, skills, and technology to their clients.

According to Stone and Bieber (1997), continuous efforts are necessary to determine new knowledge, skills, and behaviors needed for agents to achieve excellence in Extension. These efforts will ensure that Extension will still be relevant in the 21st century and beyond. The participatory process of developing competencies will also assist Extension professionals to continuously identify and validate the competencies that are important to achieve excellence.

In 1992, the Personnel and Organization Committee of the ECOP identified 16 core competencies that all Extension professionals should acquire (ECOP, 1992). The competencies were applied research, change management, communications and human relations, computer operation and software, conflict resolution, knowledge of CES, educational programming, evaluation and accountability, instructional development and

learning, marketing and public relations, organizational development, personal organization and management, professional and career development, public policy education, resource development and management, and strategic planning.

The Blue Ribbon Commission (BRC) on staff development and training was established in 1998 by the North Carolina Cooperative Extension (NCCE). One of the recommendations made by the BRC was to “seek multi-state cooperation in the development of competencies and a competency-based training curriculum for job specific groups of employees” (p. 1). The Personal & Organizational Development (POD) unit of the NCCE was established to further improve the core competencies determined by the BRC and to provide leadership to implement the Learning Management System. The POD defined seven core competencies for all Extension professionals in the state, including County Extension Directors (CEDs), administrators, agents, specialists, and volunteers (NCCE, 2001). The NCCE competency model consists of competencies, sub-competencies, and proficiencies defined for each Extension professional group. The core competencies are alike for each of the job groups; however, the sub-competencies and proficiencies for each job-group differ and may be distinctive (Liles & Mustian, 2004).

There were 20 sub-competencies identified by POD for Extension agents in North Carolina. Each sub-competency has three levels of proficiencies. The core competencies and sub-competencies are:

1. Knowledge of the Organization

An understanding of the history, philosophy, and contemporary nature of the NCCE.

Sub-Competency: Organizational structure and policies.

2. Technical/Subject Matter Expertise

The mastery of a scientific discipline, a research body of knowledge, or a technical proficiency that enhances individual and organizational effectiveness.

Sub-competency: Professional knowledge and skills, and job specific technologies.

3. Programming

The ability to plan, design, implement, evaluate, and account for significant Extension education programs that improve the quality of life for the NCCE customers.

Sub-Competency: Program design, teaching resource, and use of volunteers/engaging customers.

4. Professionalism

The demonstration of behaviors that reflect high levels of performance, a strong work ethic, and a commitment to continuing education and to the mission, vision, and goals of the NCCE.

Sub-Competency: Work ethic/image, professional activities, and balance between work and personal life.

5. Communications

The ability to transfer and receive information effectively.

Sub-competency: Marketing, basic communication, and information communication technology skills.

6. Human Relations

The ability to successfully interact with diverse individuals and groups creating partnerships, networks, and dynamic human systems.

Sub-Competency: Relationship building, networking, and personal interaction skills.

7. Leadership

The ability to influence a wide range of diverse individuals and groups positively.

Sub-Competency: Leadership principles, personal leadership, and engaging others.

The current NCCE competency model has been widely accepted among other organizations that share the NCCE's mission. For County Extension Directors (CEDs), there were 39 sub-competencies that were key indicators of their proficiencies. There were eight sub-competencies that CEDs themselves considered significantly essential in attaining success in the function of an administrative leader (Owen, 2004). An early evaluation in the tenure of CEDs was found useful in helping them to develop a long-term, personal improvement plan to master all 39 sub-competencies.

There have been several other studies over the years that support the need for core competencies for the success of various professionals in Extension (Boyd, 2003; Burke, 2002; Gonzalez, 1982; Gregg & Irani, 2004; Reynolds, 1993). The Southern Regional Extension Leadership (as cited in Gibson, 2003) identified job management, relating to others, team building, and thinking clearly as major areas of competencies that were believed to be important for the efficiency of Extension professionals.

Texas Cooperative Extension developed a system approach to professional development system referred to as You, Extension, and Success (*YES!*) with five main components. The foundation for *YES!* is a set of core competencies that were divided into six broad categories: subject matter expertise, organizational effectiveness, develop and involve others, communications, action orientation, and personal effectiveness (Stone & Coppernoll, 2004). These components represent six broad categories of competencies. *YES!* is a starting point for Extension employees in Texas to develop professional goals, increase personal achievement, and make an impact in Extension.

Place and Jacob (2001) reported that Extension professionals required resource management and stress management competencies to manage stress and pressure in the workplace. It would help them balance work and family, which would lead to better performance and organizational effectiveness.

Warrix and Bocanegra (1998) emphasized that Extension agents must understand the culture, values, and attitudes of their clients to develop effective training programs. Cultural competency is becoming more important for Extension agents to provide useful information and advice to a diversifying population. According to Harder, Lamm, and Vergot III (2010), international travel is a method used to develop cross-cultural competencies among Extension agents in Florida.

In a comparison study between administrative heads of agriculture and participants attending the Association of Leadership Educators Annual Conference, Moore and Rudd (2003) reported that both groups were looking for a list of comparable competencies needed by Extension leaders. The findings of the study also showed the importance of involving

various groups and levels of the organization for the identification and development of core competencies required for Extension leadership. This finding supports the notion that development of core competencies need the involvement of various groups to identify and validate the competencies that are important to achieve professional excellence in Extension.

Emotional intelligence competency is a relatively new concept in Extension. In a study of Extension leaders' self-evaluation of six leadership skills, Moore and Rudd (2003) reported that Extension leaders perceived emotional intelligence skills to be the most important ones. These skills included competencies such as time management and the balancing of personal lives and careers. This study revealed that Extension leaders perceived technical skills to be the least important. This finding is consistent with another study (Moore & Rudd, 2004) that concluded the higher the hierarchy of Extension leadership the lower the quantity of technical skills required for those positions.

Finally, Gregg and Irani (2004) addressed a unique competency construct unspecified in any of the previous studies that examined the use of information technology by Extension agents in Florida. They stated that "the ability of Extension agents to use computers, software, and associated peripheral devices for the purpose of serving clientele, research, and in support of Extension's administrative infrastructure, has become an essential job-related skill" (para 2). Information technology has and will continue to change the way Extension agents carry out their jobs and deliver their programs, and it will facilitate the dissemination of information.

Barriers and Rewards for Competencies

Rewards and barriers govern the rate of competency acquisition among professionals. The reward focus is moving toward personal satisfaction, colleague recognition, and professional respect (Shinn & Smith, 1999). Organizational commitment is needed to identify and acknowledge the competencies that will meet the needs of future clients and reduce the barriers that discourage acquisition of competencies.

A panel of 13 experts in the field of Extension volunteer administration identified 12 barriers to acquiring competencies for volunteer administrators (Boyd, 2003). The barriers identified were mostly linked to organizational cultures rather than volunteer administrators' lack of knowledge in volunteer administration. The importance of volunteers' contributions to achieving the organization's mission must be valued. As a volunteer-driven organization, it was recommended that Extension, especially in the area of 4-H and youth development, seek employees with the required volunteer administrator competencies or make available resources and opportunities to acquire needed competencies for those administrators. The study recommended that organizations should make the acquiring of these competencies a part of the employee's accomplishment.

