

**GRADUATES' AND EMPLOYERS' PERCEPTIONS
OF ENTRY-LEVEL EMPLOYABILITY SKILLS NEEDED
BY AGRICULTURE, FOOD AND NATURAL RESOURCES GRADUATES**

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**by
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OF ENTRY-LEVEL EMPLOYABILITY SKILLS NEEDED
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To Erin and Parker – the sources of my love and inspiration.
Erin, thank you for agreeing to enter this journey through life with me.
Parker, may you always follow your dreams and live life to the fullest. I love you both.

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Dr. Bryan L. Garton, Dissertation Supervisor

ABSTRACT

Entry level college graduates have not acquired the skills necessary for the workforce and, as such, are not prepared for the demands of industry careers (Peddle, 2000). The purpose of this study was to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia and their immediate supervisors.

Both graduates and supervisors perceived problem solving to be the employability skill most in need of curricular enhancement. In addition to problem solving and decision making, five other items were consistently ranked in category I by both graduates and supervisors. The eight consisted of “functioning well in stressful situations,” “allocating time efficiently,” “responding positively to constructive criticism,” “adapting to situations of change,” and “communicating ideas verbally to groups. Interestingly, “making effective business presentations,” “making impromptu presentations,” “writing reports,” “writing internal business communications,” and “writing external business communications” were negligible in terms of curriculum enhancement needs.

CHAPTER I

INTRODUCTION

Entry level college graduates have not acquired the skills necessary for the workforce and, as such, are not prepared for the demands of industry careers (Peddle, 2000). Today's college students are expected to learn content at a faster rate than ever before. In doing so, they are expected to develop the "hard" technical skills as well as the "soft" people skills necessary to be successful in the workplace (Hofstrand, 1996; Shivpuri & Kim, 2004). Candy and Crebert (1991), Martin, Milne-Home, Barrett, Spalding, and Jones (2000), and Tanyel, Mitchell, and McAlum (1999) recognized the difficulties post-secondary educators have in preparing graduates for the technical skills needed in industry. Because graduates begin careers in specialized positions, "it is difficult for universities to prepare students in a way that meets all employers' needs" (p. 209). Therefore, "hard" technical skills are job specific and best suited to be taught by industry professionals on the job. However, "soft" skill development is needed by all college graduates (Mullen, 1997). Evers, Rush and Berdrow (1998) stated:

Society, now more than ever, needs college graduates who question the motives and ideas of politicians, government officials, business leaders, and professors.

We need graduates who criticize in constructive ways and do not assume that we should do things in a certain way because that is the 'way it has always been done.' We need graduates who want to work in organizations that strive to correct past mistakes, not contribute to new ones. (p. 135-136)

The purpose and role of higher education has been widely debated for years. Morley (2001) stated that the debate is centered on whether higher education should exist

for the sole purpose of providing capitalistic achievement or in-depth liberal education. Heldrich (2005) asked if the purpose of higher education was to train students for specific careers or to prepare students for the general skills needed for the workforce. Espinoza (1999) proposed that the purpose of higher education should be to disseminate productive citizens into the workforce. Peddle (2000) agreed that educators were responsible for preparing students for general skills, while Atkins (1999) suggested that education is not the end-all and that the focus should be on making students lifelong learners.

Morley (2001) concluded that the role of higher education has been widely influenced by industry. While there are differing views on the intent of higher education, one emergent theme appears to surface; to a degree, higher education should prepare students for future employment (Cole & Thompson, 2002; Evers et al., 1998; Martin et al., 2000; McLaughlin, 1995; Peddle, 2000). “Employers depend on educators to provide job-ready and training-ready entry-level employees” (Carnevale, Gainer, & Villet, 1990, p. 236). Teichler (1999) posited that higher education should serve three functions when preparing students.

The educational function: to stimulate the cognitive, intellectual and systematic abilities and to convey knowledge which is conceived as broad, general, or the core of cultural and civilization competences;

The training function: to foster knowledge and competences targetedly provided in order to prepare students for future professional practice in related areas of specialization;

The socialization function: to shape the values, attitudes, social behavior and the communication skills relevant for action in socio-communicative contexts. (p. 183)

Evers et al. (1998) stated that “there is a need for a fundamental shift toward an emphasis on general skills in education” (p. 12). Dunne and Rawlins (2000) stated that

students often undervalue the need to possess transferable skills. Instead, they deem that mastery of disciplinary content is more important than transferable skills to employers. Employers desire graduates who can think on their feet and determine ways to accomplish tasks. Schmidt (1999) stated that graduates entering the workplace must “solve complex, multidisciplinary problems, work successfully in teams, exhibit effective oral and written communication skills, and practice good interpersonal skills (p. 31). Billing (2003) stated that the employability skills most desired by employers were those that were transferable to a variety of situations; specifically the skills of “problem-solving, communication, teamwork, and critical thinking...” (p. 335). Hofstrand (1996) and Robinson (2000) stated that these transferable, employability skills are considered very basic and generic in nature and should assist every person entering the workforce.

“Core,” “key,” “transferable,” “general,” “non-technical” and “soft” are all terms that have been used synonymously to define the employability skills needed most in today’s workforce. While the semantics of the term used do exist, there is no doubt that there is a need for such skills in the workplace. Hewitt (2005) posited that employers have begun turning their focus and attention to evaluating these general skills. Atkins (1999) stated that “over the last decade there has been a steady stream of reports and papers urging the higher education sector to take key, core, transferable and employability skills into the heart of students’ learning experience” (p. 1356).

Researchers have noticed a “skills gap” occurring in society (Andrews and Wooten, 2004; Askov & Gordon, 1999; Atkins, 1999; Evers et al., 1998; Kivinen & Aloha, 1999; Kivinen & Silvennoinen, 2002; Morley, 2001; Robinson, 2000; Shivpuri & Kim, 2004). There is a disconnect between the demands of employment and the level of

educational preparation of graduates (Understanding Employers, 1998). Employers do not feel as though higher education is succeeding in the role of adequately developing the employability skills of graduates (Peddle, 2000). Evers et al. (1998) stated that “the skills most in demand are least in supply” (p. 16). Candy and Crebert (1991) stated that graduates are simply not prepared in the areas of “problem solving, decision making, working in a team, or learning for themselves” (p. 572). Morley (2001) stated that “graduates are hardly thought to require emotional intelligence, political skills, or self-care in the face of occupational stress” (p. 135). Brown, Hesketh and Williams (2003) noted that employers regularly state that graduates are not prepared for the workforce. As a result, hiring college graduates becomes a risky venture for employers (Morley, 2001). To a degree, colleges and universities are failing in their role to properly prepare graduates for the expectations of the workforce.

The need to improve the employability skills of the workforce has been an issue across all phases of education. Steps have been taken to define and address key skill areas needed for improvement, specifically at the secondary level. In 1990, the Secretary’s Commission on Achieving Necessary Skills (SCANS) report was initiated to define the skills needed by high school graduates in the workforce. The focus of the report was to determine how high schools could best mirror industry in an effort to make the transition from school-to-work less difficult for secondary graduates. In addition to aiding in an easier transition for graduates, unemployment was also a concern. Therefore, by teaching the skills required by industry, the goal was to ease the transition from school-to-work; thus, increasing employment rates of high school graduates.

In a recent study conducted by Rutgers University, over 50% of New Jersey employers polled stated that it was difficult to find graduates possessing the skills needed and who were “well prepared” (p. 1) to enter industry (Heldrich, 2005). Preparing students for industry infers a sense of application must be present. Morley (2001) suggested that students should be able to “know how rather than simply knowing that” (p.135). Heldrich (2005) offered that “higher education can be improved by making it more relevant to what happens in the workforce” (p. 1). Carnevale et al. (1990) concluded that educators need to:

Teach future employees how to make decisions, how to solve problems, how to learn, how to think a job through from start to finish, and how to work with people to get the job done.

Link the teaching of academic subjects to real-world applications.

Work with employers to strengthen the link between learning in school and learning on the job (p. 237).

The recent attention on employability skill development has been brought about for various reasons. Askov and Gordon (1999) noted such reasons. They stated that “welfare reform legislation, major demographic shifts in the labor market, and the continual expansion of the U.S. economy have led to major changes in American business, which has seen unemployment rates fall in many regions to twenty-five year lows” (Askov & Gordon, 1999, p. 59). With employment rates on the decline since the early 1990s (Morley, 2001), employers have become concerned more than ever with locating and preparing good workers (Robinson, 2000).

One reason that a resurging need for employability skill development exists in today’s workforce is the fact that soft skills tend to come to the forefront during an

interview. Miller and Rosenbaum (1997) noted that a reason employers put so much attention on one's employability skills is that they simply do not trust their sources when it comes to hiring graduates and therefore must rely on their instincts during the interview process. Another possible reason for the need to develop employability skills in students is that employers are not able or willing to teach these skills.

While many companies provide technical training specific to the job description, few offer training in employability skill development. In a study of 1,420 informational technology companies, approximately half of the respondents acknowledged that they had taught some form of employability skill development to their employees (Surmacz, 2005). According to Surmacz, (2005), those who do provide such training are failing "because they do not improve individual comprehension, understanding, insight, or motivation" (p. 15).

Tetreault (1997) argued that employability skills are lacking in the workplace because people are not prepared prior to entering the workforce. Employers continue to blame higher education. Regardless of who is at fault, graduates must possess the employability skills demanded of industry to acquire and retain jobs (Tetreault, 1997). Therefore, higher education should exert more effort in preparing graduates in their employability skills.

Kivinen and Silvennoinen (2002) stated that "for any given individual, skills are the single best source of escaping from underprivilege" (p. 53). A possible reason for higher education institutions not aiding in employability skill development of students could be because college faculty have a limited knowledge of what the lacking skills are or how to teach the skills. In addition, college faculty may not possess the resources

needed to teach the skills (Hofstrand, 1996). Taylor (1998) noted that corporate employers do understand the employability skills needed by graduates and can have an influence on the enhancement of these skills in education. Paulson (2001) stated that corporations are willing to aid in partnering with higher education institutions in an effort to teach the necessary skills needed for industry success.

If entry-level graduates are lacking in the skills deemed important for success in their chosen profession, job satisfaction could also be a problem worthy of consideration. Job satisfaction plays an important role in determining whether or not graduates remain in their chosen career. Ubom and Joshua (2004) stated that the main reason employees work is to satisfy their needs in life. Steps should be taken to ensure that graduates are satisfied with their chosen career path and that the employability skills needed have been attained. Therefore, to truly understand the skills needed in the workforce, relations between industry and higher education should be improved. “Many employers assume that their views are not valued by educators” (Evers et al., 1998, p. 172). However, “educators do listen when employers complain about the quality of college graduates” (p. 172-173) because “employers have the best knowledge of the workplace” (p. 173). The knowledge employers can provide educators is helpful to the preparation of future graduates (Evers et al., 1998).

Kivinen and Silvennoinen (2002) suggested that the relationships between formal education and industry are not producing the adequate skills needed in the workforce and that these relations should be strengthened. Candy and Crebert (1991) recognized that “most learning experiences actually take place outside the educational setting” (p. 571). Therefore, they suggested that education and industry should partner through “off-

campus cooperative education” (p. 585) where students enter the workforce for one year of their educational program in an effort to learn the skills needed in industry to be successful upon graduation. This idea, however, may be impractical to most students in post-secondary education. Asking students to spend a full year in an internship could be unrealistic. If spending one year in the workforce to attain skills is not feasible, then what is the answer to enhancing skill development in students?

Fuhrmann and Grasha (1983) stated that colleges should adjust their teaching to meet the needs of students. With rising costs associated with training programs and the overall concern with graduates not being prepared for employment, higher education must assess its curriculum and evaluate its purpose with meeting student needs for employment. Shivpuri and Kim (2004) stated that

although employment of their graduates is not the only goal of colleges, it is still important for college administrators and employers to strive for open channels of communication and continuous dialogue in order to recognize, discuss, and resolve these outstanding discrepancies and more effectively serve their common link: the students (p.44).

Theoretical Framework

Swanson (1994) conceptualized a Systems Model for Performance Improvement (SMPI). This model was developed as a vehicle for industry to assess employees on their performance within the company (figure 1). The SMPI was designed to increase individual performance and productivity.

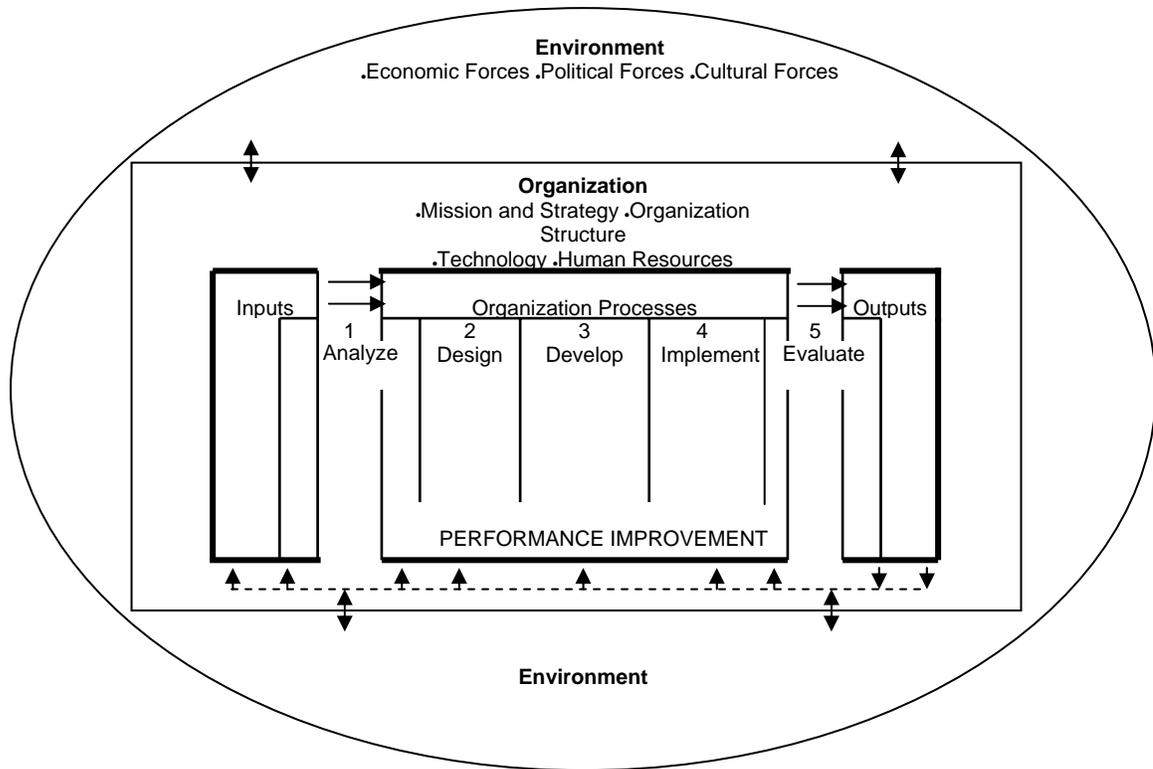


Figure 1.

Swanson's (1994) Systems Model for Performance Improvement (SMPI).

According to Swanson (1994), the SMPI investigates all factors that influence or impact the organization as a whole. Such factors consist of the environment, the organization, and the performance improvement of the individual within the organization. Environmental factors consist of economic, political, and cultural forces. These factors derive from the environment but directly impact the organization. The organizational factors assist in defining the organization. These factors consist of the mission and strategy of the organization, the overall structure of the organization, the technology used within the organization, and human resources.

The performance improvement factor was designed to increase productivity and maximize financial gains while providing quality services to the customer. This factor deals with inputs and outputs. Organizations acquire inputs, such as people and materials, from the environment (Swanson, 1994). Various factors contribute to defining the organization. “Examples include..., from an educational perspective, the employment success of its graduates” (Finch & Crunkilton, 1999, p. 30). After the inputs have been acquired by the organization from the environment, they are then processed and returned back to the environment in the form of outputs, which consist of goods and services (Swanson, 1994). These factors can directly affect the overall success of the organization.

In order for improvement efforts to be enhanced and for inputs to be exchanged for outputs, a systematic process has to be carried out. This systematic process includes five phases: analysis, design, development, implementation, and evaluation. Without careful diagnosis of any of these five phases, performance will not be improved to its maximum potential.

The first phase, analysis, is the most vital to the improvement and success of an organization. The analysis drives the remaining four phases. In this phase, developers and managers collaborate to identify what the requirements of the organization are and what the goals and standards should be. According to Swanson (1994), they determine “whether management actions, development efforts, or a combination of both will effect the change in performance. In addition, [they] determine precisely what people are required to know and be able to do to perform in the workplace” (pp. 19-20). The analysis phase is split into two areas: organizational performance diagnosis and work expertise diagnosis. Organizational performance diagnosis is primary. It is a holistic

approach that identifies the actual, desired, and individual performance goals and standards of the organization. The work expertise diagnosis is secondary and takes into consideration the details and expertise needed to be successful within the organization. The remaining four phases build on the information gathered in the analysis phase.

According to Finch and Crunkilton (1999):

The *design* phase includes both program and training design, whereas the *development* phase focuses on materials development and pilot testing. In the *implementation* phase, program plans and training are incorporated into the organization. And last, the *control* phase includes evaluating programs and training as well as deciding whether or not to continue these efforts (p. 31).

For the purpose of this study, graduates of the College of Agriculture, Food and Natural Resources were referred to as the inputs. They were analyzed according to what they believed was important and what they were able to contribute, in the way of employability skills, to the workplace. Based on the findings of this study, the existing College curriculum will be evaluated to assist future graduates in becoming employable.

Need for the Study

Due to a “skills gap” occurring in society (Askov & Gordon, 1999; Atkins, 1999; Evers et al., 1998; Kivinen & Silvennoinen, 2002; Morley, 2001; Robinson, 2000; Shivpuri & Kim, 2004) there is a need for higher education to place a greater emphasis on preparing graduates for the demands of industry (Martin, et al., 2000). This skills gap is most notable with college graduates, as they are not equipped with the desired skills

needed to be successful. Employers believe higher education is failing by not adequately developing the employability skills of graduates (Evers et al., 1998). Therefore, more emphasis is being placed on college graduates to possess employability skills. In essence, college graduates need to be more creative and social in the workforce (Brown et al., 2003). Brown et al. (2003) concluded that employers often state that college graduates are not being properly prepared for industry jobs. Therefore, a need exists for higher education institutions to investigate ways in which they can assist graduates in being better prepared for the workforce once they leave the university setting. Evers et al. (1998) stated that higher education can assist in this effort by having college faculty include general, employability skills into the student curriculum. For this to occur, higher education has to develop a relationship with industry personnel to determine what skills employers are seeking in college graduates (Kivinen & Silvennoinen, 2002). Furthermore, once these skills have been identified, college faculty must be willing to incorporate the skills into the curriculum.

While many attempts have been made at defining the employability skills graduates need to possess upon entering the workforce, few studies have looked specifically at agriculture employers and graduates. Specifically, there is a need to understand which employability skills are being sought by agriculture employers in industry and to determine whether or not agriculture college graduates feel as though they possess the employability skills desired by their employers.

Martin et al. (2000) suggested that, in addition to graduates, further research in this area should address other stakeholders' perceptions concerning employability skills. Evers et al. (1998) suggested that employers should be included as a key stakeholder

when assessing graduates. “Employers have the best knowledge of the workplace... and can foster skill development in higher education and their own organizations by incorporating the base competencies in the selection, training, development, and retention of employees” (p. 173). Therefore, an additional need exists to assess the college graduate’s immediate supervisor to determine which employability skills are most important and whether or not the college graduate is utilizing the skills to the best of his or her ability.

Statement of the Problem

Evers et al. (1998) stated that college graduates need to enhance their employability skills. The call for improving employability skills of graduates has been well documented. While graduating students may be enhancing their employability opportunities by achieving a college degree, they may not be realizing the payoff of achieving a job upon graduating from college (Brown et al., 2003). This problem could be due to lacking, crucial employability skills needed to find employment and be successful. While this argument is valid, it does not necessarily hold true for the participants of this study. It is unknown if graduates of the College of Agriculture, Food and Natural Resources at the University of Missouri-Columbia possess the employability skills needed in the workplace. Therefore, these college graduates should be assessed in an effort to shed light on the issue.

Upon conducting a literature review, certain questions arose. What are the employability skills graduates need to be successful and productive in today’s workplace? Do college graduates and supervisors agree on the employability skills

graduates should possess? Upon graduation, do graduates feel as though they are competent at performing the employability skills demanded by industry? Are graduates satisfied with their chosen career field?

Purpose of the Study

The purpose of this study was to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia. The study sought to assess graduates' perceptions regarding level of importance of identified employability skills and their self-perceived level of competence at performing those skills. In addition, graduates' immediate supervisors assessed the importance of the identified employability skills for their graduate employee's respective field of work and assessed the competence level of the graduate at performing those skills.

Research Objectives

1. Describe the demographics (gender, GPA, academic major) of the graduates.
2. Describe graduates' perceptions of the importance of the employability skills needed for the workforce.
3. Describe graduates' self-perceived level of competence at performing the employability skills.
4. Prioritize the employability skills, according to graduates, in need of curriculum enhancement using the Borich needs assessment mode.

5. Identify the contributions of on campus, off campus, and academic programs in enhancing graduates' employability skills.
6. Assess graduates' job satisfaction within their respective career choice.
7. Assess supervisors' perceptions of the importance of the employability skills needed by graduates to be successful in the workforce.
8. Assess supervisors' perceptions of the graduates' level of competence at performing the employability skills.
9. Prioritize the employability skills, according to supervisors, in need of curriculum enhancement using the Borich needs assessment mode.

Definitions

CAFNR: College of Agriculture, Food and Natural Resources at the University of Missouri-Columbia-Columbia.

Employability: "The relative chances of acquiring and maintaining different kinds of employment" (Brown et al., 2003, p. 111).

Employability Skills: "Transferable core skill groups that represent essential functional and enabling knowledge, skills, and attitudes required by the 21st century workplace... necessary for career success at all levels of employment and for all levels of education" (Overtoom, 2000, p. 2).

Employers: The immediate supervisors of CAFNR graduates.

Assumptions

For this study, the following assumptions were made:

1. Graduates objectively reported their perceptions of the importance of the employability skills and their competence level at using the skills.
2. Graduates were willing to provide the contact information of their immediate supervisors.
3. Employers (graduate supervisors) responded to the questions truthfully and without bias.

Limitations

1. The study was limited to CAFNR graduates at the University of Missouri-Columbia-Columbia and their immediate supervisors.
2. Time and resources limited the study to a sample of the population of all CAFNR graduates and their immediate supervisors.
3. Employer selection was limited to a manageable sample population; therefore, analyses were also limited due to the size of the sample.