A Delphi technique study involving agriculture and natural resource (ANR) agents and family and consumer science (FCS) agents in Texas discovered five major categories of barriers that discouraged ANR and FCS county Extension agents from acquiring core competencies (Shinn & Smith, 1999). The barriers were time pressure and increased workloads, personal costs related to attainment, increasing scopes of the job, lack of local funds, and lack of monetary reward. Organizations need to offer incentives and rewards to

employees that are vigorously involved in professional development. Even though employees are responsible for their own professional development, the organizational system must provide support to them for learning to take place in their job (Liles & Mustian, 2004). The barriers preventing Extension agents in Florida from developing cross-cultural competencies were financial costs, limited time, and job commitments (Harder et al., 2010).

A joint study between a human capital consultant and the University of Georgia (UGA) on staff classification and pay plan review recommended that UGA develop a new staff classification and pay plan linked to an effective, competency-based performance management, and career development system (Deloitte & Touche, 2001). Shinn and Smith (1999) found in a Delphi study that there were six rewards that encouraged ANR and FCS county Extension agents to acquire core competencies. The rewards were personal satisfaction, professional respect from clientele, peer recognition, salary and promotion based on performance, program flexibility based on professional judgment, and financial compensation.

Based on the author's personal communication with Dr. Haas, Director of POD, NCCE (November 3, 2009), there is a need for the integration of NCCE's current Extension competencies with the staff reward system. That integration will enhance the acquisition of competencies by Extension agents in the future.

Professional Development

Defining and pursuing competencies remain a major challenge for most professions, including Extension. It is vital for organizations to establish a continuous review process to

examine the competencies needed by workers in order to be successful, to keep pace with changes and development in communication technologies, education, and socio-economics. Organizations recognize that human capital is the most valuable part of their companies and the foundation for their expansion. According to Gayeski et al. (2007), the 21st-Century knowledge economy forces organizations to perform competency analyses and develop training programs based on future competency needs. Johnson & Wales University in Providence, Rhode Island, has developed a software tool to meet the increasing demand and pressure for a faster and comprehensive competency analysis (Gayeski et al., 2007).

According to Cooper and Graham (2001), the competencies identified as important for the success of Extension professionals should be included in in-service trainings. Combining organizational learning and competency development, followed by blending them into the organizations' culture, was found to be valuable (Murray & Donegan, 2003). Such trainings should be a balance between practical skills and subject matter knowledge as Extension professionals need not only be educated about job-related subject matters but also need to prepare to meet future challenges of the profession (Gibson & Hillison, 1994). That finding was supported by Jayaratne, Martin and DeWitt (2001) who also found that it was important for Extension agents' educational programs to include the teaching and learning process so they could be effective in their tasks. Cyr (2008) also found that Extension staff increased their long-term use of facilitation competencies by participating in training.

Trainings facilitate organizations to develop and increase competencies of their staff. An evaluation study of County Extension Director leadership training program reported that it made a significant impact on essential leadership competencies of participants (Jayaratne,

Owen, & Jones, 2010). The continuous involvement of individuals in the organization during the development of core competencies increased ownership of the competencies (Liles & Mustian, 2004). It raised their interest in, and commitment to, acquiring competencies needed for the job effectiveness.

Boyd (2003) suggested that Extension needs to increase the time and resources devoted to helping its employees acquire core competencies and to make competencies a part of their performance expectations to ensure attainment of those. Continuous maintenance of competencies should be the concern of every individual in the organization and its consumers. The profession must evaluate its existing competency maintenance system and develop a professional development technique that will meet individuals' learning styles and utilize existing technologies (Lysaght & Altschuld, 2000).

Organizations can use its resources to develop or refine their competencies and create professional development programs for Extension agents. According to Moore and Rudd (2005), leadership training programs for Extension leaders should be based on the skills they themselves perceive to be the most important.

For a professional development and training program to be effective, it is important to have baseline data before conducting training (Gibson, 2003). This data will provide information for both the content and level of competencies to be taught to the trainers and a framework for curriculum development. A well defined and understood competency statement alone will not advise employees to evaluate and increase their performance, so it is important also to define the task that is linked to the competency statement and how to achieve it (Langdon & Whiteside, 2004).

Professional development on cross-cultural competencies is required for Extension agents to help their clients to recognize the demands of global economy on their activities (Ludwig, 2002). Ludwig (2002) also suggested that taking part in the Association for International Agricultural and Extension Education was another approach to learn more about international Extension. This finding highlights the importance of taking part in Extension professional associations for competency development.

Summary

Competency has been widely used in many professions to serve clients effectively, but a globally accepted definition of competency is still much debated. The general definition, however, always includes skills, knowledge, and attributes. It is important for organizations to continue evaluating existing competencies to avoid redundancy and developing new competencies to meet the challenges of the 21st century. Competency, in terms of managerial effectiveness, contributes greatly to the relevancy and future survival of organizations. Employees should be able to translate core competencies into practical applications. The core competencies that have been developed by the Blue Ribbon Commission for Extension agents in the North Carolina Cooperative Extension need to be evaluated and revised to meet today's needs and remain relevant. Establishing Extension agents' current levels of competency will help Extension administrators effectively plan training programs. The barriers that hinder competency acquisition need to be identified for taking remedial measures.

CHAPTER III

METHODOLOGY

The review of literature revealed the importance of the identification and development of competencies needed for Extension agents to be successful in the 21st century. The purpose of this study was to determine the current level of North Carolina Extension agents' competencies and new competencies needed by the agent. This chapter discusses the methodology and processes that were used in the study. This was a descriptive survey research study.

Population and Sampling

The study population consisted of Extension agents employed by the North Carolina Cooperative Extension (NCCE). The NCCE consists of 100 counties and the Cherokee Indian Reservation. This study included Extension agents in all program areas of the NCCE: agriculture, horticulture, forestry and natural resources, family and consumer sciences, 4-H and youth development, and community development. The sampling frame for the study was the NCCE 2009 Extension agent directory maintained by the NCCE director's offices. The total number of Extension agents in the sampling frame was 332. An online sample size calculator based on Krejcie and Morgan's guidelines (1970) was used to calculate the sample size. The required sample size based on the sampling frame of 332 was 178 for achieving a 95% level of confidence with a 5% margin of error for this population. However, literature indicates that Extension agents' response rate to surveys can be as low as 65.2% (Edwards, McLucas, Briers & Rohs, 2004). The pilot study conducted with 20 randomly selected

Extension agents in NCCE received a 50% response rate with one e-mail. Based on this information, it was assumed that with two or more e-mails the study could be able to achieve a 65% response rate with Extension agents. Based on this assumption, the sample size was recalculated adjusting for a 65% response rate. The adjusted sample was 274 agents. The simple random sampling procedure was followed for drawing the study sample.

Instrumentation

The survey instrument was developed to determine the current situation of the North Carolina Extension agents' competency levels and the new competencies they need to develop to be successful in the NCCE. The survey instrument contained close-ended and open-ended questions. The instrument consisted of three major sections: scale for recording competency levels and training needs, scale for recording barriers that limited the ability to develop desired competencies, and questions for recording demographic information. The competency recording scale consisted of 42 items related to the competencies defined by NCCE in 1999 and a five-point Likert scale. The Likert scale ranged from 1 being "*Very Low*" to 5 being "*Very High*". The 42 items in the scale were divided into seven competency categories. Those seven competency categories were knowledge of the organization, technical/subject matter expertise, programming, professionalism, communications, human relations, and leadership. The competency level of each category was measured by using a five-point Likert scale and six items related to the conceptual theme of that category. The total score of each competency category ranges from six being the lowest to 30 being the highest on this scale. The overall Extension competency score ranges from 42 being the

lowest competency level to 210 being the highest competency level on this 42 item scale. In addition to the listed 42 competencies, respondents were asked to list new competencies they felt important to be successful in NCCE. Barriers were recorded on a four-point Likert scale ranging from 1 being “*Not at All*” to 4 being “*Great Extent*”. The demographic section gathered information on age, gender, current positions in the NCCE, level of education, years of experience in Extension Service, major areas of program responsibility, and membership in any Extension Service-related professional associations. This questionnaire was developed as an online survey by using the survey builder program of the College of Agriculture and Life Science, North Carolina State University. The participants were sent the survey link to access the online questionnaire.

Validity and Reliability

The content validity was established by using a panel of experts in the Extension education field who have worked with Extension agents in NCCE. The panel of experts was given a copy of the instrument and was asked to comment on its contents. Experts’ comments and suggestions were incorporated into the final instrument.

The final instrument was submitted to the NCSU Institutional Review Board (IRB) and received approval for the study. The final instrument was also submitted to the executive council of NCCE for approval to conduct this study with Extension agents.

The instrument was then pilot tested with 20 Extension agents in NCCE. The purpose of pilot test was to identify face validity and determine the reliability of the competency recording scale. The pilot study participants were given the link to the instrument, and those

Extension agents were excluded from the final study sample. The response rate was 50% with one e-mail request. Changes were made according to the pilot study participants' suggestions to ensure that the question are clear and meaningful to them.

Data from the pilot test were analyzed to assess the reliability of the instrument using the Statistical Package for the Social Sciences 17 (SPSS 17). Needed changes were made to establish the desired level of reliability of the survey instrument. It was found the Cronbach alpha was .94 for the 42-item Extension competency recording scale.

Data Collection

In the summer of 2010, data were collected using an online survey. Dr. Joe Zublena, Interim Director of NCCES and Director of County Operations, informed Extension agents to support this study by sending an e-mail on July 7, 2010. A few days after this message, an e-mail was sent to the Extension agents in the selected sample explaining the purpose of the study, a consent form, and giving them the survey link. They were given two weeks to respond. After two weeks, a follow-up e-mail was sent with the survey link asking agents to respond to the survey within a week. Based on the IRB's anonymity requirement, the respondents and non-respondents were not identified. Therefore, the second follow-up e-mail was sent to all the participants in the sample after the deadline for responding. The survey received 180 responses comprising a 66% response rate.

Lindner, Murphy, and Briers (2001) suggested that procedures for handling nonresponse issues need to be implemented when the response rate is less than 85%. A comparison of early to late respondents was used in this study to address nonresponse error.

According to Lindner et al. (2001), operationally late respondents are those who respond to a survey during the last set of successive follow-up stimuli. Their recommended minimum number of late respondents is 30. Early and late respondents were compared for major variables using independent t-test, and found that there was no significant difference between early and late respondents. Therefore, the findings of this study can be generalized to the target population.

Data Analysis

The data were downloaded into a Microsoft Excel file on the researcher's personal computer and were analyzed using the SPSS 17 program. Descriptive statistics were used to summarize findings. A multiple regression analysis was used to determine whether the current levels of Extension agents' competency varies with their demographic characteristics. Descriptive statistics were used to describe the demographic characteristics of the respondents.

The data obtained from the open-ended questions were summarized by using content analysis.

CHAPTER IV

FINDINGS

The purpose of this research was to determine the current levels of North Carolina Cooperative Extension agents' competencies and the new competencies they need to be successful in the NCCE. More specifically the study aims to achieve the following objectives:

1. Determine the current levels of competency for Extension agents in the NCCE.
2. Determine whether the competency levels vary with the demographic characteristics of Extension agents.
3. Identify needed new competencies of Extension agents in the NCCE.
4. Determine the barriers that hinder Extension agents from acquiring needed competencies.
5. Identify training needs of Extension agents for building the desired competencies.

Demographics

The majority (61%) of the respondents were female. The age of the respondents ranged from 23 to 64 years with the mean of 42.1 years. Of the respondents, 78% were in the 30 to 59 years age category. Only 5.4% of the respondents were older than 59 years. Table 1 provides a summary of the distribution of respondents by gender, age, and level of education. The respondents were highly educated with the majority (61.8%) of the respondents having master's degrees. All the respondents had bachelor's degrees, and only 3.4% of the respondents had doctoral degrees.

Table 1

Distribution of Respondents by Gender, Age and Level of Education

Characteristic	<i>n</i>	%
<hr/>		
Gender		
Male	69	39.0
Female	108	61.0
Age group (years)		
23 – 29	28	16.7
30 – 39	47	28.0
40 – 49	37	22.0
50 – 59	47	28.0
Over 59	9	5.3
Level of Education		
Bachelor's degree	62	34.8
Master's degree	110	61.8
Doctoral degree	6	3.4

The majority (43.8%) of the respondents were at the Extension Agent rank of their position while 34.3% of the respondents were at the Assistant Extension Agent rank as summarized in Table 2. Of the respondents, 33.9% were Agriculture agents, 23.2% were Family and Consumer Sciences agents, 18.6% were 4-H and Youth Development agents and 17.8% were Horticulture agents. Forestry and Natural Resource, and Community Development agents made up a small percentage of the respondents (Table 2).

Most of the respondents (88.3%) were members of Extension professional associations, and only 11.7% of the respondents were not a member of any Extension professional association as summarized in Table 2.

Table 2

Distribution of Respondents by Job Position, Major Area of Responsibility, and Whether They are Members of Extension Professional Associations

Characteristic	<i>n</i>	%
Job Position		
Extension Agent	78	43.8
Associate Agent	35	19.7
Assistant Agent	61	34.3
Other	4	2.2
Area of Responsibility		
Agriculture	60	33.9
Horticulture	32	18.1
Forestry and Natural Resources	2	1.1
Family and Consumer Sciences	41	23.2
4-H and Youth Development	33	18.6
Community Development	2	1.1
Other	7	4.0
Member of Extension Professional Association		
No	21	11.7
Yes	158	88.3

The years of experience working as an Extension professional by the respondents varied from less than a year to a maximum of 35 years, with an average working experience of 12.2 years. The data indicate the majority (53.6%) of the respondents had less than 11 years of work experience in Extension. Nearly, one third of the respondents had five years or less experience in Extension. Only 10.5% of the respondents had 25 years or more Extension experience as summarized in Table 3.

Table 3

Distribution of Respondents by Years of Experience in Extension

Years of Experience	<i>n</i>	%
5 years and below	51	29.7
6 – 10	41	23.9
11 – 15	26	15.2
16 – 20	11	6.6
21 – 25	24	14.0
26 – 30	15	8.7
More than 30	3	1.8

Findings Related to Objective 1:

Extension Agents' Current Level of Competency

The seven core competencies identified by the Blue Ribbon Commission for all Extension professionals in NCCE are *Knowledge of the Organization, Technical/Subject Matter Expertise, Programming, Professionalism, Communications, Human Relations, and Leadership*. Extension agents' current levels of proficiency in these seven competency areas were determined in this study. Six unique sub-competencies for each of the seven competency areas were used to determine Extension agents' current level of proficiency. The competency levels were recorded on a five point Likert scale ranging from 1 being “*Very Low*” to 5 being “*Very High*”. The mean score and standard deviation on this scale for each of the 42 sub-competencies are listed in Table 4. The mean values close to five indicate that Extension agents are having high level of proficiency in those sub-competencies. The mean scores of all 42 sub-competencies in the scale ranged from 3.39 to 4.33.