CHAPTER II

REVIEW OF LITERATURE

Purpose of the Study

The purpose of this study was to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia. The study sought to assess graduates' perceptions regarding level of importance of identified employability skills and their self-perceived level of competence at performing those skills. In addition, graduates' immediate supervisors assessed the importance of the identified employability skills for their graduate employee's respective field of work and assessed the competence level of the graduate at performing those skills.

Introduction to the Need for Workplace Skill Development

Developing employee's workplace skills has been a concern of supervisors. However, a major push for enhancing employability skills began in the early 1990s. In 1992, the Secretary's Commission on Achieving Necessary Skills (SCANS) report was published in an attempt to define the skills needed by employees in the workplace. The SCANS report defined three key elements: functional skills, enabling skills, and scenario. To determine the key elements, members of the SCANS reviewed research on related subject areas, talked to experts in the field concerning skills needed, and visited two large corporations that emphasized skill development. As a result, the SCANS members determined functional skills were used to describe the actual functions workers perform

at their specific job. Enabling skills were defined as skills workers learn as a result of attending formal education and participating in school related activities. They asserted that enabling skills require specific training to apply knowledge which enables workers to perform their jobs. Scenario was the term used to describe how the skills were applied in the work setting to produce a particular outcome. Scenario refers to the communication of how to integrate the skills into a positive outcome.

After further inquiry, the Commission was able to break down the three key elements into more specific skills. Five skills were determined to be related to functional skills. These five were: resource management, information management, social interaction, understanding of systems behavior and performance, human and technology interaction. Resource management dealt with the outcome associated with the organization (managing plans, budgets, and resources). Information management consisted of both oral and written communication skills. Social interaction included developing teamwork skills. Understanding of systems behavior and performance dealt with developing problem solving and analytic skills. Lastly, human and technology interaction included the ability needed to select the proper technology and media for job tasks. The SCANS report gave insight into the skills needed of employees in the workforce.

Transition from Higher Education to the Workforce

Making the transition from higher education to the workforce is important; however, Crebert, Bates, Bell, Carol-Joy and Cragolini (2004), stated that “the transition from university to employment often brings insecurity and unease” (p. 48). Graham and

McKenzie (1995) concluded that the transition process from higher education to the workforce is difficult but can be made easier by employers. One reason this transition is difficult is because graduates are not fully prepared for what industry demands of its employees. Graduates lack the readiness needed to perform to the standards of the employers (Crebert, et al., 2004). Candy and Crebert (1991) identified several problem areas involving a lack of graduate readiness upon entering the workforce. First, employers deem graduates to possess theoretical information but fail to bring realistic, practical perspectives to the job. Thus, they require a great amount of training and adaptation to the “real world” before they can contribute to the job in which they were hired to perform. Second, graduates lack the employability skills needed to be successful on the job. They fail to understand the implications of working together on a team, solving problems, and making decisions. Lastly, graduates have a misconception of what their job will entail, often expecting a structured, supervised environment similar to the one experienced in their collegiate courses.

Organizational Fit Among Entry-Level Employees

Another reason individuals struggle with the transition from higher education to the workforce could be because they perceive themselves as not fitting in at their place of employment. Graduates have developed a stereotype with employers over the years as not being prepared upon entering the workforce (Candy & Crebert, 1991). As a result, it is difficult for entry-level employees to “fit in” and find their niche. To assist people in finding organizational fit, a person-environment fit model was developed by Kezar (2001). This model assumed that individuals would be most successful and satisfied with

their work when “their skills, aptitudes, values and beliefs matched the organizations” (Kezar, 2001, p. 87). Lindholm (2003) noted that “person-environment fit approaches have been used widely in the study of personnel selection, socialization, job stress, and job satisfaction” (p. 127).

Lindholm (2003) identified four levels of environmental fit that exist within organizations. Person-vocation fit “refers to congruence between a person’s choice of occupations and his or her self-concept” (p. 128). Person-job fit assesses the congruency between the person’s skills and the demands of the job. Person-organization fit concerns the compatibility of the “values, interests, needs, and abilities of an individual and corresponding characteristics of the organization within which he or she works” (p 128). Person-work group fit deals with the intrapersonal skills of workers and their ability to get along and work with others in their group. A challenge exists for organizations to determine what an effective fit for their employees is and how to work to ensure each person within the organization feels as though they fit in and belong to the organization (Lindholm, 2003). While this sounds simple in theory, recognizing the talents and dynamics of everyone in an organization and ensuring proper fit can be difficult and challenging.

Graduate’s Expectations of Employment

A possible reason graduates struggle to adjust and fit in is because they have a misconception of what the workplace entails. Graham and McKenzie (1995) stated that graduates’ perceptions about their employment are too high. “Many new graduates expect

higher earnings, higher levels of appointment and higher status in their first job than the market can offer them” (Crebert et al., 2004, p. 60).

Not only do graduates have a misconception of what their careers should be like, they also misconstrue the hiring process. They often are under the assumption that their academic success in college will get them the job they desire (Crebert, et al., 2004). However, this is not entirely true. While employers do like to see a strong academic record from their graduate employees, they do not hire graduates solely on this criterion. In a study by Crebert et al. (2004), a group of employers were asked to describe the criteria they look for when hiring graduates. None of the employers interviewed mentioned academic standings as being an important piece of the hiring process, and only one mentioned that technical skills were important to be successful in the workforce. However, graduates may not be under the same assumption. “Many students expect their higher education to enrich their future career aspirations regardless of what exactly they might be” (Hesketh, 2000, p. 250).

Graduates entering the workforce also have the misconception that the structure will be the same as the one experienced in higher education (Candy & Crebert, 1991). When that structure is not provided in the workplace, graduates tend to become discontent and dissatisfied with their jobs.

Graduate Satisfaction with Higher Education Employment Preparation

Job satisfaction plays an important role in determining whether or not graduates remain in their chosen career. Martin et al. (2000) stated that “there is... a need for institutions to monitor graduate satisfaction, better prepare them for employment, and

explore the relationship between these two dimensions” (p. 203). Graduate satisfaction is important because “...satisfied alumni tend to supply jobs to new graduates who studied at their institution” (Schmidt et al. as cited in Martin et al., 2000, p. 200).

Ubom and Joshua (2004) stated that the main reason employees work is to satisfy their needs in life. Maslow’s Need Hierarchy Model (1943) proposed that five basic needs must be met for individuals to experience satisfaction in life. The five needs in hierarchical order, from most important to least important, are: physiological, safety, belongingness, esteem, and self-actualization (Steers & Porter, 1975). Maslow (1943) suggested that once the lower level needs are met, the person can then move on to meet higher level needs. “Once a need becomes satisfied it loses its potency as a motivating force until it again becomes manifest” (Steers & Porter, 1975, p. 31-32). Herzberg (1976) developed a theory on Motivation-Hygiene. This theory could explain why certain employees choose the profession they do, why they identify certain employability skills needed, and why they leave their initial job in pursuit of another. The motivator factors are intrinsic in nature while the hygiene, or dissatisfaction-avoidance, factors are extrinsic motivators. Herzberg stated in his Motivation-Hygiene Theory that people have two different needs that must be met. The first is the basic biological need which serves as the necessities to human survival. Herzberg explained that people work to earn money to buy food and thus food serves as the common motivating factor. However, once satisfied physically, financial security and stability become the primary need. The other need described by Herzberg is the desire to be successful, experience achievement, and grow psychologically. Specifically Herzberg stated that

the growth or *motivator* factors that are intrinsic to the job are: achievement, recognition for achievement, the work itself, responsibility, and growth or advancement. The dissatisfaction-avoidance or hygiene (KITA) factors that are extrinsic to the job include: company policy and administration, supervision, interpersonal relationships, working conditions, salary, status, and security (p. 58).

Martin et al. (2000) suggested that “an integrative approach to monitoring alumni satisfaction with the university should encompass an assessment of the curriculum, the development of competencies whilst at university, attributes of staff and student-staff, student-faculty relations, student support resources, academic resources, and gender” (p. 202). Martin et al. (2000) further revealed that graduates felt higher education prepared them more for employment at the local and national levels than it did at the international level. Furthermore, graduates were more satisfied with their educational experience in preparing them for employment if they perceived themselves to have developed the competencies needed to be successful. Thus, “higher levels of satisfaction with the development of competencies were associated with higher levels of perceived employment preparation” (Martin et al., 2000. p. 208).

Employability Skills Research with College of Agriculture Graduates

Several studies have focused on the skills graduates of agriculture programs needed to be successful. Radhakrishna and Bruening (1994) sought to determine the skills and experiences deemed necessary for agribusiness graduates in Pennsylvania. The authors focused on agribusiness employees and university agribusiness students who

attended a workshop. Findings revealed that students and employees of agribusiness agreed that the skills listed were more important than their ability to perform those skills. However, the groups differed in their perception of real-world skills and experiences needed to be successful. While students perceived internships to be vital to the success of their future employment, employees disagreed. Interestingly, students rated all skills (interpersonal, communication, technical, computer, and business and economic) as being more important than did employees. In addition, students felt more assured of their ability to perform interpersonal and communication skills than did employer.

Andelt, Barrett and Bosshamer (1997) conducted a study to identify the competencies employers seek in college of agriculture graduates from the University of Nebraska-Lincoln and to determine whether or not graduates could perform the skills and competencies needed for career success. To accomplish this task, the authors sampled 769 employers who were college of agriculture alumni. All graduates were asked to provide contact information about their immediate supervisor, which consisted of: name, title of position, and permission to use the supervisor's name.

Conclusions from the study revealed that employers suggested that communication skills would become increasingly more important over time. In addition, the ability to listen and speak clearly was determined to be two of the most important aspects of communication skills. Employers felt as though leadership skills, such as problem solving and teamwork, would need to continue to improve in the future of the graduate employees. A recommendation from the study was for colleges to survey employers every three to five years in an effort to determine skills needed for college graduates as they begin their careers.

Graham (2001) conducted a three-year study to determine the preparation of entry-level agriculture graduates for employment as perceived by employers. The findings of this study implied that employers placed a strong emphasis on the skill areas of teamwork, leadership, dedication, and initiation. In terms of communication skills, employers rated listening as the most important. Character traits such as honesty, dependability, and integrity were also valued by the employers in this study.

Litzenberg and Schneider (1987) sought to determine the competencies needed in the agriculture workforce by agricultural economics graduates. The findings of this study showed that interpersonal skills were of the utmost importance to employers, followed by communications skills. Specifically, the top five most important individual items comprising interpersonal skills were: self-motivation and positive work attitude (1st), high moral/ethical standards (2nd), work with others/team player (3rd), work without supervision (4th). The nine items comprising communication skills, in order of importance, consisted of: listen and carry out instructions (1st), give clear & concise instructions (2nd), express creative ideas (3rd), professional telephone skills (4th), express creative ideas in writing (5th), speak clearly & concisely/technical info. (6th), write technical reports (7th), listen and summarize oral presentations (8th), and read specific technical information (9th). In addition, when considering previous work experience, “extracurricular activities” ranked first in terms of being most important.

Competence Level of Graduates Entering the Workforce

While defining the skills needed in the workplace is important, determining the competence level of graduates to perform the skills is also relevant. In *The Bases of*

Competence (1998), Evers et al. (1998) defined 18 competencies in which graduates needed to be proficient in order to succeed in the workplace.

Evers et al. (1998) went through two phases to define the 18 competencies. The first phase was qualitative in nature and consisted of individual and focus group interviews of industry employers in Canada. The authors initially assumed that technical skills were most lacking and focused their intent on defining the ways to promote and advance graduates' technical skills and abilities. However, the participating employers concluded that recent graduates (those with less than five years of working experience) were ill-prepared in developing their "generic skills" (non-technical skills) and that these skills needed to be improved upon. As a result of the interviews and discussions and a thorough review of the literature, 13 competencies were identified (Table 1).

Table 1

Employability Skills Graduates Need to Possess

Phase I	Phase II
1. Administrative skills	Problem-solving/analytic
2. Quantitative and mathematical skills	Decision-making
3. Decision-making skills	Planning and organizing
4. Ability to organize and plan	Personal organization/time management
5. Ability to be creative and innovative	Risk-taking skills
6. Oral communication skills	Oral communication
7. Ability to adapt and be flexible	Written communication
8. Leadership skills	Listening
9. Written communication skills	Interpersonal skills
10. Ability to initiate (be a self-starter)	Managing conflict
11. Technical skills	Leadership/influence
12. Problem-solving skills	Coordinating
13. Ability to work independently	Creativity/innovation/change
14.	Visioning
15.	Ability to conceptualize
16.	Learning skills
17.	Personal strengths
18.	Technical skills

The authors developed a questionnaire to assess recent graduate's perceptions of the attainment of the skills to determine if graduates agreed with employers and to bring further clarity to the issue of the employability skills needed. In addition, a questionnaire was developed for the managers to assess the attainment of the skills of the graduates. In all, 442 graduates and 213 managers in twenty-seven corporations participated in Phase I of the study. The average scores from both graduates and managers ranged from 3 – “uncertain” to 4 – “somewhat adequate” on a five-point scale. This assessment revealed the need to further refine and develop the “generic skills” of college graduates.

Seeing the need to further understand the employability skills graduates should possess, the authors expanded their study. Phase II consisted of “more elaborate surveys that allowed for more extensive comparisons across cohorts” (p. 29). In addition, a more in-depth literature review shed light on the issue. As a result, additional studies were conducted and the list of skills developed from Phase I was expanded from 13 to 18. The 18 skills are displayed in Table 1.

Upon expanding the list from 13 to 18 competencies, students and graduates were asked to complete a questionnaire of items reflecting the competencies regarding to their perceptions of the attainment of the skills. To control for potential bias stemming from only having data that consisted of student and graduate self-assessments, professors and employers of graduates were also asked to participate in the study by rating the students. Three consecutive years worth of data were compiled by over 1,600 students and graduates. Only the data from those individuals who participated in the study for all three years were retained.

“Questionnaires were completed by five cohorts in each of the three years” (pg. 32). The cohorts consisted of ‘early university’ (2nd year university students), ‘pregraduate’ (last year university students), ‘job entry’ (university graduates with between 6-8 months of industry experience), ‘job change’ (university graduates with between 2-6 years of industry experience), and ‘stabilize’ (university graduates with an average of 10 years of industry experience)” (p. 32).

To reduce the 18 skills (competencies) into digestible terms, factor analysis was performed. Four “bases of competence” (constructs) were identified. The four bases of competence were: Mobilizing Innovation and Change, Managing People and Tasks, Communicating, and Managing Self. The 18 skills identified were indicators of these bases. The first base of competence, Mobilizing Innovation and Change, consisted of ability to conceptualize, creativity, risk-taking, and visioning. Managing People and Tasks was the second base of competence and consisted of coordinating, decision-making, leadership and influence, managing conflict, and planning and organizing. The third base of competence was Communicating, which consisted of interpersonal, listening, oral communication, and written communication. The fourth and final base of competence was Managing Self. It consisted of learning, personal organization, personal strengths, problem-solving and analytic.

A review of the literature revealed a deeper understanding of the need for each of the skills sets as defined by Evers et al. (1998). The following skills reflect the constructs addressed in the questionnaire.

Desirable Traits of Employers

“Employers frequently say they want to recruit potential leaders... who are good at stimulating their colleagues to take reasonable initiatives” (Coplin, 2003, pg. 69).

There is a need to enhance and develop leadership skills in students to meet the demands of industry because effective leadership skills have been deemed important for agricultural career success (Birkenholz & Schumacher, 1994). Evers et al. (1998) defined leadership and influence as “the ability to give direction and guidance to others and to delegate work tasks to peers and subordinates in an effective manner that motivates others to do their best” (p. 102).

Most agricultural employers report a need for effective leaders to aid in meeting their goals and objectives” (McKinley, Birkenholz, & Stewart, 1993, p. 76) and often rely on college graduates to satisfy leadership positions. However, employers and colleges do not necessarily agree on the qualities a college graduate should possess, especially when it comes to leadership (Shivpuri & Kim, 2004). Although there is much support for leadership development and improvement in preparing students to be effective leaders, it has all too often been an afterthought of university programs due to the rigor of course content (Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001).

In a study conducted to determine the level of importance of certain qualities assessed by department heads of colleges and employers, a discrepancy existed in the area of leadership (Shivpuri & Kim, 2004). Leadership was deemed “important” to employers but was not as important to department heads. Therefore, the leadership quality that employers are searching for in candidates has continued to go unnoticed by colleges (Shivpuri & Kim, 2004). Shivpuri & Kim (2004) noted that a “skills gap” exists

in college graduates by stating that students are not attaining the skills most important to employers. It is crucial that institutions strive to develop leadership skills in its students and not neglect this “call of duty” from society.

Cress et al. (2001) found that developing leadership programs in higher education was important because all students who participate in leadership programs increase their leadership skills and abilities. Therefore, it is imperative that institutions provide leadership programs to further develop this potential and meet the needs of industry. Developing leadership programs nationwide must become a priority (Cress et al., 2001).

One reason for the growing need of leadership development is due to the ever changing, fast paced, multifaceted society in which citizens currently live (McKinley et al., 1993). Because agriculture is an industry that is ever changing, the need for agricultural leaders is high (Birkenholz & Schumacher, 1994). Therefore, development of leadership programs in agriculture is needed. Birkenholz and Schumacher (1994) encouraged colleges of agriculture to take an initiative to develop the leadership traits of their undergraduate students. Fritz and Brown (1998) agreed that additional effort must be made to further enhance and improve leadership development in departments of agriculture.

The demands for improving leadership skills extend beyond industry needs. Research shows that students have a desire to participate in leadership training opportunities. Schumacher and Swan (1993) found that college students recognize the need to improve their leadership skills and are willing to do so if provided the opportunity. What are the leadership skills needed by employers? Coplin (2003) listed problem-solving and people skills as being direct qualities leaders should possess. In

addition, Coplin (2003) suggested initiating and completing an activity increases ones leadership ability.

With this need in mind, colleges of agriculture should provide leadership development opportunities for students. Currently, many university courses are diverting their attention to and preparing students for leadership theory and practice (Boyd & Murphrey, 2001). However, many university faculty feel the pressure of teaching technical content leaves little time to teach life-long leadership skills to students (Baer, 1980, as cited by Birkenholz and Schumacher, 1994).

In addition to developing leadership skills through coursework, Schumacher and Swan (1993) stated that faculty advisors needed to encourage their students to participate in leadership development activities outside the classroom. A study by Birkenholz and Schumacher (1994) revealed that some college faculty in agriculture programs believed that leadership skills should be developed in student organizations and activities rather than in the classroom.

Trait Theory and its Relation to Leadership and Employability

At the turn of the 20th century, researchers were extending much effort to determine what made a leader great. It was assumed that a great leader had to be a great man (Northouse, 2004). Hence the “great man” theory was born. This theory suggested that great leaders had certain traits that made them unique and effective in their leadership roles. Many researchers have set out to determine the skills leaders possess as “great men.” Mann (1959) discovered that effective leaders are intelligent, possess masculinity, are easily able to adjust, are not afraid to be domineering, are extroverted in

nature, and are conservative. Stogdill (1974) included 10 traits that made leaders effective. The ten traits were: 1) drive for responsibility and task completion, 2) vigor and persistence in pursuit of goals, 3) venturesomeness and originality in problem solving, 4) drive to exercise initiative in social situations, 5) self-confidence and sense of personal identity, 6) willingness to accept consequences of decision and action, 7) readiness to absorb interpersonal stress, 8) willingness to tolerate frustration and delay, 9) ability to influence other persons' behavior, and 10) capacity to structure social interaction systems to the purpose at hand. Kirkpatrick and Locke (1991) noted that leaders needed the following traits: drive, motivation, integrity, confidence, cognitive ability, and task knowledge. Northouse (2004) determined that the traits most important to leaders were: intelligence, self-confidence, determination, integrity, and sociability.

The trait approach is also used for personal awareness and development. By analyzing their own traits, managers can gain an idea of their strengths and weaknesses, and they can get a feel for how others see them within the organization. A trait assessment can help managers to determine if they have the qualities to move up or to move to other positions in the company... In areas where their traits are lacking, leaders can try to make changes in what they do or where they work to increase the potential impact of their given traits (Northouse, 2004, p. 21).

Not only are traits needed to be an effective leader, they are also be seen as important to be successful in the workplace. A review of the literature revealed a deeper understanding of the need of the traits or "skill sets" needed to be successful in the workplace. The following skills reflect the constructs addressed in the questionnaire.

Problem-Solving and Analytic

“Employers...want their employees to be problem solvers” (Coplin, 2003, p. 247). Individuals are continuously challenged to solve problems that arise in the workplace (Collis, Waring, & Nicholson, 2004). “Problem-solving is a skill that can be learned, and success can be achieved when this skill is utilized” (Sproull, 2001, p. 7). Sproull stated that some people do not possess the skills needed to solve problems. Perhaps this is because they have never experienced success at solving problems or feel threatened when they are asked to solve problems. Sproull speculated that another reason could be because their college courses never encouraged such a method of learning. However, the college of agriculture is no stranger to teaching students by way of problem-solving techniques. In fact, the problem-solving approach to teaching has been recognized as the preferred method of teaching agriculture subjects (Boone & Newcomb, 1990).

Problem-solving requires higher order thinking. “It consists of identifying, prioritizing, and solving problems individually or in groups” (Evers et al., 1998, p. 64). Cohen and Cohen (1984) formulated a six step approach to problem-solving. The six steps were to: “1) define the central problem, 2) list the relevant factors, 3) list alternative courses of action with their advantages and disadvantages, 4) analyze the relative merits of each alternative, 5) draw conclusions, and 6) make the decision” (p. 10). Sproull (2001) went a step further by extending the six step approach used by Cohen and Cohen to a ten step approach. The ten steps were to:

- 1) identify the problem, 2) describe and define the problem, 3) list the symptoms,
- 4) list the known changes, 5) analyze the problem, 6) hypothesize possible causes,

7) test possible causes, 8) take action(s) on the cause(s), 9) test and implement the solution, 10) implement appropriate controls (p. 10-11).

Several researchers agree that problem-solving is a valuable skill. Coplin (2003) stated that problem solvers strive to continuously improve the situations they are in. Rampersad (2001) said that the problem-solving process... “should be an important part of everybody’s job” (p. 11). Coplin also suggested that good problem solving skills required “good character, good communication skills, excellent people skills, and good research and analysis skills” (p. 107). In addition, a problem solver must take risks and visualize holistically (Coplin, 2003).

In his attempt to understand the problem solving/analytic skills phenomenon, Espinoza (1999) developed six activities related to problem solving/analytic skills. The six activities were: “completed a task given only vague instructions; revised a procedure; solved a problem on your own; extracted important ideas from words, charts, graphs, or tables; applied aspects of training to solve problems or answer questions; and synthesized previously given instructions to extrapolate solution to new problem” (p. 98). Coplin (2003) stated that “typical problems are how to reduce costs, how to increase sales, membership, or number of clients, how to retain workers, how to improve the organization’s public image, how to promote honesty, and how to increase cooperation among employees” (p. 247).