The five highest level of sub-competencies were *applying relevant subject matter to real life problems* (M=4.33), *explaining relevant subject matter* (M=4.29), *identification of research-based information* (M=4.24), *developing a program on the subject matter* (M=4.18), and *identification of appropriate delivery strategies* (M=4.15). Meanwhile, the five lowest level of sub-competencies were *managing stress* (M=3.39), *evaluation of extension programs* (M=3.42), *development of a marketing plan for programs* (M=3.48), *managing conflicts* (M=3.53), and *understanding Extension organizational procedures* (M=3.55).

Table 4

Respondents' Current Level of Sub Competencies

Competency	<i>M</i>	<i>SD</i>
Knowledge of the Organization		
Understand vision and mission of CES	4.08	.72
Understand organizational structure of CES	4.02	.71
Identify partners and stakeholders of CES	3.87	.81
Identify policies specific to your area(s) of responsibility	3.86	.91
Understand the policies of CES	3.57	.78
Understand Extension organizational procedures	3.55	.74
Technical/Subject Matter Expertise		
Apply relevant subject matter to real life problems	4.33	.65
Explain relevant subject matter	4.29	.67
Identify research-based information	4.24	.70
Develop a program on the subject matter	4.18	.73
Identify appropriate delivery strategies	4.15	.73
Demonstrate technology skills pertinent to subject matter	4.06	.73
Programming		
Utilize effective teaching methods	4.14	.70
Understand basic components of educational programming	4.07	.74
Acquire teaching resources for your subject area	4.05	.79
Prepare an annual plan of work for area of responsibility	3.78	.82
Recruit and manage volunteers	3.60	.86
Evaluate extension program	3.42	.75
Professionalism		
Identify opportunities for professional development	3.93	.74
Participate in Extension professional associations	3.84	.88
Manage multiple tasks	3.82	.77
Manage time effectively	3.64	.82
Interpret research findings	3.57	.82
Manage stress	3.39	.88
Communications		
Make clear and convincing oral presentations	4.02	.75
Develop good listening skills	3.98	.71
Fostering an environment for open communication	3.93	.68
Write effectively for target audience	3.93	.78
Use latest communications technology	3.56	.88
Develop a marketing plan for programs	3.48	.86

Table 4, continued

Human Relations		
Develop trusting professional relationships	4.04	.73
Provide consultation to clientele groups	4.01	.72
Establish relationship with subject matter specialists and peers	3.98	.75
Use professional network to enhance programs	3.92	.74
Understand diversity in extension	3.84	.82
Manage conflicts	3.53	.78
Leadership		
Apply critical thinking skills	3.91	.70
Understand relationship of personal goals to job performance	3.82	.81
Understand leadership principles	3.82	.78
Understand workgroup dynamics	3.66	.76
Nurture leadership skills in others	3.59	.85
Develop a plan for building personal leadership skills	3.58	.75
<hr/>		
Overall	161.77	20.74

Note. Scale: 1 = *Very Low*; 2 = *Low*; 3 = *Moderate*; 4 = *High*; 5 = *Very High*

Core Competency Levels

The scores for each of the *sub-competencies* were aggregated to get the score of each of the seven core competencies. Each of the core competency level was identified by using related six unique *sub-competencies* and a five point Likert scale. The Likert scale ranged from 1 being “*Very Low*” to 5 being “*Very High*”. The value of core competency score on this scale can range from six being very low competency to thirty being very high competency. The mean values close to 30 indicate high level of competencies. The highest mean value (M=25.2) was reported for the “*Technical/Subject Matter Expertise*” competency category followed by (M=23.3) “*Human Relations*” competency category. The lowest mean value (M=22.2) was reported for the “*Professionalism*” competency category as summarized in Table 5.

Table 5

Respondents' Current Level of Major Competencies

Competency	<i>M</i>	<i>SD</i>
Technical/Subject Matter Expertise	25.2	3.34
Human Relations	23.3	3.44
Programming	23.0	3.57
Knowledge of the Organization	22.9	3.74
Communications	22.9	3.36
Leadership	22.4	3.85
Professionalism	22.2	3.41

Note. Scale: 6 = *Very Low*; 12 = *Low*; 18 = *Moderate*; 24 = *High*; 30 = *Very High*

Overall Competency Levels

The scores of all 42 sub-competencies were aggregated to get the overall competency level of Extension agents. The overall competency score on this scale can range from 42 being the lowest to 210 being the highest. The overall competency score ranged from 94 to 210 with the mean value of 161.77 on this scale (Table 4). The distribution of respondents' overall competency scores in quartiles is summarized in Table 6. The respondents were distributed between 2nd quartile and 4th quartile. However, the majority (59.3%) of the respondents were in the 3rd quartile (127 to 168).

Table 6

Distribution of Overall Competency Score

Range of Score	<i>n</i>	%
1 st quartile (42 to 84)	0	0
2 nd quartile (85 to 126)	10	6.0
3 rd quartile (127 to 168)	99	59.3
4 th quartile (169 to 210)	58	34.7

Findings Related to Objective 2:

Relationship between Competency Levels and Demographic Characteristics

The research question sought to determine if there is a relationship between the competency level and the demographic characteristics of the respondents. A multiple regression analysis was used to determine whether there is a relationship between Extension agents' overall competency levels and their demographic characteristics. The overall competency was the dependent or criterion variable while demographic characteristics were used as independent or predictor variables in regression analysis. The demographic variables used in this regression analysis include gender, age, experience, job rank, content area and whether Extension agents are participating in professional associations.

The linear combination of the demographic variables included in the regression analysis was significantly related to the competency level of the respondents (Table 7). The

sample multiple correlation coefficient, R was .54. The coefficient of determination (R^2) of .30 indicates that 30% of the variability of competency level (criterion variable) can be predicted from the demographic variables (predictor variables) included in the linear regression function.

Table 7

Analysis of Variance for the Linear Regression Model

Model	Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>
Regression	18734.24	7	2676.32	8.30	.000
Residual	44844.42	139	322.62		
Total	63578.66	146			

Note. Predictor variables were gender, age, experience, job rank, content area and whether they are participating in professional associations.

The beta (β) value shows the strength of the correlation between the predictor variable and the criterion variable. The magnitude of the beta value indicates the strength of the relationship between the criterion variable and the predictor variable. The sign of the beta value indicates whether the relationship between the criterion and the predictor variable is positive or negative. Of the demographic variables in the regression function, years of Extension experience and age were the only variables that had significant beta values as summarized in Table 8. The years of Extension experience has the highest beta value ($\beta=.24$) followed by age ($\beta=.21$). Respondents' years of Extension experience and age were

positively correlated with their overall competency level. Even after partial out the effects of other variables in the regression function, years of Extension experience and age showed a significant positive correlation with the criterion variable.

Table 8

The Beta Values and Partial Correlations of the Predictors with the Overall Competency Level

Predictor Variables	β	Partial	p -value
Age	.21	.17	.04*
Gender	-.00	-.01	.94
Job title	-.03	-.03	.73
Highest education level	.13	.13	.12
Years of experience in Extension	.24	.17	.04*
Major area of responsibility	.14	.15	.08
Member of Extension professional association	.03	.04	.64

Note. * $p < .05$

Findings Related to Objective 3:

Needed New Competencies for Extension Agents

The respondents in this study were asked to list other competencies they considered as very important to be an effective Extension agent in the current context. Of the 180 respondents, 77 respondents listed additional new competencies.

These responses were analyzed for the content and grouped into identifiable categories based on the literatures. A total of four additional competencies were identified that could be added to the list of existing competencies as summarized in Table 9.