Carnevale, Gainer, and Meltzer (1990) stated that “problem-solving skills include the ability to recognize and define problems, to invent and implement solutions, and to track and evaluate results...and that “unresolved problems create dysfunctional workplace relationships” (p. 4).

Decision-Making

Evers et al. (1998) defined decision making as “making decision on the basis of a thorough assessment of the short- and long-term effects of decisions, recognizing the political and ethical implications, and being able to identify those who will be affected by the decision made” (p. 101). Cohen and Cohen (1984) posited that decision making consists of four categories: 1) instinctive decision making – the ability to decide about a decision on a moments notice, which does not require an individual to have to think about the decision being made. 2) The traditional approach to decision making – refers to previous experience in similar situations and circumstances where the individual relates the decision to what was done in the past. 3) Common sense and logic – deals with the decision maker being able to gather enough information to make a decision based on common sense or logic. 4) Decision-making methods – entails utilizing a formal, structured system by which to make decisions. (p. 2-3).

Organization and Time Management

Being a good manager of time requires being a good planner and organizer. Evers et al. (1998) defined planning and organizing as “being able to determine the tasks needed to meet objectives (strategic and tactical), perhaps assigning some of the tasks to others, monitoring the progress made against the plan, and revising the plan to include new information” (p. 104). Coplin (2003) stated that time management involves being able to “handle multiple assignments over a two- or three- week period, as well as to not miss highly routine activities, such as submitting weekly reports...” (p. 15).

A relationship exists between time management and work productivity and possessing good time management skills suggest being focused, organized, structured, and efficient (Cohen & Cohen, 1984). In order to be as proficient as possible, employers should get in the habit of “listing what has to be done, estimating the time it will take, and in what sequence you will do it” (Coplin, 2003, p. 15).

In developing time management skills, Covey (1989) suggested that individuals “organize and execute around priorities” (p. 149). Covey (1989) developed a Time Management Matrix (Figure 2) in order to assist people in executing their priorities. Covey (1989) stated that four quadrants exist in the Time Management Matrix. Quadrant I is relegated to things that are urgent and important. It is where most people spend the majority of their time.

	Urgent	Not Urgent
Important	I ACTIVITIES: Crises Pressing problems Deadline-driven projects	II ACTIVITIES: Prevention, PC activities Relationship building Recognizing new opportunities Planning, recreation
Not Important	III ACTIVITIES: Interruptions, some calls Some mail, some reports Some meetings Proximate, pressing matters Popular activities	IV ACTIVITIES: Trivia, busy work Some mail Some phone calls Time wasters Pleasant activities

Figure 2.

Covey’s Time Management Matrix (1989), *The 7 Habits of Highly Effective People*.

However, Covey warned that this quadrant can become a burden to people because sooner or later everything is urgent and important. Instead, covey suggests that

people be proactive by focusing on the items in quadrant II. Quadrant II “is the heart of effective personal management. It deals with things that are not urgent, but are important” (p. 153). By focusing on Quadrant II, individuals will manage their time instead of having their time manage them. Covey also suggested that people consumed with Quadrants III (urgent, not important) and IV (not urgent, not important) are usually those individuals who are more irresponsible in nature.

Risk-Taking

Employers must be willing to foster an environment conducive for risk taking to occur (Evers et al., 1998). “Risk Taking is taking reasonable job-related risks by recognizing alternative or different ways of meeting objectives while recognizing the potential negative outcomes and monitoring progress toward the set objectives” (Evers et al., 1998, p. 125). According to *21st Century Skills* (no date), the invention of new ideas, identifying a new phenomenon, and problem solving depend upon people being risk takers. The report went on to say:

Students who are risk takers: are willing to tackle challenging tasks, even when success is uncertain; choose tasks involving reasonable or intermediate risk rather than excessive risk; share and advocate ideas they believe in, even when those ideas are unconventional; are willing to hold their work or thinking up to critical appraisal and amend thinking when successfully challenged; are willing to be incorrect and willingly take on tasks that might result in errors (*21st Century Skills*, no date).

In his book, *A Whack on the Side of the Head*, von Oech (1983) encourages every person to take a risk at least once a week. His suggestion for novice risk takers is to start small. His advice is to “try a new recipe. Invest in a new idea. Tackle a problem outside your field of expertise” (p. 159). Without risk takers, how would any new growth be possible?

Communication (Oral, Written, and Listening)

“Employers want their employees to be good communicators, which is frequently an unfulfilled desire” (Coplin, 2003, p. 243). In his book, *The 7 Habits of Highly Effective People*, Covey (1989) defined communication as “the most important skill in life” (p. 237). Evers et al. (1998) defined communication as “interacting effectively with a variety of individuals and groups to facilitate the gathering, integrating, and conveying of information in many forms” (p. 78). It has been noted that for an organization to realize success as a whole, communication must be present (Cohen & Cohen, 1984). As a result, managers recognize the importance of hiring employees possessing strong communication skills (Cohen & Cohen, 1984). Coplin (2003) stated that in order for an employee to be effective, solid verbal communication skills must be present.

Coplin (2003) stated that writing a memo was the most common form of written communication in industry (Coplin, 2003). To effectively write a memo, good note taking and typing skills are needed (Coplin, 2003). Too many times, note taking is taken for granted. Coplin (2003) argued that employers need to be able to capture their thoughts on paper in a clear, legible form.

In addition, Coplin (2003) stated that editing and proofing skills are needed to be considered a good written communicator. Specifically, editing skills refer to “revising your first draft-organizing content between and within paragraphs, choosing the right words, and making sure the text is understandable and interesting” (p. 44). In contrast, proofing skills consist of “checking for misspellings, omissions, and grammatical mistakes” (p. 44). However, Carnevale, Gainer, and Meltzer (1990) stated that “reading and writing are not the only essential communication tools; it is through listening and oral communication that we most frequently interact with others” (p. 4).

Rampersad (2001) stated that there are multiple forms of communication. Verbal communication consists of “the use of words” (p. 60) used to formulate thought. Sound variations refer to “volume, accent, clearness, speaking velocity...” (p. 60) of the communication process. Evers et al. (1998) defined oral communication as “effectively presenting information” and written communication as “effectively transferring information” (p. 82). Visible information refers to the non-verbal skills associated with communication (Rampersad, 2001 and Evers et al., 1998). Rampersad (2001) listed “attitude, head movements, eye contact, facial expressions, motions, clothes, yes-nodding, hand signals, blushing out of shyness, turning pale out of fear, scratching, playing with objects during lengthy stories” as non-verbal skills used to assist communication (p. 60). Evers et al. (1998) listed “physical stance, eye contact, fluctuations in the voice, hand gestures, speed of talking, and the number of pauses” (p. 85) as the most important non-verbal messages used in communicating verbally.

In addition, other forms of visual information exist in oral communications. For oral communication to be effective, individuals must become proficient in using different

sources of media. Employees should be able to use “PowerPoint as well as creating visual displays on handouts, overheads, or newsprint-like papers...” (Coplin, 2003, p. 37).

Evers et al. (1998) made the contrast between oral and written communication by stating that “oral communication is the ability to present information verbally to others, either one-to-one or in groups” (p. 85). It is the most convenient method for giving and receiving information. “Written communication is the effective transfer of written information, whether formally (through reports and business correspondence, for example) or informally (through notes and memos)” (p. 86).

Research has shown that both forms of communication have been identified as priorities in employees. Coplin (2003) stated that “the purpose of written communication is the same as that of oral communication: promoting mutual understanding between two or more people” (p. 41). Lloyd and Kennedy (1997) stated that in order to possess good writing skills, a person must be able to do the following: “communicate (orally) ideas clearly, concisely, accurately, and logically; write introductory summaries and wrap-up statements; document and illustrate ideas, including creating tables and graphs” (Writing skills section).

On its most foundational level, communication requires a sender and a receiver (Rampersad, 2001) and can occur either in one-on-one conversations or in group settings (Coplin, 2003). Without one or the other, communication cannot occur. Thus, individuals should be good presenters of information as well as good listeners.

Cohen and Cohen (1984) found that other factors come into play when describing communication. As a result, a four-step method for effective verbal communication was developed. The four steps consist of: 1) preparing the message, 2) planning the

presentation of your idea, 3) trying out your idea presentation, and 4) following through on your idea (p. 32). Rampersad (2001) stated that communication “is intended to enhance knowledge components by:

- The exchange of information, informing people and the creation of clearness, in order to make the right decisions.
- The creation of awareness for norms and values in the organization.
- Influencing opinions or attitudes of people and cultivating the concept of cultural change and continuous improvement.
- The development of skills such as the ability to listen well, to set priorities, to plan activities, etc. (p. 60).

Espinoza (1999) developed seven activities in an effort to enhance communication skills. The seven activities related to communication skills were:

spoke with someone about job related issue, wrote official correspondence or inter office memos, wrote instructions for co-workers or users, verbally communicated a concern or idea to boss or co-worker, documented a procedure or incident in writing, reached an agreement with co-worker, and persuaded another person (p. 98).

Lloyd and Kennedy (1997) attempted to define communication by stating that an individual must be able to:

communicate, orally, ideas clearly, concisely, and persuasively; use ‘active’ (versus passive) listening skills; ascertain that you and another have a common understanding of the message; be curious enough to probe for critical information;

and be sensitive enough to hear and relate to the emotions behind another's words" (Communication skills section).

Coplin (2003) stated that for effective one-on-one conversations to take place, employers should get in the habit of "asking questions to check for mutual understanding, never talking more than thirty seconds at one time, and using terms that both parties understand" (p. 32).

For effective communication to occur, effective listening must take place (Cohen and Cohen, 1984). "Listening is being attentive when others are speaking, and responding effectively to others' comments during a conversation" (Evers et al., 1998, p. 84).

Rampersad (2001) cautioned that there is a difference in listening and hearing.

When someone listens, the words are actively registered and processed in the brain and then used. On the other hand, when someone hears, the words are registered in the brain and nothing is done with it. Listening can thus be seen as, hearing, remembering and using it [communication] (p. 63).

Covey (1989) stated that listening occurs at various levels. He describes these levels as: ignoring the person speaking, pretending to hear the person speaking, using selective listening, using attentive listening, and using emphatic listening. In his book, *The 7 Habits of Highly Effective People*, Covey challenged his readers to be emphatic listeners. Emphatic listening is "listening with intent to understand" (p. 240). Proper listening involves hearing the entire message being portrayed by the sender and allowing the sender to know that the responder is attentive to the message (Evers et al., 1998).

Rampersad (2001) stated that good listeners attempt to understand what others are saying and frequently use effective body language (nodding, eye contact) to convey this attempt.

Rampersad (2001) offered the following twelve tips for improving listening skills:

1. Listen critically and intensively to the whole message; listen for ideas, feelings, intentions and facts, and extract the most important themes.
2. Suspend your opinion; don't jump to conclusions before the other has finished speaking.
3. Don't be distracted by external disturbances and the way of presentation; concentrate on what is said, pay attention to the speaker and show that you are intensively listening by making eye contact with the other and through verbal and non-verbal means to show that you understand him.
4. Concentrate on the contents and not on the "packaging";
5. Wait before reacting; if you react too soon, you can listen less intensively and therefore assimilate insufficient information. Don't be tempted to interrupt at the first opportunity.
6. Be prepared to react on ideas, suggestions and remarks without denouncing them;
7. Don't concentrate on that you expect to hear; don't anticipate what the other is going to say and let the other finish talking;
8. Suppress your prejudices;
9. Suppress the need to react emotionally on what is said or on what you think is said;
10. Try to organize what you hear;
11. Take notes occasionally; don't be distracted by taking notes continuously.
12. Prepare yourself mentally to start listening. (p. 63-64).

Interpersonal Relations

Evers et al. (1998) described interpersonal skills as “working well with others (superiors, subordinates, and peers), understanding their needs, and being sympathetic to them” (p. 82). Field (1994) listed three examples of interpersonal skills, which were to: “maintain good work relations, work in a team, and discuss workplace issues and problems” (p. 41). Lloyd and Kennedy (1997) proposed that possessing interpersonal influence skills was being able to “achieve personal goals, as well as influence others and the larger organization; know how organization is structured, how it works, and why it works the way it does; know how, why, when, and by whom decisions are really made” (Interpersonal Influence skills section). Interpersonal skills are often used synonymously with teamwork skills. Dunne and Rawlins (2000) noted that “teamwork is becoming increasingly important within higher education, not only because of employer demands but also as a consequence of pragmatic requirements for change due to the increase in intake of students” (p. 361).

Managing Conflict

“Managing conflict is the ability to identify sources of conflict between oneself and others, or between other people, and to take steps to overcome disharmony” (Evers et al., p. 103). Conflict can be considered a positive attribute in the workforce (Dessler, 1982). “Conflict can, if properly channeled, be an engine of innovation and change, one that can enable an organization to better adapt to the rapid social, political, economic, and technological changes that are expect to occur” (p. 21).

Supervising

Supervisors are instrumental in integrating workplace learning on the job (Jancauskas, Atchison, Murphy, & Rose, 1999). “The necessity of supervision is accepted in practice, and although challenged from time to time, it continues to be an integral part of professional preparation and practice (Brashears, 1995). Supervisors should work with the supervisee to mentor that person through the early years on the job. Ayling (2004) stated that they are “teachers of ethical values and decision-making” (p. 3). Bezzina (2005) stated that supervisors need to be empathetic and caring toward their supervisees. In addition, they need to “provide a climate which is conducive to elicit the supervisee’s true feelings” (Discussing One’s Successes and Failures Section). Specifically, supervisee’s appreciates “a supervisor who delegates work so they know exactly what has to be done, when it has to be done, how much authority they have and why the job is important” (Quality Supervision for Industry, no year, p. 1).

Coordinating

“Coordinating is being able to coordinate the work of peers and subordinates and encourage positive group relationships” (Evers et al., 1998, p. 99). Coordination allows individuals to realize their own goals as well as assist others in fulfilling theirs (Evers et al., 1998). It is a sharing process where peers and subordinates can maximize their potential on the job. Coordinating pertains to sharing the workload with peers and subordinates (Evers et al. 1998).

Creativity, Innovation, Change

A need exists for an environment of innovation and creativity in the workforce (Evers et al., 1998). “Creativity, Innovation, Change is the ability to adapt to situations of change. At times it involves the ability to initiate change and provide novel solutions to problems. It also involves the ability to reconceptualize roles in response to changing demands related to success” (Evers et al., 1998, p. 121).

“Change does not come easily to most institutions. Even to a company in crisis, inertia, resistance, lack of vision, and a host of other factors can derail attempts to adapt to emerging environments” (Logan, as cited in Evers et al., 1998, p. 229). Innovation requires a balance between vision and assessment (Evers et al., 1998).

Visioning

Evers et al. (1998) defined visioning as “the ability to conceptualize the future of the company and provide innovative paths for the company to follow” (p. 126).

Employers must have a vision for the future and make decisions that will be most beneficial to the company or organization. To do so, they must evaluate alternatives through assessments and paradigm shifts (Connor, 2004). However, Crebert et al. (2004) stated, “the new graduate is often unable to choose the best option, or, indeed, identify more than one” (p. 57). To be a visionary, an individual must be creative and “see” things that could potentially exist in the future (Evers et al., 1998).

Ability to Conceptualize

Evers et al. (1998) defined the ability to conceptualize as “being able to combine relevant information from a number of sources, integrate information into more general

frameworks, and apply information to new or broader contexts” (p. 120-121).

“Conceptualizing involves taking what is currently happening and bringing it together to a whole picture” (Evers et al., 1998, p. 127).

Lifelong Learning

To become employable, individuals need to become lifelong learners (Rainbird, 2000). “From an employer’s perspective, an employee who knows how to learn—who knows how to approach and master any new situation—is more cost effective because time and other resources spent on training can be reduced (Carnevale, Gainer, & Meltzer, 1990, p. 3). Lloyd and Kennedy (1997) suggested that to become a lifelong learner, individuals must “understand how you absorb and retain information; learn when you are most alert and use this time to learn; and keep aware of external events and reflect on how those events affect you” (Knowing how to learn section).

“Continuous improvement requires a commitment to learning” (Garvin, 1993, p. 78). One way to ensure continuous improvement in the workplace is to focus on lifelong learning. Organizations should offer training seminars and opportunities which encourage employees to expand their knowledge and continue to learn. “Learning... may involve formal training on the work site or in an institution of education and training” (Gerber, Lankshear, Larsson, & Svensson, 1995, p. 30). Higher education institutions can aid in this need as well. Evers et al. (1998) stated that “new foundations for higher education programs can be, and should, be developed, based on general skills for a lifetime of learning ... (p. 16).

Organizations should become “learning organizations” and promote the concept of lifelong learning within its employees. Peter Senge (1990) stated that learning organizations are “... organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together” (The Learning Organization Section). In his book titled *The World is Flat*, Friedman (2005) stated that job outsourcing is becoming more of a problem for many industry workers. Therefore, a need exists to continually develop skills and knowledge in order to maintain employability should one’s job be outsourced overseas. This responsibility of providing lifelong learning opportunities, according to Friedman (2005), rests solely on individual organizations.

The more lifelong learning opportunities that companies provide, the more they are both widening the skill base of their own workforce and fulfilling a moral obligation to workers whose jobs are outsourced to see to it that they leave more employable than they came (Friedman, 2005, p, 292).

Garvin (1993) stated that “a learning organization is an organization skilled at creating, acquiring, and transferring knowledge and at modifying its behavior to reflect new knowledge and insights” (p. 80). By providing opportunities to learn and by sharing new knowledge with employees, improved motivation, morale, and satisfaction will ensue (Garvin, 1993). While promoting lifelong learning, on the surface, appears to be a valuable experience made available by all organizations, Rainbird (2000) noted that finances to promote such activities are not always available. Therefore, individuals must have an internal Motivation-Personal Strengths and desire to continue to learn. In some

cases, individuals desire to learn on their own because, when allowed, they can control their own learning (Gerber et al., 1995).

Motivation-Personal Strengths

“The expectation for university faculty to motivate students has been on the rise over the past thirty years” (Barbuto & Fritz, 2004, p. 30). Learners are generally self-motivated people (Evers, et al., 1998). However, Evers et al. (1998) stated that:

A feeling of hopelessness has worked its way into society. News of organizational restructuring, downsizing, and cost cutting, coupled with school cutbacks, deficit fighting, and the like, has taken its toll on our youth. Collaborative and cooperative programs between levels of education (such as the transition from high school to college) and within levels (through, for example, video-linked courses among a number of colleges) afford a number of opportunities for education in the future (p. 17).

To motivate students, faculty must first understand the sources of motivation for students, then determine the similarities and differences of how their students are motivated compared to other disciplines, and lastly, apply the concepts and principles of motivation in their classrooms (Barbuto and Fritz, 2004). However, as Mankin, Boone, Flores, and Willyard (2004) point out, motivating students is not an easy task.

“Motivation is central to student learning but has always been a challenge for teachers, because students enter the classroom with diverse backgrounds, interests, experiences, and learning styles” (Mankin et al., 2004, p. 6). One way to motivate students could be to attend to their personal strengths.

Personal strengths comprises a variety of personal traits that assist individuals in dealing with day-to-day work situations – for example, maintaining a high energy level, motivating oneself to function at an optimal level of performance, functioning in stressful situations, maintaining a positive attitude, being able to work independently, and responding appropriately to constructive criticism (p. 63).

Summary

Developing employee's workplace skills has been a concern of supervisors. Making the transition from higher education to the workforce can be difficult. One reason for this difficulty is due to the fact that graduates are not prepared to be accountable for what industry demands. They assume the workplace will resemble the same structure experienced at higher education institutions, and when it does not, they often become dissatisfied with their jobs. A bigger reason for graduates not making a smooth transition into the workplace is because they are not equipped with the proper employability skills needed for employment success. Research has indicated a plethora of skills needed in industry. However, the skills most in demand are problem solving and analytic, decision making, organization and time management, risk taking, oral communication, written communication, listening, interpersonal relations, managing conflict, leadership and influence, coordinating, creativity, innovation, and change, visioning, ability to conceptualize, lifelong learning, and motivation-personal strengths.

CHAPTER III

METHODOLOGY

Purpose of the Study

The purpose of this study was to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia. The study sought to assess graduates' perceptions regarding level of importance of identified employability skills and their self-perceived level of competence at performing those skills. In addition, graduates' immediate supervisors assessed the importance of the identified employability skills for their graduate employee's respective field of work and assessed the competence level of the graduate at performing those skills.

Research Objectives

1. Describe the demographics (age, gender, GPA, academic major) of the graduates.
2. Describe graduates' perceptions of the importance of the employability skills needed for the workforce.
3. Describe graduates' self-perceived level of competence at performing the employability skills.
4. Prioritize the employability skills, according to graduates, in need of curriculum enhancement using the Borich needs assessment mode.
5. Identify the contributions of on campus, off campus, and academic programs in enhancing graduates' employability skills.

6. Assess graduates' job satisfaction within their respective career choice.
7. Assess supervisors' perceptions of the importance of the employability skills needed by graduates to be successful in the workforce.
8. Assess supervisors' perceptions of the graduates' level of competence at performing the employability skills.
9. Prioritize the employability skills, according to supervisors, in need of curriculum enhancement using the Borich needs assessment mode.

Research Design

The design of this study was survey research. The purpose of survey research is to gather data from groups of people by way of questionnaires (Ary, Jacobs, & Razavieh, 2002). Gall, Gall and Borg (2003) stated that “the purpose of a survey is to use questionnaires or interviews to collect data from a sample that has been selected to represent a population to which the findings of the data analysis can be generalized” (p. 223).

Survey research can be used to assess needs. Gall et al. (2003) stated that needs assessment research is used to “measure the precise extent of discrepancy between an existing state and a desired state” (p. 558). For a needs assessment to occur, a clear and obvious need has to be identified. Upon identifying a need, judgments can be made as to what exists and what is desired (Gall et al., 2003).

Population and Sample

The population for this study was graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia-Columbia from January, 2004 – May, 2005 ($N=711$). The frame for the graduates was obtained from the CAFNR Office of Academic Programs. Due to time constraints, a random sample of the population was established (Table 3).

Table 2

Numbers of CAFNR Graduates across Academic Degrees

Academic Major	2004	2005	Total	% of Total	Stratified Sample	Actual Sample
Agricultural Economics	19	21	40	5.6	14	15
Agricultural Education	26	26	52	7.3	19	19
Agricultural Journalism	11	6	17	2.4	6	15
Agribusiness Management	38	23	61	8.6	22	22
Ag Systems Management	15	10	25	3.5	9	15
Animal Science	50	37	87	12.2	31	31
Biochemistry	35	26	61	8.6	22	22
Food and Science Nutrition	9	8	17	2.4	7	15
General Agriculture	19	17	36	5.1	13	15
Hotel & Restaurant Management	60	42	102	14.3	36	36
Plant Sciences	20	12	32	4.5	11	15
Fisheries and Wildlife	27	21	48	6.8	17	17
Forestry	34	6	40	5.6	14	15
Parks, Recreation, and Tourism	40	25	65	9.2	23	23
Soil and Atmospheric Sciences	17	11	28	3.9	10	15
Total	420	291	711	100.0	254	290

According to Gall et al. (2003), through random sampling procedures, the sample will approximate, within a margin of error, the population (Gall et al., 2003). Using a sampling technique designed by Krejcie and Morgan (1960), the population ($N=711$) of graduates was reduced to a sample size of 254. A need existed to analyze the data by academic major. In an effort to compare respondents across academic majors, a stratified

sampling technique was used. “Stratified sampling involves selecting a sample so that certain subgroups in the population are adequately represented in the sample” (Gall et al., 2003, p. 173). Ary et al. (2002) stated that “you first identify the strata of interest and then randomly draw a specified number of subjects from each stratum” (p. 167). Because the number of degree candidates from each major differed greatly (the two year total for Agricultural Journalism and Food and Science Nutrition was 17, while Hotel and Restaurant Management was 102), a minimum of fifteen graduates were randomly selected for each academic major, bringing the total number of randomly selected participants to 290 (Table 3). This modification was used to ensure representation across degrees with fewer graduates. Therefore, after utilizing Krejcie and Morgan’s (1960) statistical sampling technique, any academic major with less than fifteen randomly selected participants was increased to fifteen.

Instrumentation

Carnevale, Gainer, and Meltzer (1990) stated that “a questionnaire can be used to get workers to provide written answers to questions. It can be distributed to many workers, thereby resulting in the collection of a large amount of data... and offers an opportunity for comparative analysis” (p. 4.17). Therefore, a questionnaire (Appendix A) was developed by the researcher following an extensive review of the literature to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources.

The questionnaire used in this research study consisted of four parts. Parts I and II were modified from an original instrument constructed by Evers et al. (1998). Part I

measured the self-perceived importance and competence levels of 67 employability skills on a four-point response scale. The response scale used was:

- 0 – no importance (or competence),
- 1 – minor importance (or competence),
- 2 – moderate importance (or competence), and
- 3 – major importance (or competence).

The importance and competence constructs were further analyzed using the Borich (1980) needs assessment model. The nature of the model is to determine if and where discrepancies exist. Borich (1980) noted the importance of calculating a discrepancy score, weighted discrepancy score, and a mean weighted discrepancy score in an effort to emphasize areas in need of curriculum enhancement and modification.

Part II of the questionnaire assessed the amount of involvement certain on-campus, off-campus and academic programs contributed to the development of graduates' employability skills. Fifteen items were measured on a four-point Likert scale.

Responses ranged from:

- 0 – no contribution,
- 1 – minor contribution,
- 2 – moderate contribution,
- 3 – major contribution, and
- “NA” (Not Applicable).

The job satisfaction section of the questionnaire comprised Part III. This section was developed using the Brayfield-Rothe (1951) job satisfaction instrument, as modified

by Warner (1973). Part III consisted of 14 questions on job satisfaction and dissatisfaction factors and used a five-point response scale ranging from:

1 = Strongly Disagree,

2 = Disagree,

3 = Undecided,

4 = Agree, and

5 = Strongly Agree

Part IV of the questionnaire consisted of seven open-ended demographic questions. These questions allowed the responding graduates to expand upon their position of employment in terms of the hours per week they worked, the type of employment they possessed, the title of their occupation, the months they had worked in their current position and their annual salary and income. In addition, the participants were asked to identify the name and contact information of their immediate supervisor and the number of months they had worked for their supervisor.

In addition to obtaining responses from graduates, data from the graduate's immediate supervisor were also collected. To determine the most effective means for obtaining data from supervisors, a study by Phillippi and Banta (1994) was utilized. The researchers concluded that "interest is increasing in surveying employers to gather their opinions and suggestions concerning the preparation of graduates" (no page number listed) and that it was effective to ask graduates to provide the names and contact information of their supervisors through the graduate's questionnaire. Phillippi and Banta (1994) emphasized that there is:

“evidence that a mailed survey methodology for graduates and their employers can be effective if the graduate’s permission; is obtained on the initial questionnaire and if employers are forced by the survey instrument’s format to differentiate among listed job characteristics and performance ratings” (no page number used).

Therefore, applying the recommendations of Phillippi and Banta (1994) in this study, graduates were asked to provide the names and contact information of their immediate supervisors. Upon receiving the responses, a separate, but similar questionnaire was developed and implemented for the supervisors (Appendix B).

The questionnaire for the immediate supervisors consisted of factors influencing employability among college graduates. Supervisors were asked to assess their employee who was a CAFNR graduate on the importance of the employability skills needed in industry as well as their perception of the level of competence the graduate (employee) possessed at performing the skills. Supervisors ranked the items listed as:

- 0 - no importance,
- 1 – minor importance,
- 2 – moderate importance, and
- 3 – major importance.

To assess the level of competence, supervisors were asked to rate the items as:

- 0 – no competence,
- 1 – minor competence,
- 2 – moderate competence, and
- 3 – major competence.

In addition, supervisors were encouraged to list skills they perceived important to the job of their CAFNR graduate that were not included in the study.

Validity and Reliability

Validity is defined as the ability of a questionnaire to measure what it purports to measure (Ary et al., 2002). Two different types of validity are face validity and content validity. Face validity ensures that the questionnaire is appealing to the eye and that it “appears valid for its intended purpose” (p. 409). Content validity is used to assess whether or not the items in the questionnaire represents what the objectives dictate (Gall et al., 2003). Face and content validity were established for this study by a panel of experts consisting of CAFNR faculty (Appendix C). After suggestions were considered by the panel of experts, modifications to the questionnaire were made.

The reliability of the instrument was also analyzed. Ary et al. (2002) stated that when an instrument is reliable, it is consistent in measuring whatever it is supposed to measure. When defining reliability, it is important to discuss the Classical Test Theory. Classical Test Theory deals with error, and when conducting social science research, error is inevitable. The Classical Test Theory states that the observed score (the score that an individual receives on a specific test) is equal to the true score, which is “the score an individual would make under conditions in which a perfect measuring device is used” (Ary et al., 2002, p. 254) minus error. By checking reliability an instrument, two types of errors were controlled: random errors of measurement and systematic errors of measurement. “Random error is error that is a result of pure chance” (Ary et al., 2002, p. 250). Systematic error deals with systematic changes that affect measurement of the

variable and thus create validity problems (Ary et al., 2002). To account for reliability, a pilot study was performed. The pilot group consisted of 100 randomly chosen graduates not selected to participate in the study. The pilot group was sent an e-mail announcing the importance of their participation in completing the attached on-line survey. These individuals were asked to respond only to the importance portion of Part I – Employability Skills. Specifically, these graduates were asked to rate their perception of the importance of the 67 employability skills. After two weeks, 31 graduates had responded allowing for an assessment of the instrument’s reliability. Upon running the data, a Cronbach’s alpha of .94 was realized, indicating the instrument possessed internal consistency in measuring the variable of interest.

In an effort to alleviate the bulkiness of the questionnaire by reducing items, a factor analysis was performed on the original instrument by Evers et al. (1998). The factor analysis reduced the instrument into four competencies and sixteen employability skill constructs:

1. *Mobilizing Innovation and Change*: Conceptualizing as well as setting in motion ways of initiating and managing change that involve significant departures from the current mode.
 1. Ability to conceptualize: The ability to combine relevant information from a number of sources, integrate information into more general contexts, and apply information to new or broader contexts.
 2. Creativity, innovation, change: The ability to adapt to situations of change. At times it involves the ability to initiate change and provide novel

solutions to problems. It also involves the ability to reconceptualize roles in response to changing demands related to the organization's success.

3. Risk-taking: Taking reasonable job-related risks by recognizing alternative or different ways of meeting objectives, while at the same time recognizing the potential negative outcomes and monitoring the progress toward the set objectives.
4. Visioning: The ability to conceptualize the future of the company and provide innovative paths for the company to follow.
2. *Managing People and Tasks*: Accomplishing the tasks at hand by planning, organizing, coordinating, and controlling both resources and people.
 5. Coordinating: The ability to coordinate the work of peers and subordinates and encourage positive group relationships.
 6. Decision-making: Making timely decisions on the basis of a thorough assessment of the short- and long-term effects of decisions, recognizing the political and ethical implications, and being able to identify those who will be affected by the decisions made.
 7. Leadership and influence: The ability to give direction and guidance to others and to delegate work tasks to peers and subordinates in an effective manner, one that motivates others to do their best.
 8. Managing conflict: The ability to identify sources of conflict between oneself and others, or between other people, and to take steps to overcome disharmony.

9. Planning and organizing: The ability to determine the tasks needed to meet objectives (strategic and tactical), perhaps assigning some of the tasks to others, monitoring the progress made against the plan, and revising the plan to include new information.
3. *Communicating*: Interacting affectively with a variety of individuals and groups to facilitate the gathering, integrating, and conveying of information in many forms (for example, verbal, written).
 10. Interpersonal: Working well with others (superiors, subordinates, and peers), understanding their needs, and being sympathetic to them.
 11. Listening: Being attentive when others are speaking and responding effectively to others' comments during a conversation.
 12. Oral communication: The ability to present information verbally to others, either one-on-one or in groups.
 13. Written communication: The effective transfer of written information, either formally (for example, through reports and business correspondence) or informally (through memos, notes, and the like).
4. *Managing Self*: Constantly developing practices and internalizing routines for maximizing one's ability to deal with the uncertainty of an ever-changing environment.
 14. Learning: The ability to gain knowledge from everyday experiences and to keep up-to-date on developments in one's field.

15. Personal organization and time management: Managing several tasks at once; being able to set priorities and allocate time efficiently in order to meet deadlines.
16. Personal strengths: Comprises a variety of personal traits that assist individuals in dealing with day-to-day work situations-for example: maintaining a high energy level, motivating oneself to function at an optimal level of performance, functioning in stressful situations, maintaining a positive attitude, being able to work independently, and responding appropriately to constructive criticism (*The Bases of Competence*, p. 40-41, by Evers and Rush, 1996, p. 280-281. Copyright 1996 by Sage Publications).

Semantic changes to the employability skill constructs were made by the panel of experts. “Personal Strengths” was changed to “Motivation-Personal Strengths.” “Personal and Organizational Time Management” was changed to “Organization and Time Management.” “Learning” was changed to “Lifelong Learning.” “Interpersonal” changed to “Interpersonal Relations.” Lastly, “Planning and Organizing” was changed to “Coordination.” Each of these four competencies is represented by the employability skill constructs listed, which in turn is represented by individual items assessing the employability skill constructs (Appendix D).

Data Collection

The Dillman (2004) Tailored Design Method was used to collect data. As a result, individuals in the sample ($n=290$) were sent an initial postcard on Friday, December 16,

2005 (Appendix F). The postcard had two purposes: 1) to alert the participants of the purpose of the study and that a forthcoming questionnaire would be arriving in the near future, and 2) to allow the participants the opportunity to provide a more accurate address, if needed. The postcard informed the graduates that they had been randomly selected to participate in a College-wide study in an effort to assess the employability skills needed in industry and that their responses were important to the study, as the College would use the data to enhance the curriculum in an effort to better prepare future graduates for industry.

However, upon mailing the postcards, a valid address was not realized for all individuals, resulting in a frame error. A total of 18 individual postcards were “returned to the sender” and deemed undeliverable. Multiple attempts were made to locate and secure permanent addresses for these individuals. Specifically, contacts were made to the University of Missouri-Columbia Alumni Association. Personal searches were also conducted on-line through the whitepages.com website as well as through the University of Missouri-Columbia database. After multiple attempts to secure an address for these individuals failed, they were eliminated from the study, reducing the sample size from 290 to 272.

After four weeks upon sending the initial postcards and receiving feedback from graduates who provided a more accurate address, the questionnaire (Appendix A), cover letter (Appendix G), and pre-addressed stamped envelope were mailed to the 272 graduates on January 25, 2006. The cover letter informed the participants of the purpose of the study and the need for honest responses to the questions and encouraged them to return their completed questionnaire by February 7, 2006. Attached to the questionnaire

was a \$1.00 bill. This was included for participants to enjoy a soft drink or cup of coffee as they completed the questionnaire, as a means for encouraging participation.

On February 7, 2006, sixty-seven (24.6%) of the sampled graduates responded by returning their completed questionnaire. On February 8, 2006, those who had not responded were sent a follow-up postcard (Appendix H) requesting that they complete and return their questionnaire. Two weeks later, February 21, 2006 another package, consisting of a second cover letter (Appendix I), questionnaire, and pre-paid, stamped envelope, was mailed to the non-respondents. After the initial mailing and subsequent follow-up procedures, 141 usable questionnaires were received from the graduates for a 52% response rate.

Phase II of the study consisted of assessing supervisors' perceptions of the employability skills of their CAFNR graduate. On February 26, 2006, an initial postcard (Appendix J) was sent to graduates' supervisors ($N = 75$), as made available by the graduates' responses in Phase I. The postcard informed the supervisors that the study was being conducted to assess the perceptions of CAFNR graduates, as well as those of their immediate supervisors. As a result, the CAFNR graduate they had hired had been randomly selected to participate and therefore, their input was also needed. The postcard insisted that the study would only be maximized upon their assessment of their employee's employability skills. The postcard encouraged the supervisors to complete their forthcoming questionnaires and return them in the pre-addressed, stamped envelope provided.

After submitting the initial postcards, the questionnaire (Appendix B) and cover letter (Appendix K) were mailed to the supervisors on March 1, 2006. The cover letter

informed the supervisors of the purpose of the study and the need for honest responses to the questions. The cover letter encouraged the supervisors to complete and return their questionnaire by March 14, 2006. After March 14, 2006, ten (13.3%) supervisors had returned their completed questionnaire. Of those who had not returned their questionnaire, another postcard (Appendix L) informing them to please complete and return their questionnaire was sent on March 15, 2006. One week later, March 22, 2006, a final package was submitted to the non-respondents. The final package consisted of a follow-up questionnaire and cover letter (Appendix M). After the initial mailing and follow-up procedures, 42 usable questionnaires were received from the supervisors for a 56% response rate.

Data Analysis

Survey research seeks to describe data quantitatively by way of descriptive statistics. Descriptive statistics consist of the measures of central tendency (Ary et al., 2002) and variability and seek to “describe and summarize the data” (p. 154). Measures of central tendency consist of means, medians, and modes. The mean is an interval of ratio statistic used to describe the average of the scores. The median assesses the middle score in a distribution and is ordinal in nature. The mode is a nominal statistic and describes the score or value that appears in a distribution most often.

Objective one was addressed by assessing the frequencies and percentages of gender and the mean and standard deviation of GPA. To address objectives two, three, six, seven, and eight, means and standard deviations were reported. Objective five was reported by using frequencies and percentages. To address objectives four and nine, the

Borich (1980) needs assessment model was implemented. Garton and Chung (1997) stated that the Borich model (1980) “utilized survey methodology in which respondents provided data that could be weighted and ranked in order of priority” (p. 52). To determine the perceived level of importance of the employability skills needed in industry and the perceived level of competence at performing the skills, discrepancy scores were taken from the data on the employability skill constructs. Sixteen employability skill constructs were identified through the literature. Participants responded to a set of items comprising each employability skill construct in an effort to better understand the skills needed in the workplace. The employability skill constructs were ranked from high to low to determine the greatest discrepancies, which would send an alert to where the curriculum should be enhanced.

Specifically, a discrepancy score for each employability skill construct was calculated by taking the mean importance rating minus the mean competence rating. A weighted discrepancy score was then calculated for every employability skill construct by multiplying the discrepancy score by the mean importance rating. Lastly, a mean weighted discrepancy score for each of the employability skills was then calculated by taking the sum of the weighted discrepancy scores, divided by the number of respondents ($n = 141$). The employability skill constructs were then ranked, from high to low; using the mean weighted discrepancy scores. Items with a high discrepancy score indicated areas needed for curriculum enhancement and improvement. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 13.0 computer program for windows.

Depending on the MWDS, the employability skill items fell into one of four categories. All items with a MWDS of .80 or above were deemed to possess a high discrepancy score and placed in category I. Category II consisted of moderate discrepancy scores and contained items ranging in MWDS from .50-.79. Category III consisted of low discrepancy scores and contained items ranging from .30-.49. Lastly, category IV consisted of negligible discrepancy scores and contained all items possessing a MWDS of .29 and below.

Summary

The study was conducted to assess the employability skills of CAFNR graduates from January, 2004 through May, 2005 and consisted of a descriptive survey. The study sought to determine graduate's perceptions of the importance of the employability skills and their level of competence at performing the skills. Because of the potential problematic issues surrounding self ratings, graduates were asked to supply the name and contact information of their immediate supervisor. The supervisors were then sent a questionnaire and asked to assess the importance of the employability skills and the competence level of their (CAFNR) employee. Job satisfaction was also assessed for the graduates. Fourteen items assess the level to which CAFNR graduates were satisfied with their daily jobs.

CHAPTER IV

FINDINGS

Purpose of the Study

The purpose of this study was to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia. The study sought to assess graduates' perceptions regarding level of importance of identified employability skills and their self-perceived level of competence at performing those skills. In addition, graduates' immediate supervisors assessed the importance of the identified employability skills for their graduate employee's respective field of work and assessed the competence level of the graduate at performing those skills.

Population and Sample

The population for this study was graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia-Columbia from January, 2004 – May, 2005 ($N=711$). The frame for the graduates was accessed from the CAFNR Office of Academic Programs. Due to time and money, a random sample of the population was established. Using a sampling technique described by Krejcie and Morgan (1960), the population ($N=711$) of graduates was reduced to a sample size of 254.

In an effort to compare respondents across academic majors, a stratified sampling technique was used. Because the number of degree candidates from each major differed

greatly, a minimum of fifteen graduates were randomly selected for each academic major, bringing the total number of randomly selected participants to 290 (Table 3).

Table 3

Respondents by Academic Major

Academic Major	Stratified Sample	Undeliverable	Number of Respondents
Agricultural Economics	15	0	9
Agricultural Education	19	1	14
Agricultural Journalism	15	0	11
Agribusiness Management	22	0	13
Ag Systems Management	15	1	13
Animal Science	31	2	15
Biochemistry	22	2	10
Food and Science Nutrition	15	1	8
General Agriculture	15	3	5
Hotel & Restaurant Management	36	5	10
Plant Sciences	15	0	10
Fisheries and Wildlife	17	2	7
Forestry	15	0	6
Parks, Recreation, and Tourism	23	0	5
Soil and Atmospheric Sciences	15	1	5
Total	290	18	141

However, upon the data collection process, it was realized that the minimum number of responses needed to compare graduates across academic major was not realized. In addition to the lack of responses needed to compare graduates across academic major, eighteen graduates' addresses could not be obtained resulting in frame error.

Control of Non-Response Error

Non-response error is a threat to external validity. When controlling for non-response error, the findings will assimilate the sample (Miller & Smith, 1983). Miller and

Smith (1983) stated that one way for handling non-response error is to compare early and late respondents because late respondents tend to be similar to non-respondents. Ary et al. (2002) stated that another way to compare respondents is to categorize them into two distinct groups of early and late respondents. Therefore, in an effort to be conservative, the first 25% ($n = 35$; early respondents) were compared to the last 25% ($n = 35$; late respondents). This represented the extreme ends of the spectrum concerning early and late respondents, allowing the greatest discrepancy. Early respondents were compared to late respondents on known demographic data (Ary, et al., 2002). As a result, ACT, high school class rank, predicated MU GPA, and final MU GPA were variables compared (Table 4).

Table 4

Comparison of Early and Late Respondents on Known Demographic Data

	Early Respondents		Late Respondents		p-value
	M	SD	M	SD	
1. ACT	24.4	3.7	25.1	3.7	.12
2. High School Class Rank	73.8	21.3	81.4	17.4	.01*
3. Predicted MU Grade Point Average	2.82	.52	2.99	.50	.02*
4. Final MU GPA	2.92	.47	3.18	.47	.00*

Note. $p < .05$

Early respondents were significantly different than late respondents on three of the four demographic variables at the .05 level. The three variables significantly different were: high school class rank, predicted MU GPA, and final MU GPA, with late respondents scoring higher on all three variables.

Early and late respondents were also compared on the mean weighted discrepancy score (MWDS) of the 16 employability skill constructs (Appendix D). When comparing

early and late respondents on the MWDS, there was no significant difference between the two groups on the 16 employability skill constructs MWDS at the .05 level (Table 5).

Table 5

Comparison of Early and Late Respondents on the Employability Skill Constructs

Employability Skill Construct	Early Respondents		Late Respondents		p-value
	MWDS	SD	MWDS	SD	
1. Problem Solving and Analytic	.83	1.13	1.08	.98	.34
2. Decision-Making	.64	1.25	.52	1.48	.72
3. Organization and Time Management	.44	1.43	.77	1.06	.27
4. Risk Taking	.74	1.22	.47	1.44	.41
5. Oral Communication	.82	1.62	.41	1.80	.33
6. Written Communication	.16	1.64	.00	1.71	.70
7. Listening	1.06	1.67	.76	1.66	.46
8. Interpersonal Relations	.32	1.36	.30	1.20	.96
9. Managing Conflict	.42	1.65	.13	1.64	.46
10. Leadership and Influence	.08	1.90	.56	1.36	.24
11. Coordination	.20	1.88	.26	1.30	.87
12. Creativity, Innovation, and Change	.81	1.35	.74	1.47	.84
13. Visioning	.82	1.50	.62	1.49	.58
14. Ability to Conceptualize	.13	1.60	.39	1.21	.44
15. Lifelong Learning	.68	1.62	.77	1.60	.82
16. Motivation-Personal Strengths	.76	1.24	.91	1.29	.62

Note. $p < .05$

In addition, early and late respondents were compared with regard to their level of job satisfaction. No significant differences existed between early and late respondents with regard to their level of job satisfaction (Table 6).

Table 6

Comparison of Early and Late Respondents on Level of Job Satisfaction

Variable	Early Respondents		Late Respondents		p-value
	M	SD	M	SD	
Overall Job Satisfaction	3.89	.86	3.99	.69	.60

Note. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree; $p < .05$

Because two of the three comparisons (MWDS and job satisfaction) revealed no significant differences between early and late respondents, the groups were considered to be similar. Therefore, the results of the study were deemed generalizable to the sample.

Objective One

Objective one sought to describe the demographics (gender, GPA) of the graduates by academic major. Gender is nominal data; therefore, it was reported using frequency and percentage (Table 7). Mean and standard deviation was used to describe graduate's grade point average (GPA) at the completion of their degree program.