Approximately 34.7% of the respondents identified *emotional intelligence* as the most essential competency in the current context. This would include *motivation*, *self-confidence*, and *empathy*. The respondents perceived *interpersonal skills*, which includes *social skills*, as another important additional competency for extension agents. Other additional competencies identified by the respondents were *flexibility or adaptability* and *managing resources*.

Several new competencies identified by the respondents were expansion of existing core-competency for Extension Agents in NCCE, especially under the *programming*, *technical/subject matters*, and *professionalism* competencies. Several respondents indicated that program evaluation and understanding how to use the Extension Reporting System (ERS) as important competencies in order to ensure accountability of Extension programming. The respondents also pointed out the need for Extension agents to have research knowledge competencies to understand the research process, interpret and apply recommendations to real life problems.

Table 9

Additional Competencies Considered Important for Extension Agents

Competencies	n	%
Emotional intelligence	17	34.7
Interpersonal skills	12	24.5
Flexibility/adaptability	11	22.4
Managing resources	9	18.4

Findings Related to Objective 4:**The Barriers for Acquiring Competencies**

The barriers for acquiring competencies were identified by listing commonly cited barriers and asking respondents to rate them on a four point Likert scale ranging from one being “*Not at All*” to four being “*Great Extent*”. In addition to the barriers in the scale, respondents were asked to list any other significant barriers. Means of the identified barriers are summarized in Table 10. The mean values close to four indicate those are considerable barriers. Increased work load (M=3.24), lack of time (M=3.12) and lack of funding (M=3.02) were identified as the most important barriers for acquiring competencies. Lack of personal motivation (M=1.67) and lack of credible information (M=1.77) were the least constraining barriers.

Only 40 respondents listed additional barriers that limit their ability to acquire desired competencies. The other barriers the respondents listed were inadequate compensation for the most outstanding workers in the organization, unfair evaluation system, incompetent management and inability of administration to solve problems, lack of supervision or managerial coaching, lack of quality teaching materials to meet the client needs, training contents, inconsistency of the administration about required skills, increased pressure with too many expectations, family commitment, and the training focused only on new agents.

A respondent mentioned, *“I feel that I have acquired most, if not all of these competencies and I think that I do an excellent job. However, there is no motivation for me to continue. I do not see any job promotion, recognition, or pay increase in the future. Really, not even any verbal praise”*. A few respondents indicated that lack of communication between new and experienced agents has become a barrier for new agents to acquire desired competencies.

Table 10

Respondents Identified Barriers to Acquire Desired Competencies

Barriers	<i>M</i>	<i>SD</i>
Increase workload	3.24	.73
Lack of time	3.12	.78
Lack of funding	3.02	.92
Increase in personal costs related to acquire competency	2.88	.95
Lack of incentives for acquiring competencies	2.63	1.02
Lack of training opportunities	2.46	.97
Ineffective training delivery methods	2.28	.92
Lack of organizational support	2.16	.90
Lack of educational resources	2.04	.92
Lack of credible information	1.77	.87
Lack of personal motivation	1.67	.78

Note. 1 = *Not at All*; 2 = *A little extent*; 3 = *Some extent*; 4 = *Great extent*

Findings Related to Objective 5:

Training Needs for Building Desired Competencies

Respondents were asked to rate their current level of proficiency for 42 sub-competencies related to six competency categories on a five point Likert scale ranging from 1 being “*Very Low*” to 5 being “*Very High*”. Means of the responses ranged from 3.39 to 4.33 as summarized in Table 11. The lower the mean value of each of the 42 sub-competencies it is greater the need of training for building proficiency in that sub competency area.

Of the 42 sub-competencies in the scale, 28 (67%) items have the mean score less than four indicating these are the competency areas where training needs exist. The lowest 10 mean values were reported for *Managing stress* (3.39), *Evaluation of Extension programs*, *Development of a marketing plan for programs*, *Managing conflicts*, *Understanding Extension organizational procedures*, *Using latest communications technology*, *Interpretation of research findings*, *Understanding the policies of CES* and *Developing a plan for building personal leadership skills* as summarized in Table 11. Only 33% of the sub-competencies have the mean score of more than 4.

Table 11

Respondents' Rating of Competency Areas for Training Needs

Competency Area	<i>M</i>	<i>SD</i>
Managing stress	3.39	.88
Evaluation of Extension programs	3.42	.75
Development of a marketing plan for programs	3.48	.86
Managing conflicts	3.53	.78
Understanding Extension organizational procedures	3.55	.74
Using latest communications technology	3.56	.88
Interpretation of research findings	3.57	.82
Understanding the policies of CES	3.57	.78
Developing a plan for building personal leadership skills	3.58	.75
Nurturing leadership skills in others	3.59	.85
Recruiting and managing volunteers	3.60	.86
Managing time effectively	3.64	.82
Understanding workgroup dynamics	3.66	.76
Preparing an annual plan of work for area of responsibility	3.77	.82
Understanding leadership principles	3.82	.78
Managing multiple tasks	3.82	.77
Understanding relationship of personal goals to job performance	3.82	.81
Understanding diversity in Extension	3.84	.82
Participating in Extension professional associations	3.84	.88
Identification policies specific to your area(s) of responsibility	3.86	.91
Identification of partners and stakeholders of CES	3.87	.81
Applying critical thinking skills	3.91	.70
Using professional network to enhance programs	3.92	.74
Identification of opportunities for professional development	3.93	.74
Writing effectively for target audience	3.93	.78
Fostering an environment for open communication	3.93	.68
Establishing relationship with subject matter specialists and peers	3.98	.75
Developing good listening skills	3.98	.71
Providing consultation to clientele groups	4.01	.72
Understanding organizational structure of CES	4.02	.71
Making clear and convincing oral presentations	4.02	.75
Developing trusting professional relationships	4.04	.73
Acquiring teaching resources for your subject area	4.05	.79
Demonstrating technology skills pertinent to subject matter	4.06	.74
Understanding basic components of educational programming	4.07	.74
Understanding vision and mission of CES	4.08	.72

Table 11, continued

Utilizing effective teaching methods	4.14	.70
Identification of appropriate delivery strategies	4.15	.73
Developing a program on the subject matter	4.18	.73
Identification of research-based information	4.24	.70
Explaining relevant subject matter	4.29	.67
Applying relevant subject matter to real life problems	4.33	.65

Note. Scale: 1 = *Very Low*; 2 = *Low*; 3 = *Moderate*; 4 = *High*; 5 = *Very High*

The respondents were asked the best occasion to acquire these competencies and the responses have been summarized in Table 12. A majority (62.8%) of the respondents considered in-service training as the most appropriate occasion to acquire important Extension competencies.

Table 12

Respondents' Most Preferred Occasion to Acquire Extension Competencies

Occasion to acquire competency	<i>n</i>	%
In-service training	113	62.8
New Extension agents' training	39	21.7
Before joining with Cooperative Extension	28	15.6

Effective Educational Delivery Methods

The respondents were asked to identify the most effective educational delivery methods for them to acquire desired Extension competencies and their responses have been summarized in Table 13. The majority (74.3%) of the respondents considered the small group, face-to-face training workshops as the most effective educational delivery method for them to acquire desired competencies. Other methods such as mentoring, hands-on, job shadowing and the combination of one or more of the listed methods were identified as the second most effective educational delivery methods. Large group, face-to face-training workshops was identified as the third most effective educational delivery method. Educational delivery method using printed learning materials was considered the least effective method (1.7%).