Table 7

Demographics of Responding CAFNR Graduates by Academic Major (n=141)

Academic Major	Gender				GPA	
	Male		Female		M	SD
	f	%	f	%		
Agricultural Economics	6	66.7	3	33.3	3.17	.36
Agricultural Education	4	28.6	10	71.4	3.18	.52
Agricultural Journalism	4	36.4	7	63.6	3.34	.40
Agribusiness Management	10	76.9	3	23.1	3.25	.49
Ag Systems Management	12	92.3	1	7.7	3.38	.39
Animal Science	2	13.3	13	86.7	3.18	.49
Biochemistry	2	20.0	8	80.0	3.47	.24
Food and Science Nutrition	0	0.0	8	100.0	3.20	.45
General Agriculture	4	80.0	1	20.0	2.56	.54
Hotel and Restaurant Management	5	50.0	5	50.0	2.84	.46
Plant Sciences	7	70.0	3	30.0	3.31	.56
Fisheries and Wildlife	3	42.9	4	57.1	2.77	.21
Forestry	4	66.7	2	33.3	3.47	.28
Parks, Recreation, and Tourism	2	40.0	3	60.0	2.97	.31
Soil and Atmospheric Sciences	1	20.0	4	80.0	2.92	.45
Total	66	47.0	75	53.0	3.18	.47

In terms of gender, 66 (47%) of the respondents were male and 75 (53%) were female. The mean GPA was 3.18 with a standard deviation of .47. The academic major

with the greatest response from graduates was agricultural systems management (87%), followed by agricultural education (74%), and agricultural journalism (73%). The lowest response rates came from graduates with degrees in parks, recreation, and tourism (22%), hotel and restaurant management (28%), and general agriculture and soil and atmospheric sciences (33%). The academic majors having the highest GPA was biochemistry and forestry (GPA = 3.47). The academic major having the lowest GPA was general agriculture (GPA = 2.56).

Objective Two

Objective two sought to describe graduates' perceptions of the importance of the employability skills needed for the workforce. The 67 employability skills were ranked in order of importance based on their mean importance (Table 8). Four employability skills were found to have a mean importance greater than 2.80. These four items consisted of "solving problems" ($M = 2.87$), "ability to work independently" ($M = 2.84$), "functioning well in stressful situations" ($M = 2.84$), and "maintaining a positive attitude" ($M = 2.81$). In addition, seven items possessed a mean importance of less than 2.00. These seven items were "writing reports" ($M = 1.98$), "conceptualizing a future for the company" ($M = 1.94$), "providing innovative paths for the company to follow for future development" ($M = 1.90$), "making impromptu presentations" ($M = 1.88$), "writing external business communications" ($M = 1.87$), "reconceptualizing your role in response to changing corporate realities" ($M = 1.84$), and "identifying political implications of the decisions to be made" ($M = 1.53$).

Table 8

Graduates' Perceptions of the Importance of the Employability Skills (n=141)

Rank	Employability Skill	<i>M</i>	<i>SD</i>
1.	Solving problems	2.87	.38
2.	Ability to work independently	2.84	.45
3.	Functioning well in stressful situations	2.84	.38
4.	Maintaining a positive attitude	2.81	.46
5.	Listening attentively	2.79	.43
6.	Identifying problems	2.77	.47
7.	Working well with fellow employees	2.77	.49
8.	Setting priorities	2.77	.50
9.	Allocating time efficiently	2.76	.52
10.	Relating well with supervisors	2.75	.54
11.	Functioning at an optimal level of performance	2.74	.53
12.	Managing/overseeing several tasks at once	2.69	.51
13.	Gaining new knowledge from everyday experiences	2.67	.58
14.	Establishing good rapport with subordinates	2.67	.67
15.	Meeting deadlines	2.66	.63
16.	Prioritizing problems	2.65	.51
17.	Responding positively to constructive criticism	2.65	.61
18.	Communicating ideas verbally to groups	2.64	.61
19.	Recognizing the effects of decisions made	2.63	.54
20.	Conveying information one-to-one	2.63	.59
21.	Adapting to situations of change	2.62	.63
22.	Identifying essential components of the problem	2.57	.55
23.	Using proper grammar, spelling, and punctuation	2.57	.71
24.	Keeping up-to-date on developments in the field	2.56	.68
25.	Responding to others' comments during a conversation	2.55	.58
26.	Making decisions on the basis of thorough analysis of the situation	2.54	.63
27.	Maintaining a high energy level	2.51	.66
28.	Assessing long-term effects of decisions	2.50	.66
29.	Understanding the needs of others	2.49	.66
30.	Establishing the critical events to be completed	2.49	.74
31.	Making decisions in a short time period	2.46	.64
32.	Giving direction and guidance to others	2.46	.71
33.	Combining relevant information from a number of sources	2.43	.74
34.	Revising plans to include new information	2.40	.71
35.	Initiating change to enhance productivity	2.40	.79
36.	Knowing ethical implications of decisions	2.39	.82
37.	Recognizing alternative routes in meeting objectives	2.36	.68
38.	Sorting out the relevant data to solve the problem	2.34	.63
39.	Providing novel solutions to problems	2.33	.67
40.	Gaining new knowledge in areas outside the immediate job	2.30	.77

Table 8 (Continued).

Graduates' Perceptions of the Importance of the Employability Skills (n=141)

Rank	Employability Skill	<i>M</i>	<i>SD</i>
41.	Resolving conflicts	2.30	.82
42.	Contributing to group problem solving	2.27	.68
43.	Identifying potential negative outcomes of a risky venture	2.27	.86
44.	Keeping up-to-date with external realities to company's success	2.27	.95
45.	Empathizing with others	2.25	.79
46.	Supervising the work of others	2.25	.89
47.	Monitoring progress against the plan	2.21	.75
48.	Assigning/delegating responsibility	2.17	.76
49.	Integrating information into more general contexts	2.14	.74
50.	Delegating work to subordinates	2.14	.91
51.	Coordinating the work of subordinates	2.14	.96
52.	Applying information to new or broader contexts	2.11	.74
53.	Taking reasonable job-related risks	2.11	.77
54.	Making effective business presentations	2.11	.93
55.	Identifying sources of conflict among people	2.09	.83
56.	Delegating work to peers	2.09	.87
57.	Monitoring progress toward objectives in risky ventures	2.05	.83
58.	Coordinating the work of peers	2.01	.88
59.	Writing internal business communication	2.01	.91
60.	Integrating strategic considerations in the plans made	2.00	.74
61.	Writing reports	1.98	.95
62.	Conceptualizing a future for the company	1.94	.93
63.	Providing innovative paths for company's future development	1.90	.95
64.	Making impromptu presentations	1.88	.96
65.	Writing external business communications	1.87	1.00
66.	Reconceptualizing your role to changing corporate realities	1.84	1.01
67.	Identifying political implications of the decisions to be made	1.53	.90

Note. Scale: 0 = No Importance, 1 = Important, 2 = Moderate Importance, 3 = Major Importance

Objective Three

Objective three sought to describe graduates' self-perceived level of competence at performing the employability skills. Means and standard deviations were reported to describe graduates' self-perceived level of competence at performing the employability skill constructs (Table 9).

Table 9

*Graduates' Perceptions of their Level of Competence at Performing the Employability**Skills (n=141)*

Rank	Employability Skill	<i>M</i>	<i>SD</i>
1.	Ability to work independently	2.69	.56
2.	Relating well with supervisors	2.65	.55
3.	Working well with fellow employees	2.65	.58
4.	Listening attentively	2.55	.64
5.	Setting priorities	2.53	.65
6.	Maintaining a positive attitude	2.52	.59
7.	Establishing good rapport with subordinates	2.52	.66
8.	Meeting deadlines	2.51	.67
9.	Functioning well in stressful situations	2.49	.61
10.	Gaining new knowledge from everyday experiences	2.49	.66
11.	Managing/overseeing several tasks at once	2.45	.65
12.	Using proper grammar, spelling, and punctuation	2.43	.77
13.	Functioning at an optimal level of performance	2.42	.65
14.	Identifying problems	2.40	.53
15.	Responding to others' comments during a conversation	2.40	.67
16.	Solving problems	2.39	.57
17.	Understanding the needs of others	2.39	.67
18.	Conveying information one-to-one	2.36	.71
19.	Maintaining a high energy level	2.34	.71
20.	Prioritizing problems	2.32	.64
21.	Allocating time efficiently	2.31	.71
22.	Adapting to situations of change	2.30	.70
23.	Giving direction and guidance to others	2.28	.70
24.	Recognizing the effects of decisions made	2.27	.66
25.	Empathizing with others	2.27	.77
26.	Combining relevant information from a number of sources	2.24	.65
27.	Making decisions in a short time period	2.24	.69
28.	Supervising the work of others	2.24	.70
29.	Responding positively to negative criticism	2.24	.75
30.	Knowing ethical implications of decisions	2.24	.77
31.	Identifying essential components of the problem	2.22	.61
32.	Making decisions on the basis of thorough analysis of the situation	2.22	.64
33.	Communicating ideas verbally to groups	2.22	.75
34.	Writing reports	2.21	.76
35.	Resolving conflicts	2.19	.68
36.	Keeping up-to-date on developments in the field	2.19	.70
37.	Establishing the critical events to be completed	2.19	.70
38.	Revising plans to include new information	2.19	.75

Table 9 (Continued).

Graduates' Perceptions of their Level of Competence at Performing the Employability

Skills (n=141)

Rank	Employability Skill	<i>M</i>	<i>SD</i>
39.	Assigning/delegating responsibility	2.17	.76
40.	Contributing to group problem solving	2.14	.63
41.	Assessing long-term effects of decisions	2.14	.65
42.	Initiating change to enhance productivity	2.14	.72
43.	Coordinating the work of subordinates	2.14	.83
44.	Sorting out the relevant data to solve a problem	2.12	.59
45.	Identifying sources of conflict among people	2.12	.77
46.	Gaining new knowledge in areas outside the immediate job	2.11	.80
47.	Integrating information into more general contexts	2.09	.69
48.	Providing novel solutions to problems	2.08	.66
49.	Delegating work to subordinates	2.08	.81
50.	Recognizing alternative routes in meeting objectives	2.07	.69
51.	Making effective business presentations	2.04	.78
52.	Identifying negative outcomes when considering a risky venture	2.04	.80
53.	Taking reasonable job-related risks	2.02	.79
54.	Monitoring progress against the plan	2.01	.74
55.	Delegating work to subordinates	2.01	.75
56.	Coordinating the work of peers	1.98	.78
57.	Writing internal business communication	1.96	.82
58.	Applying information to new or broader contexts	1.95	.59
59.	Keeping up-to-date with external realities of company's success	1.93	.77
60.	Writing external business communication	1.91	.85
61.	Making impromptu presentations	1.89	.87
62.	Integrating strategic considerations in the plans made	1.87	.71
63.	Monitoring progress toward objectives in risky ventures	1.87	.81
64.	Conceptualizing a future for the company	1.66	.83
65.	Reconceptualizing your role to changing corporate realities	1.63	.86
66.	Providing innovative paths for a company's future development	1.61	.78
67.	Identifying political implications of the decisions to be made	1.46	.80

Note. Scale: 0 = No Competence, 1 = Competent, 2 = Moderately Competent, 3 = Major Competence

Eight employability skills had a mean competence of greater than 2.50. The eight items were “ability to work independently” ($M = 2.69$), “relating well with supervisors” ($M = 2.65$), “working well with fellow employees” ($M = 2.65$), “listening attentively” (M

= 2.55), “setting priorities” ($M = 2.53$), “maintaining a positive attitude” ($M = 2.52$), “establishing good rapport with subordinates” ($M = 2.52$), and “meeting deadlines” ($M = 2.51$). In addition, twelve employability skills had means of less than 2.0. These three consisted of “integrating information into more general contexts” ($M = 2.09$), “providing novel solutions to problems” ($M = 2.08$), and “delegating work to subordinates” ($M = 2.08$).

Objective Four

The purpose of objective four was to prioritize the employability skills, as perceived by graduates, in need of curriculum enhancement using the Borich needs assessment model. The Borich (1980) needs assessment model allows two ratings to be taken into account simultaneously in an effort to determine where discrepancies exist (Table 10). A discrepancy score was calculated by taking the importance rating minus the competence rating for each graduate on each employability skill. A weighted discrepancy score was then calculated by multiplying each discrepancy score by the associated mean importance rating of the employability skill. Lastly, a mean weighted discrepancy score (MWDS) was calculated by taking the sum of the weighted discrepancy scores for each skill and dividing by the number of respondents ($n = 141$). To prioritize the skills for curriculum enhancement, four categories were defined as a result of the mean weighted discrepancy scores. Specifically, category I consisted of all MWDS greater than .80 and was considered a high discrepancy. Category II consisted of all MWDS from .50 to .79 and was considered a moderate discrepancy. Category III consisted of all MWDS from

.30 to .49 and was considered a low discrepancy. Category IV consisted of all skills with a MWDS below .30 and was considered a negligible discrepancy.

Table 10

Graduates' Perceptions of the Employability Skills Using Mean Weighted Discrepancies

Category	Employability Skill	MWDS
I	Solving problems	1.30
	Allocating time efficiently	1.22
	Communicating ideas verbally to groups	1.09
	Responding positively to constructive criticism	1.07
	Functioning well in stressful situations	.97
	Keeping up-to-date on developments in the field	.95
	Identifying problems	.92
	Recognizing the effects of decisions made	.90
	Assessing long-term effects of decisions	.89
	Identifying essential components of the problem	.86
	Prioritizing problems	.85
	Functioning at an optimal level of performance	.84
	Adapting to situations of change	.81
II	Maintaining a positive attitude	.79
	Making decisions by thoroughly analyzing the situation	.76
	Keeping up-to-date with external realities for success	.73
	Establishing the critical events to be completed	.73
	Conveying information one-to-one	.70
	Recognizing alternative routes in meeting objectives	.69
	Managing/overseeing several tasks at once	.64
	Setting priorities	.64
	Listening attentively	.62
	Initiating change to enhance productivity	.60
	Providing novel solutions to problems	.57
	Conceptualizing a future for the company	.56
	Making decisions in a short time period	.55
	Providing innovative paths for company's future development	.53
Identifying potential negative outcomes on risky ventures	.52	
III	Sorting out the relevant data to solve the problem	.49
	Revising plans to include new information	.47
	Gaining new knowledge from everyday experiences	.47
	Combining relevant information from a number of sources	.46
	Ability to work independently	.44
	Monitoring progress against the plan	.43

Table 10 (Continued).

Graduates' Perceptions of the Employability Skills Using Mean Weighted Discrepancies

Category	Employability Skill	MWDS
	Assigning/delegating responsibility	.42
	Gaining new knowledge in areas outside the immediate job	.42
	Maintaining a high energy level	.42
	Giving direction and guidance to others	.41
	Meeting deadlines	.39
	Monitoring progress toward objectives in risky ventures	.37
	Responding to others' comments during a conversation	.37
	Establishing good rapport with subordinates	.37
	Reconceptualizing your role to changing corporate realities	.37
	Knowing ethical implications of decisions	.35
	Applying information to new or broader contexts	.32
	Working well fellow employees	.31
IV	Contributing to group problem solving	.29
	Resolving conflicts	.29
	Integrating strategic considerations in the plans made	.25
	Relating well with supervisors	.25
	Understanding the needs of others	.24
	Delegating work to peers	.20
	Taking reasonable job-related risks	.18
	Delegating work to subordinates	.15
	Making effective business presentations	.13
	Integrating information into more general contexts	.12
	Identifying political implications of the decision to be made	.11
	Writing internal business communication	.11
	Supervising the work of others	.09
	Coordinating the work of peers	.08
	Coordinating the work of subordinates	.03
	Making impromptu presentations	-.01
	Identifying sources of conflict among people	-.02
	Empathizing with others	-.05
	Writing external business communication	-.07
	Writing reports	-.44
	Using proper grammar, spelling, and punctuation	-1.53

Thirteen employability skill items fell into category I as a result of having high discrepancy scores according to the perceptions of graduates, indicating a high need for curriculum enhancement. The top five skills in category I were: “solving problems”

(1.30), “allocating time efficiently” (1.22), “communicating ideas verbally to groups” (1.09), “responding positively to constructive criticism” (1.07), and “functioning well in stressful situations” (.97).

Category II contained 15 items that received high moderate discrepancy scores, indicating a moderate need for curriculum enhancement. The top five skills in category II were: “maintaining a positive attitude” (.79), “making decisions by thoroughly analyzing the situation” (.76), “keeping up-to-date with external realities for success” (.73), “establishing the critical events to be completed” (.73), and “conveying information one-to-one” (.70).

Eighteen employability skill items fell into category III, indicating low discrepancy scores and a low need for curriculum enhancement. The top five skills for category III consisted of: “sorting out the relevant data to solve the problem” (.49), “revising plans to include new information” (.47), “gaining new knowledge from everyday experiences” (.47), “combining relevant information from a number of sources” (.46), and “ability to work independently” (.44).

Nine of the 67 items, as perceived by graduates, received a mean weighted discrepancy score of less than .10, falling into category IV (negligible), indicating less of a need for curriculum enhancement in these areas. The nine lowest rated employability skill items consisted of “supervising the work of others” (.09), “coordinating the work of peers” (.08), “coordinating the work of subordinates” (.03), “making impromptu presentations” (-.01), “identifying sources of conflict among people” (-.02), “empathizing with others” (-.05), “writing external business communication” (-.07), “writing reports” (-.44), and “using proper grammar, spelling, and punctuation” (-1.53).

Objective Five

Objective five sought to identify the contribution of on campus, off campus and academic programs in developing graduates' employability skills. For readability and ease of interpretation, data was collapsed from the instrument to include three categories (not applicable, no contribution, and contribution). All graduates who selected minor, moderate, or major contribution options were collapsed into the "contribution" category. Of the graduates who participated in organizational clubs, 107 (76.4%) perceived them to be the on-campus program that contributed the most to the development of their employability skills (Table 11).

Table 11

Contribution of Programs to the Development of Employability Skills (n=141)

	Contribution to Developing Employability Skills					
	NA		No Contribution		Contribution	
On Campus Programs	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
1. Organizational Clubs	24	16.8	9	6.3	107	76.4
2. Intramural Sports	75	52.4	10	7.0	56	39.7
3. College Committees	75	52.4	12	8.4	53	37.9
4. Honorary Societies	75	52.4	20	14.0	46	32.6
5. Fraternities/Sororities	84	58.7	13	9.1	44	31.2
6. Campus Committees	92	64.3	10	7.0	39	27.7
7. Student Government	89	62.2	14	9.8	38	27.0
8. Collegiate Athletics	116	81.1	11	7.7	14	9.9
9. Marching Band	118	82.5	16	11.2	7	5.0
10. ROTC	119	83.2	15	10.5	7	5.0
Off Campus Programs						
1. Church Organizations	44	30.8	7	4.9	89	63.6
2. Commodity Groups	97	67.8	12	8.4	30	21.6
3. Military	118	82.5	11	7.7	10	7.2
Academic Programs						
1. Courses in CAFNR	3	2.1	4	2.8	131	94.9
2. CAFNR Workshops	65	45.5	13	9.1	60	42.6

Intramural sports contributed to the development of the skills for 56 (39.7%) of the graduates, while college committees contributed to the development of the skills for 53 (37.9%) of the graduates. The on-campus program with the least amount of participation from graduates was ROTC. One hundred and nineteen graduates selected ROTC to be not applicable to the development of their skills. In terms of the off campus programs, 89 (63.6%) of the graduates perceived church organizations to have contributed to the development of their skills. Thirty (21.6%) perceived commodity groups contributed to their development, while 10 (7.2%) perceived the military contributed to the development of employability skills. As for academic programs, 131 (94.9%) graduates perceived courses in CAFNR contributed to the development of their employability skills and 60 (42.6%) perceived CAFNR workshops to have made a contribution to their skill development.

Objective Six

Assessing graduates' level of job satisfaction within their respective career choice was the purpose of objective six. The job satisfaction section of the questionnaire was developed using the Brayfield-Rothe (1951) job satisfaction instrument, as modified by Warner (1973). The job satisfaction section consisted of 14 questions on job satisfaction and dissatisfaction factors and used a five-point response scale (Table 12). The summated mean for the level of job satisfaction of graduates in the College of Agriculture, Food and Natural Resources was 3.93 (SD = .73).

Table 12

Overall Level of Graduate Job Satisfaction (n = 141)

Variable	<i>M</i>	<i>SD</i>
Level of Job Satisfaction	3.93	.73

Note. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree

Objective Seven

Assessing supervisors' perceptions of the importance of the employability skills needed by graduates to be successful in the workforce was the purpose of objective seven. The 67 employability skills were ranked in order of importance based on their mean importance (Table 13).

Eleven employability skill items were found to possess a mean importance of 2.80 or higher. The eleven skills were "working well with fellow employees" ($M = 2.93$), "functioning well in stressful situations" ($M = 2.90$), "ability to work independently" ($M = 2.90$), "solving problems" ($M = 2.88$), "maintaining a positive attitude" ($M = 2.88$), "setting priorities" ($M = 2.85$), "allocating time efficiently" ($M = 2.85$), "meeting deadlines" ($M = 2.83$), "identifying problems" ($M = 2.80$), "recognizing the effects of decisions made" ($M = 2.80$), and "responding positively to constructive criticism" ($M = 2.80$). In addition, eight employability skill items had means lower than 1.95. These items consisted of "making impromptu presentations" ($M = 1.93$), "assigning/delegating responsibility" ($M = 1.93$), "conceptualizing a future for the company" ($M = 1.90$), "writing internal business communication" ($M = 1.85$), "coordinating the work of subordinates" ($M = 1.82$), "delegating work to peers" ($M = 1.80$), "delegating work to subordinates" ($M = 1.79$), and "writing external business communication" ($M = 1.68$).

Table 13

*Supervisors' Perceptions of the Importance of the Employability Skills needed by**Graduates (n=42)*

Rank	Employability Skill	<i>M</i>	<i>SD</i>
1.	Working well with fellow employees	2.93	.26
2.	Functioning well in stressful situations	2.90	.30
3.	Ability to work independently	2.90	.30
4.	Solving problems	2.88	.34
5.	Maintaining a positive attitude	2.88	.40
6.	Setting priorities	2.85	.36
7.	Allocating time efficiently	2.85	.36
8.	Meeting deadlines	2.83	.38
9.	Identifying problems	2.80	.40
10.	Recognizing the effects of decisions made	2.80	.40
11.	Responding positively to constructive criticism	2.80	.41
12.	Adapting to situations of change	2.78	.57
13.	Functioning at an optimal level of performance	2.76	.44
14.	Listening attentively	2.76	.44
15.	Prioritizing problems	2.73	.45
16.	Managing/overseeing several tasks at once	2.73	.50
17.	Gaining new knowledge from everyday experiences	2.73	.51
18.	Conveying information one-to-one	2.71	.46
19.	Relating well with supervisors	2.71	.51
20.	Responding to others' comments during a conversation	2.68	.47
21.	Identifying essential components of the problem	2.68	.52
22.	Sorting out the relevant data to solve the problem	2.66	.48
23.	Keeping up-to-date on developments in the field	2.66	.53
24.	Maintaining a high energy level	2.66	.53
25.	Decisions on the basis of thorough analysis of the situation	2.63	.54
26.	Establishing the critical events to be completed	2.63	.54
27.	Recognizing alternative routes in meeting objectives	2.61	.54
28.	Communicating ideas verbally to groups	2.59	.63
29.	Understanding the needs of others	2.58	.50
30.	Identifying potential negative outcomes of a risky venture	2.54	.60
31.	Knowing ethical implications of decisions	2.54	.60
32.	Using proper grammar, spelling, and punctuation	2.54	.75
33.	Making decisions in a short time period	2.51	.60
34.	Assessing long-term effects of decisions	2.49	.60
35.	Initiating change to enhance productivity	2.49	.71
36.	Combining relevant information from a number of sources	2.46	.75
37.	Gaining new knowledge in areas outside the immediate job	2.45	.68
38.	Contributing to group problem solving	2.41	.63

Table 13 (Continued).

Supervisors' Perceptions of the Importance of the Employability Skills needed by Graduates (n=42)

Rank	Employability Skill	<i>M</i>	<i>SD</i>
39.	Resolving conflicts	2.41	.84
40.	Identifying sources of conflict among people	2.37	.77
41.	Keeping up-to-date with external realities of a company's success	2.37	.77
42.	Establishing good rapport with subordinates	2.34	1.02
43.	Monitoring progress toward objectives in risky ventures	2.33	.77
44.	Revising plans to include new information	2.29	.75
45.	Taking reasonable job-related tasks	2.28	.65
46.	Monitoring progress against the plan	2.28	.72
47.	Reconceptualizing your role to changing corporate realities	2.25	.81
48.	Providing novel solutions to problems	2.24	.70
49.	Empathizing with others	2.20	.79
50.	Applying information to new or broader contexts	2.15	.82
51.	Integrating information into more general contexts	2.15	.88
52.	Giving direction and guidance to others	2.07	.96
53.	Making effective business presentations	2.05	.97
54.	Integrating strategic considerations in the plans made	2.02	.69
55.	Coordinating the work of peers	2.00	.95
56.	Writing reports	2.00	1.04
57.	Supervising the work of others	2.00	1.16
58.	Providing innovative paths for the company for future development	1.97	.99
59.	Identifying political implications of the decisions to be made	1.95	.87
60.	Making impromptu presentations	1.93	.85
61.	Assigning/delegating responsibility	1.93	.88
62.	Conceptualizing a future for the company	1.90	1.01
63.	Writing internal business communication	1.85	.99
64.	Coordinating the work of subordinates	1.82	1.10
65.	Delegating work to peers	1.80	1.04
66.	Delegating work to subordinates	1.79	1.13
67.	Writing external business communication	1.68	1.08

Note. Scale: 0 = No Importance, 1 = Important, 2 = Moderate Importance, 3 = Major Importance

Objective Eight

Objective eight sought to assess supervisors' perceptions of the graduates' level of competence at performing the employability skills. Four employability skills possessed a mean competence of greater than 2.60 (Table 14).

Table 14

*Supervisors' Perceptions of the Graduates' Level of Competence at Performing the**Employability Skills (n=42)*

Rank	Employability Skill	<i>M</i>	<i>SD</i>
1.	Maintaining a positive attitude	2.73	.59
2.	Relating well with supervisors	2.68	.61
3.	Ability to work independently	2.63	.58
4.	Working well with fellow employees	2.61	.74
5.	Meeting deadlines	2.54	.55
6.	Conveying information one-to-one	2.54	.67
7.	Maintaining a high energy level	2.51	.60
8.	Responding to others' comments during a conversation	2.51	.60
9.	Listening attentively	2.46	.67
10.	Functioning at an optimal level of performance	2.46	.71
11.	Making decisions in a short time period	2.44	.60
12.	Responding positively to constructive criticism	2.43	.75
13.	Allocating time efficiently	2.41	.67
14.	Adapting to situations of change	2.41	.84
15.	Identifying problems	2.40	.59
16.	Gaining new knowledge from everyday experiences	2.40	.67
17.	Keeping up-to-date on developments in the field	2.39	.67
18.	Recognizing the effects of decisions made	2.39	.77
19.	Establishing the critical events to be completed	2.38	.71
20.	Functioning well in stressful situations	2.38	.74
21.	Knowing ethical implications of decision	2.37	.73
22.	Managing/overseeing several tasks at once	2.37	.77
23.	Using proper grammar, spelling, and punctuation	2.37	.80
24.	Combining relevant information from a number of sources	2.34	.73
25.	Gaining new knowledge in areas outside the immediate job	2.33	.76
26.	Setting priorities	2.32	.69
27.	Identifying essential components of the problem	2.30	.61
28.	Sorting out the relevant data to solve the problem	2.29	.68
29.	Empathizing with others	2.28	.78
30.	Establishing good rapport with subordinates	2.27	1.02
31.	Prioritizing problems	2.25	.59
32.	Communicating ideas verbally to groups	2.24	.80
33.	Solving problems	2.23	.62
34.	Monitoring progress against the plan	2.21	.62
35.	Understanding the needs of others	2.20	.82
36.	Making thorough decisions by thorough analysis of the situation	2.17	.70

Table 14 (Continued).

Supervisors' Perceptions of the Graduates' Level of Competence at Performing the

Employability Skills (n=42)

Rank	Employability Skill	<i>M</i>	<i>SD</i>
37.	Contributing to group problem solving	2.15	.70
38.	Keeping up-to-date with external realities of a company's success	2.15	.73
39.	Initiating change to enhance productivity	2.13	.79
40.	Providing novel solutions to problems	2.12	.68
41.	Assessing long-term effects of decisions	2.12	.71
42.	Identifying sources of conflict among people	2.12	.75
43.	Applying information to new or broader contexts	2.12	.78
44.	Integrating information into more general contexts	2.12	.78
45.	Writing reports	2.10	.75
46.	Taking reasonable job-related risks	2.08	.66
47.	Revising plans to include new information	2.08	.69
48.	Recognizing alternative routes in meeting objectives	2.07	.72
49.	Resolving conflicts	2.05	.82
50.	Reconceptualizing your role in response to changing corporate realities	2.05	.83
51.	Coordinating the work of peers	2.03	.64
52.	Monitoring progress toward objectives in risky ventures	2.03	.75
53.	Writing external business communication	2.03	.79
54.	Making effective business presentations	2.03	.80
55.	Identifying potential negative outcomes of a risky venture	2.00	.63
56.	Writing internal business communication	2.00	.80
57.	Supervising the work of others	2.00	.91
58.	Giving direction and guidance to others	1.98	.85
59.	Delegating work to peers	1.97	.83
60.	Providing innovative paths for the company to future development	1.97	.83
61.	Integrating strategic considerations in the plans made	1.93	.62
62.	Making impromptu presentations	1.93	.83
63.	Coordinating the work of peers	1.92	.87
64.	Assigning/delegating responsibility	1.84	.75
65.	Conceptualizing a future for the company	1.84	.93
66.	Delegating work to subordinates	1.81	.89
67.	Identifying political implications of the decision to be made	1.75	.84

Note. Scale: 0 = No Competence, 1 = Competent, 2 = Moderately Competent, 3 = Major Competence

The four items were “maintaining a positive attitude” ($M = 2.73$), “relating well with supervisors” ($M = 2.68$), “ability to work independently” ($M = 2.63$), and “working

well with fellow employees” ($M = 2.61$). Ten employability skill items possessed mean scores less than 2.00. These skills consisted of “giving direction and guidance to others” ($M = 1.98$), “delegating work to peers” ($M = 1.97$), “providing innovative paths for the company to follow for future development” ($M = 1.97$), “integrating strategic considerations in the plans made” ($M = 1.93$), “making impromptu presentations” ($M = 1.93$), “coordinating the work of peers” ($M = 1.92$), “assigning/delegating responsibility” ($M = 1.84$), “conceptualizing a future for the company” ($M = 1.84$), “delegating work to subordinates” ($M = 1.81$), and “identifying political implications of the decision to be made” ($M = 1.75$).

Objective Nine

Objective nine sought to prioritize the employability skills, according to supervisors, in need of curriculum enhancement using the Borich needs assessment model. The Borich needs assessment model allows for two independent constructs to be measured simultaneously by calculating discrepancy scores. A discrepancy score was calculated by taking the importance rating minus the competence rating for each supervisor on each employability skill. A weighted discrepancy score was then calculated by multiplying each discrepancy score by the associated mean importance rating of the employability skill. Lastly, a mean weighted discrepancy score (MWDS) was calculated by taking the sum of the weighted discrepancy scores for each employability skill and dividing by the number of observations ($n = 42$). To prioritize the skills for curriculum enhancement, four categories were defined as a result of the mean weighted discrepancy

scores. Specifically, category I consisted of all MWDS greater than .80 and was considered a high discrepancy (Table 15).

Table 15

Supervisors' Perceptions of the Employability Skills Using Mean Weighted Discrepancy Scores

Category	Employability Skill	MWDS
I	Solving problems	1.78
	Setting priorities	1.49
	Functioning well in stressful situations	1.45
	Recognizing alternative routes in meeting objectives	1.37
	Identifying problems	1.33
	Identifying potential negative outcomes when considering risky venture	1.33
	Prioritizing problems	1.24
	Allocating time efficiently	1.22
	Making decisions on the basis of thorough analysis of the situation	1.19
	Recognizing the effects of decisions made	1.13
	Responding positively to constructive criticism	1.00
	Adapting to situations of change	.99
	Managing/overseeing several tasks at once	.98
	Identifying essential components of the problem	.96
	Sorting out the relevant data to solve the problem	.95
	Understanding the needs of others	.92
	Working well with fellow employees	.91
	Assessing long-term effects of decisions	.89
	Initiating change to enhance productivity	.89
	Communicating ideas verbally to groups	.86
Gaining new knowledge from everyday experiences	.85	
Meeting deadlines	.81	
Resolving conflicts	.80	
II	Functioning at an optimal level of performance	.79
	Listening attentively	.79
	Keeping up-to-date on developments in the field	.70
	Ability to work independently	.76
	Monitoring progress toward objectives in risky ventures	.67
	Relating well with supervisors	.65
	Contributing to group problem solving	.63
	Establishing the critical events to be completed	.63
	Identifying sources of conflict among people	.56
	Revising plans to include new information	.55
Keeping up-to-date with external realities related to company's success	.51	

Table 15 (Continued).

Supervisors' Perceptions of the Employability Skills Using Mean Weighted Discrepancy

Scores

Category	Employability Skill	MWDS
III	Conveying information one-to-one	.45
	Responding to others' comments during a conversation	.45
	Taking reasonable job-related risks	.43
	Reconceptualizing your role in response to changing corporate realities	.43
	Knowing ethical implications of decisions	.42
	Identifying political implications of the decision to be made	.42
	Using proper grammar, spelling, and punctuation	.42
	Maintaining a positive attitude	.41
	Maintaining a high energy level	.38
	Assigning/delegating responsibility	.37
IV	Supervising the work of others	.29
	Combining relevant information from a number of sources	.29
	Gaining new knowledge in areas outside the immediate job	.29
	Establishing good rapport with subordinates	.28
	Conceptualizing a future for the company	.27
	Providing novel solutions to problems	.27
	Integrating strategic considerations in the plans made	.24
	Coordinating the work of peers	.24
	Monitoring progress against the plan	.22
	Delegating work to subordinates	.21
	Giving direction and guidance to others	.20
	Providing innovative paths for the company for future development	.19
	Making decisions in a short time period	.18
	Making effective business presentations	.10
	Coordinating the work of subordinates	.09
	Making impromptu presentations	.05
	Applying information to new or broader contexts	.05
	Integrating information into more general contexts	.05
	Writing reports	-.05
	Delegating work to peers	-.04
	Writing internal business communication	-.10
	Empathizing with others	-.16
	Writing external business communication	-.32

Category II consisted of all MWDS from .50 to .79 and was considered a moderate discrepancy. Category III consisted of all MWDS from .30 to .49 and was considered a low discrepancy. Category IV consisted of all skills with a MWDS below .30 and was considered a negligible discrepancy.

The items with the greatest need for curriculum enhancement were identified in category I because of their high discrepancy scores. Three of the skills had a MWDS equal to or greater than 1.45. These three skills consisted of “solving problems” (MWDS = 1.78), “setting priorities” (MWDS = 1.49), and “functioning well in stressful situations” (MWDS = 1.45). In all, twenty-three employability skills had a high discrepancy score and fell into category I.

Eleven items had a moderate discrepancy score and comprised category II, indicating a moderate need for curriculum enhancement. The top five items in category II were: “functioning at an optimal level of performance” (.79), “listening attentively” (.79), “keeping up-to-date on developments in the field” (.70), “ability to work independently” (.76), and “monitoring progress toward objectives in risky ventures” (.67).

Ten items comprised category III, indicating a low discrepancy score and a low need for curriculum enhancement. The top five skills in category III consisted of: “conveying information one-to-one” (.45), “responding to others’ comments during a conversation” (.45), “taking reasonable job-related risks” (.43), “reconceptualizing your role in response to changing corporate realities” (.43), and “knowing ethical implications of decisions” (.42).

Twenty-three items fell into category IV and were perceived to possess negligible discrepancy scores by supervisors. Nine items in category IV had a mean weighted

discrepancy score of less than .10. These nine items consisted of “coordinating the work of subordinates” (.09), “making impromptu presentations” (.05), “applying information to new or broader contexts” (.05), “integrating information into more general contexts” (.05), “writing reports” (-.05), “delegating work to peers” (-.04), “writing internal business communication” (-.10), “empathizing with others” (-.16), and “writing external business communication” (-.32). As a result, these nine items are a low need for curriculum enhancement.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Purpose of the Study

The purpose of this study was to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia. The study sought to assess graduates' perceptions regarding level of importance of identified employability skills and their self-perceived level of competence at performing those skills. In addition, graduates' immediate supervisors assessed the importance of the identified employability skills for their graduate employee's respective field of work and assessed the competence level of the graduate at performing those skills.

Research Objectives

1. Describe the demographics (age, gender, GPA, academic major) of the graduates.
2. Describe graduates' perceptions of the importance of the employability skills needed for the workforce.
3. Describe graduates' self-perceived level of competence at performing the employability skills.
4. Prioritize the employability skills, according to graduates, in need of curriculum enhancement using the Borich needs assessment mode.

5. Identify the contributions of on campus, off campus, and academic programs in enhancing graduates' employability skills.
6. Assess graduates' job satisfaction within their respective career choice.
7. Assess supervisors' perceptions of the importance of the employability skills needed by graduates to be successful in the workforce.
8. Assess supervisors' perceptions of the graduates' level of competence at performing the employability skills.
9. Prioritize the employability skills, according to supervisors, in need of curriculum enhancement using the Borich needs assessment mode.

Limitations of the Study

The study was limited to CAFNR graduates at the University of Missouri-Columbia-Columbia and their immediate supervisors. In addition, the study did not generate an adequate response rate per academic major to allow for an analysis by major. Therefore, caution should be exercised when interpreting and generalizing the findings of this study.

Research Design

The design of this study was survey research. The purpose of survey research is to gather data from groups of people by way of questionnaires (Ary et al., 2002). Gall et al. (2003) stated that "the purpose of a survey is to use questionnaires or interviews to collect data from a sample that has been selected to represent a population to which the findings of the data analysis can be generalized" (p. 223).

Survey research can be used to assess needs. Gall et al. (2003) stated that needs assessment research is used to “measure the precise extent of discrepancy between an existing state and a desired state” (p. 558). For a needs assessment to occur, a clear and obvious need has to be identified. Upon identifying a need, judgments can be made as to what exists and what is desired (Gall et al., 2003).

Population and Sample

The population for this study was graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia-Columbia from January, 2004 – May, 2005 ($N=711$). The frame for the graduates was obtained from the CAFNR Office of Academic Programs. Due to time constraints, a random sample of 254 graduates was taken from the population. This sample approximated, within a margin of error, the initial population (Krejcie & Morgan, 1960).

A need existed to analyze the data by academic major. In an effort to compare respondents across academic majors, a stratified sampling technique was employed. “Stratified sampling involves selecting a sample so that certain subgroups in the population are adequately represented in the sample” (Gall et al., 2003, p. 173). Ary et al. (2002) stated that “you first identify the strata of interest and then randomly draw a specified number of subjects from each stratum” (p. 167). Because the number of degree candidates from each major differed greatly, a minimum of fifteen graduates were randomly selected for each academic major, bringing the total number of randomly selected participants to 290.

Instrumentation

Carnevale, Gainer, and Meltzer (1990) stated that “a questionnaire can be used to get workers to provide written answers to questions. It can be distributed to many workers, thereby resulting in the collection of a large amount of data... and offers an opportunity for comparative analysis” (p. 4.17). Therefore, a questionnaire was developed by the researcher, following an extensive review of the literature, to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources.

The questionnaire consisted of four parts. Parts I and II were modified from an original instrument constructed by Evers, Rush, and Berdrow (1998). Specifically, Part I measured the self-perceived importance and competence levels of 67 employability skills on a four-point Likert scale. The Likert scale ranged from:

- 0 – no importance (or competence),
- 1 – minor importance (or competence),
- 2 – moderate importance (competence), and
- 3 – major importance (or competence).

The importance and competence constructs were further analyzed using the Borich (1980) needs assessment model. The nature of the model is to determine if and where discrepancies exist. Borich (1980) noted the importance of calculating a discrepancy score, weighted discrepancy score, and a mean weighted discrepancy score in an effort to emphasize areas in need of curriculum enhancement and modification.

Part II of the questionnaire assessed the amount of involvement certain on-campus, off-campus, and academic programs contributed to the development of

graduates' employability skills. Fifteen items were measured on a four-point Likert scale.

Responses ranged from:

0 – no contribution,

1 – minor contribution,

2 – moderate contribution, and

3 – major contribution, with

“NA” (Not Applicable) being an option.

The job satisfaction section of the questionnaire comprised Part III. This section was developed using the Brayfield-Rothe (1951) job satisfaction instrument, as modified by Warner (1973). Part III consisted of 14 questions on job satisfaction and dissatisfaction factors and used a five-point Likert scale ranging from “strongly agree” to “strongly disagree.”

Part IV of the questionnaire consisted of seven open-ended demographic questions. These questions allowed the responding graduates to expand upon their position of employment in terms of the hours per week they worked, the type of employment they possessed, the title of their occupation, the months they had worked in their current position, and their annual salary and income. In addition, the participants were asked to identify the name and contact information of their immediate supervisor and the number of months they had worked for their supervisor.

In addition to obtaining responses from graduates, data from the graduate's immediate supervisor was also needed. Therefore, graduates were asked to provide the names and contact information of their immediate supervisors. Upon receiving the responses, a separate, but similar, questionnaire was sent to the supervisors.

Supervisors were asked to assess their CAFNR graduate employee on the importance of the employability skills needed in industry, as well as their perception of the level of competence the graduate (employee) possessed at performing the skills.

Supervisors ranked the items listed as:

- 0 - no importance,
- 1 – minor importance,
- 2 – moderate importance, and
- 3 – major importance.

To assess the level of competence, supervisors were asked to rate the items as:

- 0 – no competence,
- 1 – minor competence,
- 2 – moderate competence, and
- 3 – major competence.

In addition, supervisors were encouraged to list skills they perceived important to the job of their CAFNR graduate that were not included in the study.

Validity and Reliability

Validity is defined as a questionnaire's ability to measure what it purports to measure (Ary et al., 2002). Two different types of validity are face validity and content validity. Face validity ensures that the questionnaire is appealing to the eye and that it “appears valid for its intended purpose” (p. 409). Content validity is used to assess whether or not the items in the questionnaire represents what the objectives dictate (Gall et al., 2003). Face and content validity were established for this study by a panel of

experts consisting of CAFNR faculty. After suggestions were considered by the panel of experts, modifications to the questionnaire were made.

The reliability of the instrument was also taken into account. To account for reliability, a pilot study was performed. The pilot group consisted of 100 randomly chosen graduates not participating in the study. These individuals were asked to respond only to the importance portion of the employability skills. As a result of the pilot test, a Cronbach's alpha of .94 was realized, indicating the instrument possessed internal consistency in measuring the variables of interest.

Data Collection

The Dillman (2004) tailored design method was used to collect data. As a result, individuals in the sample ($n=290$) were sent an initial "alert" postcard. The postcard informed the graduates that they had been randomly selected to participate in a College-wide study in an effort to assess the employability skills needed in industry and that their responses were important to the study, as the College would use the data to enhance the curriculum in an effort to better prepare future graduates for industry.

However, upon mailing the postcards, a valid address was not realized for all individuals, resulting in a frame error. A total of 18 individual postcards were "returned to the sender" and deemed undeliverable. After multiple attempts to secure an address for these individuals failed, they were eliminated from the study, reducing the sample size from 290 to 272.

After four weeks upon sending the initial postcards, the questionnaire, cover letter, and pre-addressed stamped envelope were mailed to the 272. Attached to the

questionnaire was a \$1.00 bill. This was included for participants to enjoy a soft drink or cup of coffee as they completed the questionnaire, as a means for encouraging participation.

After two weeks, sixty-seven (24.6%) of the sampled graduates had responded. Those who had not responded were sent a follow-up postcard requesting that they complete and return their questionnaire. Two weeks later, another package, consisting of a second cover letter, questionnaire, and pre-paid, stamped envelope, was mailed to the non-respondents. After the initial mailing and subsequent follow-up procedures, 141 usable questionnaires were received for a 52% response rate.

Phase II of the study consisted of assessing supervisors' perceptions of the employability skills of their CAFNR graduate. An initial postcard was sent to graduates' supervisors ($N=75$), as made available by the graduates' responses in Phase I. The postcard informed the supervisors that the study was being conducted to assess the perceptions of CAFNR graduates, as well as those of their immediate supervisors. As a result, the CAFNR graduate they had hired had been randomly selected to participate and therefore, their input was also needed. The postcard encouraged supervisors to complete the forthcoming questionnaire and return them in the pre-addressed, stamped envelope provided.

After sending the initial postcards, the questionnaire and a cover letter were mailed to the supervisors. After two weeks, ten (13.3%) supervisors had returned their completed questionnaire. Of those who had not returned their questionnaire, another postcard informing them to please complete and return their questionnaire was sent. One week later, a final package was submitted to the non-respondents. The final package

consisted of a follow-up questionnaire and cover letter. After the initial mailing and follow-up procedures, 42 usable questionnaires were received from the supervisors for a 56% response rate.