Table 13

The Most Effective Educational Delivery Method to Develop Competencies

Delivery method	<i>n</i>	%
Small group, face-to face-training workshops	133	74.3
Large group, face-to face-training workshops	9	5.0
Online training programs	6	3.4
Electronic learning materials	4	2.2
Printed learning materials	3	1.7
Others		
Combination of two or more methods	10	5.6
Mentoring	5	2.8
Hands-on	5	2.8
Job shadowing	4	2.2

Summary

Means of the respondents' proficiency levels for 42 sub competencies ranged from 3.39 to 4.33 on a five point Likert scale (1 = *Very Low*, 5 = *Very High*). Means of 28 sub competencies were less than 3.9 indicating those as the needed areas of in-service training.

The means of the respondents' proficiency levels for seven major competencies ranged from 22.2 to 25.2 on an aggregated scale of 6 being *Very Low* and 30 being *Very High*. The highest mean value (M=25.2) was reported for the competency in "*technical subject matter*" while the lowest competency was reported for the competency in "*professionalism*" (M=22.2). The respondents identified "lack of time" as the main barrier for acquiring desired competency.

Respondents identified stress management as the most important training need. It may help them to increase their performance as the workload is increased due to budget constraint, and staffing shortages. The respondents believed that the best time to acquire lacking competencies is during the in-service training. The respondents still preferred a face-to-face training approach for acquiring needed competencies even though communication technology is widely used in Extension. Some respondents mentioned that mentoring is another effective approach for new agents to acquire practical knowledge or skills compared to workshops. Increased workload and lack of time were identified as the most constraining barriers for acquiring competencies.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

This chapter summarizes conclusions drawn from the findings of the study. The chapter also presents implications, recommendations and suggestions for further research.

Summary of the Study

The Cooperative Extension Service was established under the Smith-Lever Act of 1914 with a mission to spread useful and practical information in agriculture, home economics, and related subjects to improve people's lives. The Extension programming environment has changed over the last decade due to urbanization and changes in socio-economic structure, clientele and technology. This situation can create a gap between what was defined as the desired competency standards in 1999 and the desired competencies in the present context. The purpose of this research was to determine the North Carolina Cooperative Extension (NCCE) agents' current level of competencies and desired new competencies to be effective in their jobs.

The study population consisted of Extension agents employed by the NCCE. The sampling frame for the study was the NCCE 2009 Extension agent directory maintained by the NCCE director's offices. The simple random sampling procedure was followed for drawing the study sample of 274 Extension agents. The questionnaire was developed as an online survey by using the survey builder program of the College of Agriculture and Life Science, North Carolina State University. The participants were sent the survey link to access the online questionnaire. The instrument was then pilot tested with 20 Extension agents in

NCCE. The Statistical Package for the Social Sciences 17 (SPSS 17) program was used to analyze the pilot test data for assessing the reliability of the instrument. It was found that the Cronbach alpha was .94 for the 42-item Extension competency recording scale. The survey received 180 responses comprising a 66% response rate. With the anticipated response rate of 65%, 274 subjects were contacted to get the required sample size of 178 for analyzing data to achieve a 95% level of confidence with a 5% margin of error for this population of 332 Extension agents.

This study compared early to late respondents to address the non response error (Lindner et al., 2001). There was no significant difference between early and late respondents for demographic variables and the overall competency variable indicating that findings of this study can be generalized for the study population.

Discussion and Conclusions

The majority (61%) of the Extension agents in NCES were females. The age of the Extension agents ranged from 23 to 64 years with the mean value of 42.1 years. The majority (66.7%) of the Extension agents were between 20 and 49 years of age indicating that Extension agents were a fairly young group of professionals. Ensle (2005) suggested that Extension administrators need to understand how the young agents' values will affect the Extension organization in the future, as these groups are likely to give up opportunities for professional developments in exchange for more time with family and friends. Ezell (2003) recommended that Extension organizations should give more attention to developing new

employee orientation that focuses on specific job expectations before assigning them into the actual work environment with all its demands, pressures, and expectations.

Of the Extension sampled agents, 61.8% had a master's degree while 34.4% had only a bachelor's degree. Only 3.4% of the Extension agents had a doctoral degree. The review of the distribution of academic qualifications indicates that NCCE has employed a well educated group of Extension agents. According to Burke (2002), the knowledge and skills of core competencies among 4-H agents increase as their level of education increases.

About one third (33.9%) of the Extension agents in this study were agriculture agents followed by family and consumer sciences agents (23.2%), 4-H agents (18.6%) and horticulture agents (18.1%) respectively. Forestry and natural resources agents and community development agents made up the remainder (1.1%) of the Extension agents in this study. The majority (88.3%) of the Extension agents in NCCE were members of a professional association indicating their commitment to developing professional capacity. According to Strong & Harder (2009), Extension agents' participation in a professional association can assist them in learning about the organization's promotion procedure, and recognitions.

The findings of this study indicate that Extension agents in NCCE had a higher level of proficiencies related to the NCCE defined competencies in 1999. The study also found that there were some additional competencies needed for Extension agents to be successful in the present context. The rest of the discussion focuses on these findings.

Objective One

Extension Agents' Current Level of Competency

North Carolina Extension Agents' current level of proficiency in 42 sub-competencies ranged from 3.39 to 4.29 on a five point Likert scale (1 = *Very Low*, 5 = *Very High*) indicating that they had a “*moderate*” to “*high*” level of competency in those areas. The sub-competency that Extension agents were most confident in was their ability to apply relevant subject matter to real life problems. This implies that Extension agents were better prepared for serving the technical information needs of clients. The sub-competency that Extension agents were least confident in was their ability to manage stress. This finding emphasizes the need for additional training in helping Extension agents to manage stresses while balancing their job and personal life. In a study, Ezell (2003) found a positive relation between agents' job stress and their intention to leave Extension.

Extension agents' proficiency levels in seven major competencies ranged from 22.2 to 25.2 on an aggregated scale (6 = *Lowest*, 30 = *Highest*) indicating that North Carolina Extension agents had moderate to high level of proficiency in all seven major competency areas. The highest mean was reported for “*technical subject matter*” competency. The lowest mean was reported for “*professionalism*” competency. The overall competency score was obtained by aggregating the responses for each of the 42 *sub-competencies*. The overall competency score on this aggregated scale can range from 42 being the lowest to 210 being the highest. The respondents' overall mean score was 161.8 on this scale. The overall competency scores of 94% of the respondents were in the upper two quartiles indicating most of the Extension agents had moderate to high level of competency. Only 6% of the

respondents were in the second lowest quartile competency category. No one was in the lowest quartile competency category indicating that everyone had some level of Extension competency.

Objective Two:

Relationship between Competency Levels and Demographic Characteristics

The regression analysis confirmed that Extension agents' overall competency level had significant positive correlations with their years of Extension experience and age, indicating older agents and more experienced agents had a higher level of competency. However, Extension agents' competency levels did not vary with other demographic variables such as gender, level of education, whether they were affiliated with any professional association, job position and the area of job responsibility. Similar to these findings, Burke (2002) reported that 4-H agents' level of knowledge, importance and use of competencies did not vary with their gender, education, ethnic background, and job responsibilities, except for age and years of experience. Maddy et al. (2002) suggested that information in core competencies needs to be included in new staff orientation and staff development professional plans, to ensure effective utilization of the core competencies. The acquisition of competencies should be considered as an important part of the worker's performance (Boyd, 2003). A long term professional development plan can be prepared by helping Extension professionals to conduct self evaluation in the early years of tenureship to ensure development of the desired sub competencies (Owen, 2004).