Data Analysis

Survey research seeks to describe data quantitatively by way of descriptive statistics. Descriptive statistics consist of the measures of central tendency and variability and seek to “describe and summarize the data” (Ary, et al., 2000, p. 154). Measures of central tendency consist of means, medians, and modes. The mean is an interval of ratio statistic used to describe the average of the scores. The median assesses the middle score in a distribution and is ordinal in nature. The mode is a nominal statistic and describes the score or value that appears in a distribution most often.

Objective one was addressed by assessing the frequencies and percentages of gender and the mean and standard deviation of GPA. To address objectives two, three, six, seven, and eight, means and standard deviations were reported. Objective five was reported by using frequencies and percentages. To address objectives four and nine, the Borich (1980) needs assessment model was implemented. Garton and Chung (1997) stated that the Borich model (1980) “utilized survey methodology in which respondents provided data that could be weighted and ranked in order of priority” (p. 52). To determine the perceived level of importance of the employability skills needed in industry and the perceived level of competence at performing the skills, discrepancy scores were derived from the data on the employability skill constructs.

Sixteen employability skill constructs were identified through the literature. These constructs were comprised of individual items that further defined and measure each construct. The items were listed as scaled responses for those included in the study. The employability skills were then ranked and assessed to determine where curriculum enhancement was needed.

Specifically, a discrepancy score for each employability skill was calculated by taking the importance rating minus the competence rating. A weighted discrepancy score was then calculated for each employability skill by multiplying the discrepancy score by the importance rating. Lastly, a mean weighted discrepancy score (MWDS) for each of the employability skills was then calculated by taking the sum of the weighted discrepancy scores, divided by the number of respondents ($n = 141$). The employability skills were then ranked, from high to low; using the mean weighted discrepancy scores. Employability skills with a greater discrepancy score indicated areas in need of curriculum enhancement and improvement. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 13.0 computer program for windows.

Summary of the Findings

Objective One - Demographics

Graduates participating in the study consisted of 66 (47%) male and 75 (53%) female. The academic major receiving the greatest response from graduates was agricultural systems management (87%), while parks, recreation, and tourism had the lowest response rate (22%). The final mean GPA for the graduates was 3.18. Graduates

in the biochemistry and forestry degree programs had the highest GPA ($M = 3.47$), while general agriculture graduates had the lowest GPA ($M = 2.56$).

Objective Two- Importance of the Employability Skills to Graduates

According to graduates, all 67 skills are at least moderately important in the workplace. Graduates perceived the most important skills to consist of problem solving and motivation, while the least important skills pertained to communication, visioning, creativity, and risk taking.

Objective Three – Graduates’ Competence of the Employability Skills

While graduates perceive themselves to be at least competent at performing all 67 skills, they perceive themselves to be most competent with their “ability to work independently.” Graduates perceive themselves the least competent at “identifying political implications of the decisions to be made.” Interestingly, graduates also perceive this skill the least important to their success in the workplace.

Objective Four – Employability Skills Prioritized by Graduates

Utilizing the Borich needs assessment model, the skill most in need of curricular attention is problem solving. Specifically, 46% of the skills identified in category I (high discrepancy scores) consisted of problem solving and decision making. In terms of the number of skills per category, thirteen items existed in category I, fifteen comprised category II (moderate discrepancy scores), nineteen items made up category III (low discrepancy scores), and twenty items existed in category IV (negligible discrepancy scores).

Objective Five – Programs’ Contributions

Graduates were most likely to participate in CAFNR courses, organizational clubs, and church organizations. They were least likely to participate in ROTC, the marching band, the military, and collegiate athletics. In terms of the programs’ contributions to the development of the employability skills, more graduates perceived marching band, ROTC, and the military did not contribute to their skill development as opposed to those who did.

Objective Six- Job Satisfaction of Graduates

Graduates in the College of Agriculture, Food and Natural Resources tend to be satisfied with their chosen career path. However, a fairly high standard deviation score indicates that there is some disagreement with the level of satisfaction among graduates.

Objective Seven – Importance of Employability Skills to Supervisors

According to supervisors, all 67 skills were deemed at least moderately important for graduate’s success in the workplace. Of the 67 skills, supervisors perceived “working well with fellow employees” to be the most important. Supervisors deemed skills pertaining to motivation, organization, and time management to be the most important, while written communication was one of the least important skills needed.

Objective Eight- Competence of Employability Skills According to Supervisors

Overwhelmingly, supervisors perceive graduates to be competent at performing the motivation skill, while “identifying political implications of the decision to be made” is the item graduates are least competent at performing. In addition, the skills graduates

are least competent at performing include coordination, time management, leadership, and decision making.

Objective Nine – Employability Skills Prioritized by Supervisors

Upon utilizing the Borich needs assessment model, supervisors perceived problem solving to be the skill area in greatest need of curricular attention. This finding is consistent with the graduates who also deemed it the most important for curriculum enhancement. Twenty-three items comprised category I (high discrepancy scores). Eleven items made up category II. Category III consisted of ten items, and category IV contained twenty-three items. In terms of curriculum enhancement, the Borich needs assessment model revealed the curriculum is doing an adequate job at preparing graduates in the areas of written and oral communications.

Conclusions and Implications

Objective One - Demographics

The stratified sample was comprised of 55% male and 45% female. However, a greater percentage of females responded to the request to participate than males. Graduates with degrees in agricultural systems management were the most likely to respond to the questionnaire, while graduates with degrees in parks, recreation, and hotel and restaurant management were the least likely to participate. Graduates in biochemistry and forestry had the highest mean GPA, while general agriculture graduates had the lowest GPA. Only five of the fifteen CAFNR academic majors surveyed had a cumulative GPA less than 3.00. The overall mean GPA of the responding graduates was

3.18. This finding approximates that of the original sample (GPA = 3.05) and of all graduates in the College (GPA = 2.98).

It can be concluded that graduates from traditional degree programs in the College of Agriculture, Food and Natural Resources had a higher response rate than non-traditional degree programs. While it would seem obvious that graduates with degrees in parks, recreation and tourism and hotel and restaurant management would deal directly with people on a daily basis and would value a study on the need for transferable skills, it is difficult to understand why these graduates were the least likely to participate. Could it be that there is a disconnect with these graduates and the College of Agriculture, Food and Natural Resources? Could it be that these graduates do not feel a sense of belongingness or connectedness to the College and therefore chose not to participate?

Objective Two – Importance of the Employability Skills to Graduates

Graduates perceived all 67 employability skill items to be moderately important to entry-level positions in the workplace. Three of the four most important skills comprised the motivation-personal strengths construct. Specifically, “solving problems” is of major importance to graduates, while “identifying political implications of the decisions to be made” is the least important. Therefore, it is important that graduates be problem solvers and motivated prior to entering the workforce. Written communication is heavily stressed at the University of Missouri-Columbia. However, graduates rated “writing external business communication” near the bottom of the list of important entry-level employability skills. Therefore, graduates do not deem it as important as the rest of the skills. Could it be that the writing intensive program at the University of Missouri-

Columbia is preparing students to be proficient with these skills and thus graduates do not find the skills as critical to their success as the other employability skills?

Objective Three – Graduates’ Competence at Performing the Employability Skills

Graduates perceived themselves to be at least competent at performing all 67 employability skills. Graduates were most competent with their “ability to work independently,” while they were least competent at “identifying political implications of the decisions to be made.” This finding was similar to the importance scale, as graduates perceived the political implications of their decisions to be of least importance to their success in the workplace. When comparing importance and competence, graduates ranked “ability to work independently” second on the importance scale and first on the competence scale. While “solving problems” was rated as the most important skill needed in the workplace, it was rated sixteenth by graduates on the competence scale.

It can be implied that graduates need more experience at solving problems. While the “ability to work independently” was rated high on the importance scale, it was rated even higher on the competence scale, indicating the curriculum is adequately addressing graduates needs in this area.

Objective Four – Prioritizing Skills in Need of Curriculum Enhancement

Graduates rated 60 of the 67 employability skills higher on the important scale than the competence scale. This finding is consistent with Radhakrishna and Bruening’s (1994) conclusion that entry-level employees deem employability skills more important than their ability to perform the skills. It can be concluded that the employability skill in greatest need of curricular attention, according to graduates, is problem solving and

decision making since six of the thirteen items comprising category I identified problem solving and decision making skills. Category I was comprised of employability skills with high discrepancy scores, thus, a need for curriculum enhancement. This finding is consistent with previous research by Garton and Robinson (in-press) who found that two of the four employability skills targeted for curriculum enhancement were defining and solving problems and analyzing information in decision making. In all, thirteen items were perceived to possess high discrepancy score, indicating a need to enhance the existing curriculum to include these skills. Interestingly, “communicating ideas verbally to groups” was a skill identified in category I, while “making effective business presentations” and “making impromptu presentation” were skills included in category IV. Is there a real difference in these three skills? They all represent oral communication. How could one fall into category I (high discrepancy score) and the other two fall into category II (negligible)? Could it be that graduates were confused with the wording on the questionnaire? In all, fifteen skills comprised category II, indicating a moderate discrepancy score. One third of the skills in category II deal with “creativity, innovation, and change,” and “visioning.” Three consist of “organization and time management.” Therefore, it can be implied that students have a moderate need to learn more about creativity, visioning, and organization and time management. Category III consists of nineteen items with low discrepancy scores. Of the nineteen, four deal with lifelong learning and motivation-personal strengths. Therefore, graduates have a low need to obtain more information on lifelong learning and motivation skills. Category IV consisted of twenty skills possessing a negligible discrepancy score. Three skills listed in category IV dealt with supervising and coordinating. While these skills are highly sought after for

some positions, it is clear entry-level employees do not need skills in supervising or coordinating the work of peers. Over a third (35%) of the skills comprising construct IV deal with areas of communications, implying the curriculum is addressing the entry-level communication needs of graduates.

Objective Five – Program Contribution to Employability Skills

Graduates perceive that participation in organizational clubs is the on campus activity that contributes the greatest in developing their employability skills. Specifically, all on campus programs contributed to the development of employability skills with the exception of marching band and ROTC. In all, marching band and ROTC did not assist in the development of employability skills for graduates. Often times being a member of the marching band, ROTC, and the military requires the ability to follow orders. These programs are often directed by autocratic leaders who demand students to adhere to strict guidelines. Could it be that because of the rigor of these programs, graduates did not feel as though they had the opportunity to learn the transferable skills needed in the workplace? Because organizational clubs, church organizations, and courses in CAFNR were the programs that contributed most to the development of graduates' employability skills, it could be implied that when students get involved, participate, and assume leadership roles in student organizations their employability skills are enhanced.

Objective Six – Job Satisfaction of Graduates

Overall, graduates are satisfied with their chosen career field. Graduates rated their job satisfaction at a 3.9. This conclusion is consistent with research by Garton and Robinson (in press) who found agricultural education graduates to be satisfied with their

chosen career path. In that study, both public school teachers and industry career professionals rated their job satisfaction at a 4.1. The finding is also consistent with research by Castillo and Cano (1999) who found Ohio agriculture teachers to be satisfied with their job. Females had a mean satisfaction score of 4.03, while males had a mean satisfaction score of 3.92. Martin et al. (2000) stated that a need existed “for institutions to monitor graduate satisfaction, better prepare them for employment, and explore the relationship between these two dimensions” (p. 203). Could it be that because graduates are ultimately satisfied with their careers the current curriculum is aiding in that satisfaction by teaching the necessary skills for employment success? One could imply, from the findings, that CAFNR graduates are satisfied with their chosen careers. Martin et al. (2000) stated that graduates were more satisfied with their educational experience if they perceived themselves competent in the workplace. It could be implied that CAFNR graduates are satisfied because they perceive themselves to be competent at performing the employability skills deemed necessary for success in their chosen careers?

Objective Seven – Employability Skills Deemed Important by Supervisors

All 67 employability skills fell into the moderately important category. However, of all the communication skills listed, “listening attentively” was perceived by supervisors to be the most important. This finding is consistent with Graham (2001) who found that employers rated listening as the most important communication skill for graduates to possess. Six of the top ten most important employability skills deal with motivation and organization and time management. Therefore, it can be implied that supervisors desire employers who are highly motivated, organized, and can manage their

time well. Supervisors agreed with graduates that written communication is not one of the more important skills needed by entry-level employees. In addition, supervisors place less importance on the visualization and supervision skills of their entry-level employees. Therefore, it could be implied that because these graduates are entry-level employees, they have not yet had the time and experience to develop a strong vision for their job. In addition, these graduates should be gaining experience on the job by working independently and with fellow employees, not by delegating their work to others.

Objective Eight – Competence of Employability Skills According to Supervisors

Graduates are competent at performing motivation according to supervisors. Supervisors ranked “ability to work independently” as the third highest skill on the competence scale, indicating graduates are competent at performing this skill. When comparing supervisors and graduates, this skill is consistent with both groups. It can be concluded that supervisors perceive graduates to be more competent at “maintaining a positive attitude” than do graduates themselves. In all, supervisors rated graduates’ level of competence at performing the skills higher than graduates rated themselves. Therefore, supervisors perceive graduates at being more competent than graduates view themselves to be. Both supervisors and graduates agree that “identifying political implications of the decision to be made” is the skill graduates are least competent at performing. It is also the skill that is least important to both graduates and supervisors. Graduates are least competent at delegating and coordinating the work of their peers and maintaining a strong vision of the future of the company for which they work. Specifically, according to supervisors, the last five skills listed on the competence scale deal with the coordination,

organization and time management, visioning, leadership and influence, and decision making employability skill constructs. Could it be that entry-level employees simply have not had the time or experience and do not possess the knowledge needed to effectively coordinate, assign, and delegate work to their peers and, visualize a future for the company, and make decisions concerning political implications?

Objective Nine – Supervisors’ Rating of the Employability Skills in Need of Curriculum Enhancement

Through the Borich needs assessment model, supervisors and graduates agreed on eleven skills needed for curriculum enhancement. It can be concluded that graduates are not obtaining all of the necessary skills needed for employment success. Supervisors perceive more skills to be in greater need of curriculum enhancement as opposed to graduates. According to supervisors, the employability skill item in greatest need of attention is problem solving. This finding is consistent with graduates, as both graduates and supervisors perceived “solving problems” to be the top rated employability skill in need of curriculum enhancement. This finding is consistent with Coplin (2003) who stated that employers have a desire for their employees to be problem solvers. Specifically, seven of the twenty-three items comprising category I deal with problem solving and decision making. This finding is consistent with previous research by Garton and Robinson (in-press) who found that two of the four employability skills targeted for curriculum enhancement were defining and solving problems and analyzing information in decision making. In all, twenty-three items were perceived to possess high discrepancy score, indicating a need to enhance the existing curriculum to include these skills.

Category II indicated a moderate discrepancy score and was comprised of eleven skills. Ten skills comprised category III, representing a low discrepancy score, while twenty-three skills were perceived negligible and ranked in category IV. In addition to problem solving and decision making, five other items were consistently ranked in category I by both graduates and supervisors. The eight consisted of “functioning well in stressful situations,” “allocating time efficiently,” “responding positively to constructive criticism,” “adapting to situations of change,” and “communicating ideas verbally to groups.” Interestingly, both graduates and supervisors agreed that “making effective business presentations,” “making impromptu presentations,” “writing reports,” “writing internal business communications,” and “writing external business communications” were negligible in terms of curriculum enhancement needs. This finding would imply that the curriculum is meeting the needs of CAFNR graduates in their entry-level employment positions.

It can further be implied that curriculum enhancement is needed in the areas of problem solving and decision making. Interestingly, enhancement does not need to occur in the area of written communication. The University of Missouri-Columbia-Columbia is nationally renowned for its acclaimed writing intensive program. Therefore, could it be that because written communication is so heavily stressed, graduates are obtaining the competence needed for success beyond the college classroom? In addition, could it be implied that graduates were unclear upon reading the items? Could this be a reason one oral communication skill was rated in category I while another was listed in category IV?

Recommendations

College faculty and administrators are always seeking ways to better prepare students for the workplace. Because problem solving rose to the top of the Borich needs assessment model of both graduates and supervisors, it is recommended that the College of Agriculture, Food and Natural Resources address the problem solving skill deficiency. Specifically, faculty members within each department of the College should identify ways in which to modify current curriculum to include more problem solving skills. Evers et al. (1998) stated that “teaching styles have to give students the opportunity to engage in the learning process and to solve problems by working the mental muscles within the class contexts, rather than just memorizing what is given to them.” (p. 68). Therefore, it is recommended that workshops be conducted in an effort to assist faculty in developing the innovative methods and techniques needed for faculty to incorporate and teach these skills to future students. Curriculum should focus on assisting students in identifying problems, identifying the essential components of a problem, and prioritizing problems.

Graduates and supervisors agreed on eleven items that need attention. The eleven items are “solving problems,” “allocating time efficiently,” “communicating ideas verbally to groups,” “responding positively to constructive criticism,” “functioning well in stressful situations,” “identifying problems,” recognizing the effects of decision made,” “assessing long-term effects of decisions,” “identifying essential components of the problem,” “prioritizing problems,” and “adapting to situations of change” were all skills that had high discrepancy scores. Therefore, curriculum modifications should be

made to address these employability skills. Because both graduates and supervisors perceived all 67 items to be at least important to employability success in the workplace, it is recommended that all 67 be retained or included in the curriculum. Furthermore, it is recommended that when assessing the curriculum, faculty satisfy the needs of students by addressing the skills in category I prior to addressing the skills in category II. Once all skills in categories I and II have been addressed, faculty can address the skills in category III. The items comprising category IV are of negligible discrepancy scores. However, because they are still important skills, it is recommended that none of the items be removed from the curriculum and deemed unimportant. Rather, it is implied that the curriculum is meeting the needs of graduates in these areas and should therefore continue to meet the needs accordingly.

Experience is often times a necessity for learning (Kolb, 1984). Therefore, students should be encouraged to gain experience by participating in on and off campus programs. When students desire to develop their employability skills outside of class, they should be encouraged to participate in on campus programs such as organizational clubs and college committees, as well as off campus programs such as church organizations and commodity groups.

This study laid the foundation for assessing skills needed in the workforce. This study should be replicated in an effort to uncover additional knowledge about what skills are needed by entry-level employees in the workplace. Specifically, this study should be replicated to focus only on supervisors of entities that hire CAFNR graduates. In addition, the current study and future investigations should be used to shed light on each department within the CAFNR. By having information on graduates of each department,

the skills could be assessed more directly. For example, the problem-solving and analytic skill was determined to be the most in need of curriculum enhancement. However, some of the departments across CAFNR may be doing an adequate job of teaching this skill. Furthermore, skills perceived to be of less importance to graduates on the whole could be more important to independent departments. Therefore, census studies should be performed on each academic department within the CAFNR.

Because a relatively high level of variance existed between graduates on job satisfaction, it is recommended that further investigation be made to determine why some graduates are not satisfied with their chosen careers. Finally, it is recommended that the results of this study be shared with future students and faculty in an effort to shed light on the skills needed in the workplace. Furthermore, higher education institutions should continue to collaborate with industry professionals in an effort to equip future graduates with the appropriate skills needed for success in the workplace.

REFERENCES

- Andelt, L. L., Barrett, L. A., & Bosshamer, B. K. (1997). Employer assessment of the skill preparation of students from the college of agricultural sciences and natural resources. *North American Colleges and Teachers of Agriculture Journal*, 41(4), 47-53.
- Andrews, K. & Wooten, B. (2005). Closing the gap: Helping students identify the skills employers want. *National Association of Colleges and Employers Journal*, 65(4), 40-43.
- Ary, D., Jacobs, L. C., & Razavieh, A. (2002). Introduction to research in education (6th ed.). Wadsworth Group: CA.
- Askov, E. N. & Gordon, E. E. (1999). The brave new world of workforce education. *New Directions For Adult and Continuing Education*, 83, p. 59-68.
- Atkins, M. J. (1999). Oven-ready and self-basting: Taking stock of employability skills. *Teaching in Higher Education*, 4(2), 1356-2517.
- Ayling, D. (2004). *Mentoring in the cooperative education workplace: A review of the literature*. New Zealand Association for Co-operative Education. 7th Annual Conferences and Proceedings.
- Barbuto, J. E. & Fritz, S. M. (2004). Is there a difference between agriculture/natural resources and non-agriculture/natural resources majors' Motivation-Personal Strengths sources? *North American Colleges and Teachers of Agriculture Journal*, 48(3), 30-35.
- Bezzina, M. A. (2005). Professional supervision in the early years. Retrieved on May 7, 2006 from www.appogg.mt.
- Billing, D. (2003). Generic cognitive abilities in higher education: An international analysis of skills sought by stakeholders. *Compare*, 33(3), p. 335-350.
- Birkenholz, R. J. & Schumacher, L. G. (1994). Leadership skills of college of agriculture graduates. *Journal of Agricultural Education*, 35(4), p. 1-8.
- Boone, H. * Newcomb, L. H. (1990). Effects of approach to teaching on student achievement, retention, and attitude. *Journal of Agricultural Education*, a(4), 9-14.
- Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *The Journal of Teacher Education*, 31(3), 39-42.

- Boyd, B. L. & Murphrey, T. P. (2001). Interest in online leadership education and implications for instructional design strategies. *Journal of Agricultural Education*, 42(1), 29-38.
- Brashears, F. (1995). Supervision as social work practice: A reconceptualization. *Social Work*, 40(5), 692-699.
- Brayfield, A. H., & Rothe, H. F. (1951, October). An index of job satisfaction. *Journal of Applied Psychology*, 35, 305-311.
- Brown, P., Hesketh, A., & Williams, S. (2003). Employability in a knowledge-driven economy. *Journal of Education and Work*, 16(2), 107-123.
- Candy, P. C. & Crebert, R. G. (1991). Ivory tower to concrete jungle. The difficult transition from the academy to the workplace as learning environments. *Journal of Higher Education*, 62(5), 570-592.
- Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1990). *Workplace basics training manual. A publication of the American society for training and development.* Jossey-Bass Publishers: CA.
- Carnevale, A. P., Gainer, L. J., & Villet, J. (1990). *Training in America.* Jossey-Bass Publishers: CA.
- Castillo, J. X. & Cano, J. (1999). A comparative analysis of Ohio agriculture teachers' level of job satisfaction. *Journal of Agricultural Education*, 40 (4), 67-76
- Cohen, W. A., & Cohen, N. (1984). *Top executive performance: 11 keys to success and power.* John Wiley & Sons, New York.
- Cole, L. & Thompson, G. (2002). Satisfaction of agri-business employers with college graduates they have hired. *North American Colleges and Teachers of Agriculture Journal*, 46(1), 34-39.
- Collis, B., Waring, B., & Nicholson, G. (2004). *Learning from experience, for experienced staff.* Association for Educational Communications and Technology; 27th, Chicago, IL, October 19-23.
- Coplin, B. (2003). *10 things employers want you to learn in college: The know-how you need to succeed.* Ten Speed Press: CA.
- Covey, S. R. (1989). *The 7 habits of highly effective people: Restoring the character ethic.* Rockefeller Center; NY.