Objective Three:

Needed New Competencies for Extension Agents

The new competencies that were identified by the respondents were *emotional intelligence (EI), interpersonal skills, flexibility/adaptability, and managing resources*. Liles and Mustian (2004) recommended involvement of employees in every step of development, identification, and validation of their competency in the modeling process. It would increase ‘ownership’ of the competency model, which would encourage the desire to develop these competencies. The new competencies need to be incorporated into the existing NCCE’s competency model as they were perceived important by the agents to be successful in the current context.

Most of the agents listed emotional intelligence as the most required new competency to be successful in the current context. It is essential for Extension to recognize the importance of EI competencies for today’s workforce (Ayers & Stone, 1999; Moore & Ruud, 2003). The individuals with emotional competency have the skill to manage their emotions in response to an events or situations, and react accordingly. In the Texas Extension Competency Model, EI competencies are parallel to the “personal effectiveness” competency (Stone & Coppernoll, 2004). Extension agents in this study emphasized that managing stress, good work and personal ethics, self motivation and self-direction, and integrity, as the other important sub-competencies needed to be successful in their job. These findings are compatible with the findings of a study conducted with Extension professionals in Arkansas that reported personality qualities including dependability, fairness, honesty, and trustworthiness as the most valued competency qualities for Extension professionals (Cooper

& Graham, 2001). Similar to this finding, Roberts et al. (2007) reported personality qualities were important competencies for agricultural teachers to be successful. Personal integrity, high levels of motivation, and eagerness are important emotional competencies, but seldom included in courses, workshops, and seminars (Moore and Rudd, 2005).

The respondents also identified interpersonal skill as an important competency. Interpersonal skill is necessary for Extension agents to interrelate effectively with their diverse clients. In the current NCCE's competency model, the *networking* sub-competency focused on the relationship and collaboration between special subject matter specialists, colleagues, and others to develop training curricula. It is important to re-evaluate and include new sub-competencies to meet the needs of agents in the current context. Similar to this finding, Cooper & Graham (2001) reported that personal skills including people skills, positive attitudes, friendliness, and self motivation as important competencies for agents. Building people skills will ensure continuous success for Extension in the current environment (Cooper & Graham, 2001). According to Cochran (2009), Extension professionals need to develop partnerships with their clients and build up trust to support their work.

The respondents identified flexibility and managing resources as other new competencies needed. Flexibility is needed when the organizational environment is experiencing changes (Bartram et al., 2002; Cochran, 2009). Demographic changes, technology advancements, and the global market all create new challenges for Extension. Under these challenging conditions, the Extension professionals have to adjust for new working environments. Extension agents acknowledged the importance of managing limited

resources, especially financial resources. The respondents also emphasized the need for grant writing competency in the current economic context.

Respondents stressed the importance of *research knowledge-related* sub-competencies to understand the research process, interpret and apply recommendations to real life issues. The research competency was a sub-competency under the “*technical/subject matter expertise*” competency category. However, research process competency is not listed under any of the major sub-competencies for Extension agents. Findings emphasize the need for adding *understanding research process* as an important sub-competency. According to Radhakrishna & Martin (1999), program evaluation and research methods are important training needs for Extension agents.

Objective Four:

The Barriers for Acquiring Competencies

Increased workload was identified as the main barrier that limited Extension agents’ ability to acquire desired competencies. Other important barriers limiting Extension agents’ ability to acquire desired competencies were lack of time, lack of funding, increase in personal costs, and lack of incentives. As indicated by an agent, “*I feel that I have acquired most, if not all of these competencies and I think that I do an excellent job. However, there is no motivation for me to continue. I do not see any job promotion, recognition, or pay increase in the future. Really, not even any verbal praise*”. This view is consistent with the notion that adult learners’ are motivated by the possibility of a better job, promotions, and higher salary (Knowles, Holton III, & Swanson, 2005). Adult learners constantly

acknowledged lack of time and lack of money as the main barriers to participating in adult education (Merriam, Caffarella, & Baumgartner, 2007). According to a study by Shinn and Smith (1999), increased scope of job responsibilities and personal costs associated with acquisition of competency were the main barriers discouraging Agriculture and Natural Resource agents in Texas from acquiring core competencies. It is important to remove these barriers for facilitating Extension agents to acquire needed competencies to be successful.

Strong and Harder (2009) recommended that agents should plan their personal need ahead of work events' schedule to achieve stability between work and personal life. Boyd (2003), suggested organizations should consider employees' acquisition of competencies as an important part of their accomplishments. Based on their study, Deloitte & Touche (2001) also suggested the acquisition of core competencies by the workforce is necessary to be embedded into the organization staff classification and pay system. But Spencer & Spencer (1993) cautioned that organizations need to define a clear financial link between the competency-based pay system and the economic value to the organization.

Objective Five:

Training Needs for Building Desired Competencies

Training is an important component for building competencies in any organization. Identification of needs and expectations of learners is the key to developing a successful training program. Boyd (2003) suggested that Extension needs to increase the time and resources devoted to helping its employees acquire core competencies. The findings of the study indicate learning to manage stress was the most important training need. Similar to this

finding, Place and Jacob (2001) reported that Extension needs to develop programs and in-service training on daily planning to reduce agents' stress level. Training in time management and work-place skills are considered important to reduce the barriers that are preventing agents from acquiring needed competencies. Organization will achieve greater efficiency by developing positive workplace competencies (Place & Jacob, 2001). According to Gibson & Hillison (1994), the competency elements listed and rated at least 2.5 on a 4 point scale (1 = *Little*; 4 = *Very Important*) should be included in the training program

Several agents in this study indicated that they did not participate in training as it did not meet their needs. Harder and Dooley (2007) reported that agents only participated in professional development based on their individual interests. For a training program to be effective, it is important to have a baseline data to provide information for both the content and level of competencies to be taught to the learners (Gibson, 2003). The criteria for an effective training are to be learner focused and have the ability to demonstrate productive behavior and effective life skills, celebrate personal and group achievements, and inspire and motivate learners (Wise & Ezell, 2003). Therefore, it is important for NCCE to involve Extension agents in needs identification and planning training programs for building their Extension competencies.

This study found that the best time to acquire competencies for the agents was during in-service training. Extension agents identified small group face-to-face training workshops as the most effective delivery method for them to acquire desired competencies. Ferrer, Fugate, Perkins, & Easton (2004) reported that participants in face to face in-service training can put into practice instantly what they have learned. So, Extension should invest

comprehensively in in-service training if it is the best method to produce the needed outcome (Ferrer et al., 2004). Several agents also indicated mentoring, hands-on workshops and shadowing were other effective educational delivery methods for them to acquire desired competencies. According to Maddy et al. (2002), mentoring must focus on core competencies. But, mentoring and shadowing must involve high-quality experienced agents (Strong & Harder, 2009). According to Harder et al. (2010), hands-on experience was considered the most important for professional and personal development. This indicates different agents have different delivery preferences for learning about competencies. The adult learners have different learning styles and some may not react instantly to new subject matters or environment (Knowles, Holton III, & Swanson, 2005). According to Lysaght and Altschuld (2000), any profession must evaluate its existing competency maintenance system and develop a professional development technique that will meet individuals' learning styles and utilize existing technologies. It is important for the Extension System to respect the individual's personal rights during the professional development process (Maddy et. al., 2002).

Limitations

This study was conducted with the North Carolina Cooperative Extension Agents in 2010. The findings are limited to the NCCE Extension agents. It was assumed that the respondents were truthful when responding to the survey. Data were collected anonymously to facilitate Extension agents' truthfulness when responding to the survey. However, the violation of this assumption is a possibility and it may be a limitation of this study.

Recommendations

Since the Blue Ribbon Commission made recommendations for the desired competencies for Extension agents in 1999, many changes including funding, communication technology and clientele have taken place. Parallel to these changes, emotional intelligence, interpersonal skills, flexibility for adapting to changing environment and ability to manage resources have been identified as new competencies important for Extension agents to be successful in NCCE. It is important to incorporate these new competencies into the Blue Ribbon Commission recommended list of Extension competencies to ensure that Extension competencies are up-to-date with organizational and environmental changes.

Although NCCE agents have a moderate to high level of proficiency in all seven major competency areas, there are specific sub competency areas for improvement. In-service training opportunities should be provided to help Extension agents develop competency in stress management, extension program evaluation, extension program marketing and conflict management. Also, in-service trainings are needed to develop new competencies such as emotional intelligence, interpersonal skills, flexibility for adapting to the changing environment and ability to manage resources for Extension agents to be successful in the current context. The next most important training needs were building Extension agents' competency to use new communication technology, interpret research findings, develop leadership skills and nurture leadership skills among others and apply NCCE organizational procedures and policies. When in-service training opportunities are provided, it is important to give priority for the new agents since they are at the lowest level of competency compared to more experienced agents.

It is important to minimize the major barriers that prevent Extension agents acquiring desired competencies. The major barriers such as increased work load, lack of time, lack of funding, increased in personal costs related to acquiring competency, and lack of incentives for acquiring competency, should be properly addressed to ensure that Extension agents have opportunities to develop desired competencies. Face-to-face, in-service training workshops with small groups should be used as the most effective delivery method for helping Extension agents develop desired competencies. The use of two or more educational delivery methods complementing each other is encouraged to achieve the effectiveness of in-service training programs.

Implications

The identification of needed competencies to be effective in Extension has implications for hiring new Extension agents. It is important to select individuals who have desired competencies for the job. Nearly one-third of the Extension agents are new and they comprise the most needed group for in-service training to build their competencies. Extension agents identified the face-to-face small group training as the most effective method for building their competencies. However, they indicated that time is the most limiting factor. These findings indicate that it is rational to organize small group face-to-face training programs close to their work place for achieving desired results while minimizing their travel time. This can be achieved by organizing training programs for the Extension agents from a few nearby counties, having them meet at one central location and arranging trainers to travel

to those locations. This approach will contribute to save travel time and money for Extension while enhancing the effectiveness of training.

Suggestions for Future Research

A periodic review of practicing competencies for the relevance of existing context is needed to identify outdated competencies. Parallel to this, identification of needed new competencies is necessary to update competency standards for improving the effectiveness of Extension systems. Replication of this study with a multi-state sample is needed to broaden the recommendations of this study beyond the NCCE.

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APPENDICES

APPENDIX A - IRB HUMAN SUBJECTS APPROVAL

NC STATE UNIVERSITY

Sponsored Programs and
Regulatory Compliance
Campus Box 7514
2701 Sullivan Drive
Raleigh, NC 27695-7514

919.515.2444
919.515.7721 (fax)

From: Debra Paxton, IRB Administrator
North Carolina State University
Institutional Review Board

Date: June 18, 2010

Project Title: Identification of Competencies Needed for Extension Agents in
North Carolina

IRB#: 1527-10-6

Dear Dona Lakai:

The research proposal named above has received administrative review and has been approved as exempt from the policy as outlined in the Code of Federal Regulations (Exemption: 46.101. b.2). Provided that the only participation of the subjects is as described in the proposal narrative, this project is exempt from further review.

NOTE:

1. This committee complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU projects, the Assurance Number is: FWA00003429.
2. Any changes to the research must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days.

Please provide your faculty advisor with a copy of this letter. Thank you.

Sincerely,

Debra Paxton
NCSU IRB

APPENDIX B - INSTRUMENT

Identification of competencies needed for Extension Agent

How do you rate your current level of confidence in your ability to:	Very Low	Low	Moderate	High	Very High
1. Understand organizational structure of CES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Understand vision and mission of CES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Understand policies of CES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Understand Extension organizational procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Identify partners and stakeholders of CES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Identify policies specific to your area(s) of responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Explain relevant subject matter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Apply relevant subject matter to real life problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Identify research-based information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Demonstrate technology skills pertinent to subject matter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How do you rate your current level of confidence in your ability to:	Very Low	Low	Moderate	High	Very High
11. Develop a program on the subject matter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Identify appropriate delivery strategies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Understand basic components of educational programming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Acquire teaching resources for your subject area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Prepare an annual plan of work for area of responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Utilize effective teaching methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Recruit and manage volunteers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Evaluate extension programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Identify opportunities for professional development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Participate in Extension professional associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How do you rate your current level of confidence in your ability to:	Very Low	Low	Moderate	High	Very High
21. Interpret research findings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Manage time effectively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Manage multiple tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Manage stress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Develop a marketing plan for programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Develop good listening skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Write effectively for target audience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Use latest communications technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Make clear and convincing oral presentations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Fostering an environment for open communication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How do you rate your current level of confidence in your ability to:	Very Low	Low	Moderate	High	Very High
31. Develop trusting professional relationships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Use professional network to enhance programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Establish relationship with subject matter specialists and peers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Provide consultation to clientele groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35. Manage conflicts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Understand diversity in extension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Understand leadership principles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Understand relationship of personal goals to job performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Understand workgroup dynamics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Develop a plan for building personal leadership skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How do you rate your current level of confidence in your ability to:	Very Low	Low	Moderate	High	Very High
41. Apply critical thinking skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Nurture leadership skills in others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

43. In addition to the above list, what are the other competencies you consider as very important for someone to be an effective Extension agent in current context? (Please list all you consider.)

44. What is the most appropriate time for someone to acquire important Extension competencies?

- Before joining with Cooperative Extension
- New Extension agents' training
- During in-service training
- Other (Please specify)

45. What do you consider as the most effective educational delivery method in helping Extension Agents gain important competencies?

- Small group, face-to-face training workshops
- Large group, face-to-face training workshops
- Printed learning materials
- Electronic learning materials such as educational programs saved in CD

Online training programs

Others (Please specify)

To what extent do the following barriers limit your ability to develop desired competencies?	Not at All	A little extent	Some extent	Great Extent
46. Lack of time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Increase workload	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Lack of organizational motivation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Lack of personal motivation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. Lack of training opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Ineffective training delivery methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52. Lack of educational resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Lack of incentives for acquiring competencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. Lack of credible information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. Lack of funding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To what extent do the following barriers limit your ability to develop desired competencies?	Not at All	A little extent	Some extent	Great Extent
56. Increase in personal costs related to acquiring competency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

57. Please list other barriers that you consider limit your ability to develop desired competencies.

58. Age (years)

59. Gender

Male

Female

60. What is your current job title?

- Extension Agent
- Associate Agent
- Assistant Agent
- Other

61. Highest education level attained?

- Bachelor's degree
- Master's degree
- Doctoral degree (please specify)

62. How many years of experience do you have in extension (including work in other states)?

63. What is your major area of responsibility?

- Agriculture
- Horticulture
- Forestry and Natural Resources
- Family and Consumer Sciences
- 4-H and Youth Development
- Community Development
- Other (please specify) :

64. Are you a member of any extension professional association?

- No
- Yes, please specify :