- Crebert, G., Bates, M., Bell, B., Carol-Joy, & Cragolini, V. (2004). Ivory tower to concrete jungle revisited. *Journal of Education and Work*, 17(1), 47-70.
- Cress, C. M., Astin, H. S., Zimmerman-Oster, K., & Burkhardt, J. C. (2001). Developmental outcomes of college students' involvement in leadership activities. *Journal of College Student Development*, 42(1), p. 15-26.
- Dessler, G. (1982). *Organization & management*. Reston Publishing Co., Reston, VA.
- Dillman, D. A. (2004). *Mail and internet surveys: The total design method*. New York, NY: John Wiley & Sons.
- Dunne, E. & Rawlins, M. (2000). Bridging the gap between industry and higher education: Training academics to promote student teamwork. *Innovations in Education and Training International*, 37(4), p. 361-371.
- EnGauge. (n.d.) *21st century skills*. Retrieved November 11, 2005, from <http://www.ncrel.org/engauge/skills/invent5.htm>
- Espinoza, J. (1999). *The hourly rate of learning: Skills students learn while working in college*. Unpublished doctoral dissertation, Virginia Tech University: Blacksburg.
- Evers, F. T., Rush, J. C., & Berdrow, I. (1998). The bases of competence. Skills for lifelong learning and employability. Jossey-Bass Publishers, San Francisco.
- Finch, C. R. & Crunkilton, J. R. (1999). *Curriculum development in vocational and technical education: Planning, content, and implementation (5th ed.)*. Needham Heights, MA: Allen and Bacon.
- Field, L. (1994). *Skills training for tomorrow's workforce*. Pfeiffer & Company: CA.
- Friedman, T. L. (2005). *The world is flat. A brief history of the twenty-first century*. Farrar, Straus and Giroux, New York.
- Fritz, S. M. & Brown, F. W. (1998). Leadership education courses and programs in departments of agricultural education. *Journal of Agricultural Education*, 39(3), p. 57-62.
- Fuhrmann, B. S., & Grasha, A. F. (1983). *The past, present and future in college teaching: Where does your teaching fit?* In *A practical handbook for college teachers* (pp. 1-20). Boston, MA: Little, Brown, and Company.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: An introduction (7th ed.)*. Boston, MA: Allen and Bacon.

- Garvin, D. (1993). Building learning organizations. *Harvard Business Review*, 71(4), 78-91.
- Garton, B. L. & Chung, N. (1997). An assessment of the inservice needs of beginning teachers of agriculture using two assessment models. *Journal of Agricultural Education*, 38(3), 51-58.
- Garton, B. L. & Robinson, J. S. (in press). Career paths, job satisfaction, and employability skills of agricultural education graduates. *North American Colleges and Teacher of Agriculture Journal*.
- Gerber, R. Lankshear, C., Larsson, S., & Svensson, L. (1995). Self-directed learning in a work context. *Education & Training*, 37(8) 26-32.
- Graham, C. & McKenzie, A. (1995). Delivering the promise: The transition from higher education to work (Part I). *Education & Training*, 37(1), 4-11.
- Graham, D. L. (2001). Employer perception of the preparation of agricultural and extension education graduates. *Journal of Southern Agricultural Education Research*, 51(1), p. 89-101.
- Heldrich, J. J. (2005). Survey of New Jersey employers to assess the ability of higher education institutions to prepare students for employment.
- Herzberg, F. (1976). *The managerial choice*. Homewood, IL: Dow-Jones Irwin.
- Hesketh, A. J. (2000). Recruiting an elite? Employers' perceptions of graduate education and training. *Journal of Education and Work*, 13(3), 245-271.
- Hewitt, S. (2005). *9 soft skills for success*. Retrieved September 9, 2005 from http://www.askmen.com/money/career_100/121_career.html
- Hofstrand, R. (1996). Getting all the skills employers want. Techniques: *Making Education & Career Connections*, 71(8), p. 51.
- Jancauskas, E., Atchison, M., Murphy, G. & Rose, P. (1999). *Unleashing the potential of work-integrated learning through professionally trained academic and industry supervisors*. Paper presented at the International Conference of Cooperative Education.
- Kezar, A. (2001). Investigating organizational fit in a participatory leadership environment. *Journal of Higher Education Policy and Management*, 23(1), 85-101.

- Kirkpatrick, S. A. & Lock, E. A. (1991). Leadership: Do traits matter? *The Executive*, 5, 48-60.
- Kivinen, O. & Silvennoinen, H. (2002). Changing relations between education and work on the mechanisms and outcomes of the educational system. *International Journal of Lifelong Education*, 21(1), 44-54.
- Kivinen, O. & Ahola, S. (1999). Higher education as human risk capital. *Higher Education*, 38, 191-208.
- Kolb, D. A. (1984). *Experiential learning*. Englewood Cliffs, NJ: Prentice Hall.
- Krejcie, R. V. & Morgan, D. W. (1960). Small-sample techniques. *The NEA Research Bulletin*, Vol. 38, p. 99.
- Lindholm, J. A. (2003). Perceived organizational fit: Nurturing the minds, hearts, and personal ambitions of university faculty. *The Review of Higher Education*, 27(1), 125-149.
- Litzenberg, K. K. & Schneider, V. E. (1987). Competencies and qualities of agricultural economics graduates sought by agribusiness employers. *American Journal of Agricultural Economics*, 69(5), 1031-1036.
- Lloyd, M. A. & Kennedy, J. H. (1997, August 28). *Skills employers seek*. [Online]. Available: <http://psywww.com/careers/skills.htm>.
- Mankin, K. R., Boone, K. M., Flores, S., & Willyard, M. R. (2004). What agriculture students say motivates them to learn. *NACTA Journal*, 48(4), 6-11.
- Mann, R. D. (1959). A review of the relationship between personality and performance in small groups. *Psychological Bulletin*, 56, 241-270.
- Martin, A. J., Milne-Home, J., Barrett, J., Spalding, E. & Jones, G. (2000). Graduate satisfaction with university and perceived employment preparation. *Journal of Education and Work*, 13(2), 201-213.
- Maslow, A. H. (1943). A theory of human Motivation-Personal Strengths. *Psychological Review*, 50, 370-396.
- McKinley, B. G., Birkenholz, R. J. & Stewart, B. R. (1993). Characteristics and experiences related to the leadership skills of agriculture students in college. *Journal of Agricultural Education*, 34(3), p. 76-83.
- McLaughlin, M. (1995). *Employability skills profile: What are employers looking for?* ERIC Digest. Retrieved September 9, 2005 from <http://www.ericdigests.org/1997-2/skills.htm>

- Miller, L. E. & Smith, K. L. (1983). Handling nonresponse issues. *Journal of Extension*, 21, 45-50.
- Miller, S. F. & Rosenbaum, J. E. (1997). 'Hiring in a hobbesian world. Social infrastructure and employers' use of information', *Work and Occupation*, 24(4), 498-523.
- Morley, L. (2001). Producing new workers: quality, equality and employability in higher education. *Quarterly in Higher Education*, 7(2), 131-138.
- Mullen, J. (1997). Graduates deficient in 'soft' skills. *People Magazine*, 3(22), no page given.
- Northouse, P. G. (2004). *Leadership theory and practice*. Thousand Oaks, CA: Sage Publications.
- Overtom, C. (2000). *Employability skills: An update*. ERIC Digest, No. 220.
- Paulson, K. (2001). Using competencies to connect the workplace and postsecondary education. *New Directions for Institutional Research*, no. 110, 41-54.
- Peddle, M. T. (2000). Frustration at the factory: Employer perceptions of workforce deficiencies and training trends. *Journal of Regional Analysis & Policy*, 30(1) 23-40.
- Phillippi, R. H. & Banta, T. W. (1994). Assessing employer satisfaction: A test of several survey techniques. *Assessment & Evaluation in Higher Education*, 19(2), (Electronic source without page numbering used.).
- Quality supervision for industry: Training leader's guides. Coastal Training Technologies Corporation: VA
- Radhakrishna, R. B. & Bruening, T. H. (1994). Pennsylvania study: Employee and student perceptions of skills and experiences needed for careers in agribusiness. *North American Colleges and Teachers of Agriculture Journal*, 38(1), 15-18.
- Rainbird, H. (2000). Skilling the unskilled: Access to work-based learning and the lifelong learning agenda. *Journal of Education and Work*, 13(2), 183-197.
- Rampersad, R. K. (2001). *Total Quality Management*. Springer-Verlag Heidelberg: NY.

- Robinson, J. P. (2000). What are employability skills? *The workplace*, Volume 5, Issue 3, 1-3 Retrieved September 9, 2005 from <http://www.aces.edu/crd/workforce/publications/employability-skills.PDF>
- Schmidt, S. J. (1999). Using writing to develop critical thinking skills. *North American Colleges and Teachers of Agriculture Journal*, 43(4), 31-38.
- Schumacher, L. G. & Swan, M. K. (1993). Need for formal leadership training in students in a Land-Grant college of agriculture. *Journal of Agricultural Education*, 34(3), p. 1-9.
- Secretary's Commission on Achieving Necessary Skills. *What work requires of schools: A SCANS report for America 2000*. Washington, D.C.: U.S. Department of Labor, 1991.
- Senge, P. Peter Senge and the learning organization. Retrieved on May 7, 2006 from <http://www.infed.org/thinkers/senge.htm>.
- Shivpuri, S. & Kim, B. (2004). Do employers and colleges see eye-to-eye? *National Association of Colleges and Employers*. 37-44.
- Sproull, B. (2001). *Process problem solving: A guide for maintenance and operations teams*. Productivity Press, Inc., Portland, OR.
- Steers, R. M. & Porter, L. W. (1975). *Motivation-Personal Strengths and work behavior*. New York: McGraw-Hill.
- Stogdill, R. M. (1974). *Handbook of leadership: A survey of theory and research*. New York: Free Press.
- Surmacz, J. (2005). By the numbers. *CIO Magazine*. 2005, January 15. Retrieved September 9, 2005, from http://www.cio.com/archive/011505/tl_numbers.html
- Swanson, R. A. (1994). *Analysis for improving performance*. Berrett-Koehler Publishers, San Francisco, CA.
- Tanyel, F, Mitchell, M.A., & McAlum, H.G. (1999). The skill set for success of graduates: Do prospective employers and university faculty agree? *Journal of Education for Business*. 75(1), p. 33-37.
- Taylor, A. (1998). Employability skills: From corporate 'wish list' to government policy. *Journal of Curriculum Studies*, 30(2), p. 143-164.

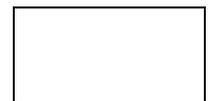
- Teichler, U. (1999). Research on the relationships between higher education and the world of work: Past achievements, problems and new challenges. *Higher Education*, 38, 169-190.
- Tetreault, P. (1997). Preparing students for work. *Adult Learning*, 8(4), p. 8-14.
- Ubom, I. U. & Joshua, M. T. (2004). Needs satisfaction variables as predictors of job performance of employees: Implications for guidance and counseling. *The African Symposium. An On-line Educational Research Journal* 4(3), 1-7.
- Understanding Employers' Perceptions of College Graduates. *Change*. 30(3), (May/June, 1998): p. 47-50. (Electronic source without page numbering used.)
- von Oech, R. (1983). *A whack on the side of the head: How you can be more creative*. (Revised ed.). New York: Warner Brooks, Inc.
- Warner, P. D. (1973). A comparative study of three patterns of staffing within the cooperative extension organization and their association with organizational structure, organizational effectiveness, job satisfaction, and role conflict. Unpublished doctoral dissertation, Ohio State University: Columbus.

APPENDIX A:
GRADUATE'S QUESTIONNAIRE OF THE
EMPLOYABILITY SKILLS NEEDED IN THE WORKFORCE

Survey of the Employability Skills Needed in the Workforce



College of
Agriculture
Food and
Natural
Resources



Purpose

The purpose of this questionnaire is to secure information from alumni of the College of Agriculture, Food and Natural Resources at the University of Missouri-Columbia-Columbia within the last two years. Specifically, the questionnaire is designed to assess your perceptions of the importance of selected employability skills and your perceived level of competence at performing the skills. In addition, the questionnaire assesses how satisfied you are in your current employment.

Your participation in this study is strictly voluntary and greatly appreciated. The information you provide will assist the College in evaluating the ways in which students are being prepared for employment. Therefore, your responses are vital. However, you are not required to participate in this study. It is strictly voluntary. Should you decide to participate in this study, please return the completed questionnaire in the pre-paid, stamped envelope no later than **Tuesday, February 7, 2006**.

The responses you provide will remain confidential. The number on the front of this questionnaire will be used as a method for tracking in the event that a follow-up mailing to non-respondents is needed. However, no names will be associated with the findings of this study.

Thank you for participating in this important study. Through your participation, we can continue to provide Mizzou students with a high quality education.

PART I – Employability Skills

Please respond to the following items by circling the response that most adequately reflects your perception of the importance of the skill and your perceived level of competence at performing the skill.

- In the **LEFT column**, indicate how important you believe the corresponding skills are to the success of your occupation.
- In the **RIGHT column**, indicate your perceived level of competence at performing the corresponding skills.

<i>Sample Question</i>	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
Item								
<u>Circle your responses</u>								
#. Facilitating a panel discussion.	0	1	2	3	0	1	2	3
The respondent perceived facilitating a panel discussion to be of major importance to his/her employment success and perceived him/herself to have minor competence at that skill.								

Item	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
<u>Circle your responses</u>								
1. Identifying problems.	0	1	2	3	0	1	2	3
2. Prioritizing problems.	0	1	2	3	0	1	2	3
3. Solving problems.	0	1	2	3	0	1	2	3
4. Contributing to group problem solving.	0	1	2	3	0	1	2	3
5. Identifying essential components of the problem.	0	1	2	3	0	1	2	3

Item	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
6. Sorting out the relevant data to solve the problem.	0	1	2	3	0	1	2	3
7. Making decisions in a short time period.	0	1	2	3	0	1	2	3
8. Assessing long-term effects of decisions.	0	1	2	3	0	1	2	3
9. Making decisions on the basis of thorough analysis of the situation.	0	1	2	3	0	1	2	3
10. Identifying political implications of the decision to be made.	0	1	2	3	0	1	2	3
11. Knowing ethical implications of decisions.	0	1	2	3	0	1	2	3
12. Recognizing the effects of decisions made.	0	1	2	3	0	1	2	3
13. Establishing the critical events to be completed.	0	1	2	3	0	1	2	3
14. Assigning/delegating responsibility.	0	1	2	3	0	1	2	3
15. Monitoring progress against the plan.	0	1	2	3	0	1	2	3
16. Integrating strategic considerations in the plans made.	0	1	2	3	0	1	2	3
17. Revising plans to include new information.	0	1	2	3	0	1	2	3
18. Setting priorities.	0	1	2	3	0	1	2	3
19. Allocating time efficiently.	0	1	2	3	0	1	2	3
20. Managing/overseeing several tasks at once.	0	1	2	3	0	1	2	3
21. Meeting deadlines.	0	1	2	3	0	1	2	3
22. Taking reasonable job-related risks.	0	1	2	3	0	1	2	3
23. Identifying potential negative outcomes when considering a risky venture.	0	1	2	3	0	1	2	3
24. Monitoring progress toward objectives in risky ventures.	0	1	2	3	0	1	2	3
25. Recognizing alternative routes in meeting objectives.	0	1	2	3	0	1	2	3
26. Conveying information one-to-one.	0	1	2	3	0	1	2	3
27. Communicating ideas verbally to groups.	0	1	2	3	0	1	2	3
28. Making effective business presentations.	0	1	2	3	0	1	2	3
29. Making impromptu presentations.	0	1	2	3	0	1	2	3
30. Writing reports.	0	1	2	3	0	1	2	3

Item	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
31. Writing external business communication.	0	1	2	3	0	1	2	3
32. Writing internal business communication.	0	1	2	3	0	1	2	3
33. Using proper grammar, spelling, & punctuation.	0	1	2	3	0	1	2	3
34. Listening attentively.	0	1	2	3	0	1	2	3
35. Responding to others' comments during a conversation.	0	1	2	3	0	1	2	3
36. Working well with fellow employees.	0	1	2	3	0	1	2	3
37. Relating well with supervisors.	0	1	2	3	0	1	2	3
38. Establishing good rapport with subordinates.	0	1	2	3	0	1	2	3
39. Empathizing with others.	0	1	2	3	0	1	2	3
40. Understanding the needs of others.	0	1	2	3	0	1	2	3
41. Identifying sources of conflict among people.	0	1	2	3	0	1	2	3
42. Resolving conflicts.	0	1	2	3	0	1	2	3
43. Supervising the work of others.	0	1	2	3	0	1	2	3
44. Giving direction and guidance to others.	0	1	2	3	0	1	2	3
45. Delegating work to peers.	0	1	2	3	0	1	2	3
46. Delegating work to subordinates.	0	1	2	3	0	1	2	3
47. Coordinating the work of peers.	0	1	2	3	0	1	2	3
48. Coordinating the work of subordinates.	0	1	2	3	0	1	2	3
49. Providing novel solutions to problems.	0	1	2	3	0	1	2	3
50. Adapting to situations of change.	0	1	2	3	0	1	2	3
51. Initiating change to enhance productivity.	0	1	2	3	0	1	2	3
52. Keeping up-to-date with external realities related to your company's success.	0	1	2	3	0	1	2	3
53. Reconceptualizing your role in response to changing corporate realities.	0	1	2	3	0	1	2	3
54. Conceptualizing a future for the company.	0	1	2	3	0	1	2	3
55. Providing innovative paths for the company to follow for future development.	0	1	2	3	0	1	2	3
56. Combining relevant information from a number of sources.	0	1	2	3	0	1	2	3

Item	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
57. Applying information to new or broader contexts.	0	1	2	3	0	1	2	3
58. Integrating information into more general contexts.	0	1	2	3	0	1	2	3
59. Keeping up-to-date on developments in the field.	0	1	2	3	0	1	2	3
60. Gaining new knowledge in areas outside the immediate job.	0	1	2	3	0	1	2	3
61. Gaining new knowledge from everyday experiences.	0	1	2	3	0	1	2	3
62. Maintaining a high energy level.	0	1	2	3	0	1	2	3
63. Functioning at an optimal level of performance.	0	1	2	3	0	1	2	3
64. Responding positively to constructive criticism.	0	1	2	3	0	1	2	3
65. Maintaining a positive attitude.	0	1	2	3	0	1	2	3
66. Functioning well in stressful situations.	0	1	2	3	0	1	2	3
67. Ability to work independently.	0	1	2	3	0	1	2	3

Circle your responses

68. What skills are important to the success of your job that have NOT been included in this study?

PART II – On and Off Campus Involvement

Considering the employability skills in Part I, please rate the following items by circling the responses that best describes the contribution to developing the skills. If there is an item listed that you were **not** directly involved in, please circle NA (Not Applicable).

Item	Contribution				
	No contribution	Minor contribution	Moderate contribution	Major contribution	Not Applicable
<u>Circle your responses</u>					
On Campus Programs					
69. Organizational Clubs (Block & Bridle, Ag Econ Club, etc.)	0	1	2	3	NA
70. Honorary Societies (Alpha Zeta, etc.)	0	1	2	3	NA
71. Social Fraternities/Sororities	0	1	2	3	NA
72. Student Government (CAFNR Council, STUCO, etc.)	0	1	2	3	NA
73. Band (Marching Mizzou)	0	1	2	3	NA
74. ROTC	0	1	2	3	NA
75. Collegiate Athletics	0	1	2	3	NA
76. Intramural Sports	0	1	2	3	NA
77. College/University committees (Ag Week, CAFNR Policy, etc.)	0	1	2	3	NA
78. Campus-wide Committees (Homecoming, etc.)	0	1	2	3	NA
77. Other: _____	0	1	2	3	NA
78. Other: _____	0	1	2	3	NA
Off Campus Programs					
79. Church/Religious Organizations	0	1	2	3	NA
80. Commodity Organizations	0	1	2	3	NA
81. Military (Reservist or Active)	0	1	2	3	NA
82. Other: _____	0	1	2	3	NA
Academic Programs					
Courses in the College of Agriculture, Food & Natural Resources	0	1	2	3	NA
CAFNR Sponsored Workshops	0	1	2	3	NA

PART III– Current Job Satisfaction

Please respond to the following statements concerning your job satisfaction by circling the response that best describes you.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1. My job is interesting enough to keep me from getting bored.	SD	D	U	A	SA
2. My friends seem more interested in their jobs than I am.	SD	D	U	A	SA
3. I consider my job pleasant.	SD	D	U	A	SA
4. I am often bored with my job.	SD	D	U	A	SA
5. I feel satisfied with my job.	SD	D	U	A	SA
6. Most of the time, I have to force myself to go to work.	SD	D	U	A	SA
7. I definitely dislike my work.	SD	D	U	A	SA
8. I feel I am happier in my work than most other people.	SD	D	U	A	SA
9. Most days I am enthusiastic about my work.	SD	D	U	A	SA
10. Each day of work seems like it will never end.	SD	D	U	A	SA
11. I like my job better than the average worker does.	SD	D	U	A	SA
12. My job is uninteresting.	SD	D	U	A	SA
13. I find real enjoyment in my work.	SD	D	U	A	SA
14. I am disappointed that I ever took this job.	SD	D	U	A	SA

PART IV – Personal and Occupational Status

(Please circle the answer that best describes you)

1. On average, how many hours per week do you spend at your job?

- | | |
|------------------------------|------------------------------|
| a. Less than 20 hours | e. 50 – 59 hours |
| b. 21 – 29 hours | f. 60 – 69 hours |
| c. 30 – 39 hours | g. 70 – 79 hours |
| d. 40 – 49 hours | h. More than 80 hours |

2. Which of the following best describes your current status?

- a.** Employed full-time
- b.** Employed part-time
- c.** Caring for family full-time
- d.** Attending graduate or professional school
- e.** Serving in the military
- f.** Unemployed, seeking employment
- g.** Other (please specify) _____

3. If employed, what is your current occupational status?

- c.** Position/Title: _____
- d.** Employer: _____
- e.** Responsibilities: _____

(Please circle the answer that best describes you)

4. How many months have you been in your current position?
- | | |
|------------------------------|--------------------------|
| a. Less than 3 months | e. 13 – 15 months |
| b. 4 - 6 months | f. 16 – 18 months |
| c. 7 – 9 months | g. 19 – 21 months |
| d. 10 – 12 months | h. 22 – 24 months |
5. For the current year, what is your annual salary/income?
- | |
|-------------------------------|
| a. Less than \$20,000 |
| b. \$20,000 - \$24,999 |
| c. \$35,000 - \$39,999 |
| d. \$25,000 - \$29,999 |
| e. \$30,000 - \$34,999 |
| f. \$35,000 - \$39,999 |
| g. \$40,000 - \$44,999 |
| h. \$50,000 or greater |

6. In addition to your responses, this study also seeks input from supervisors. Therefore, please provide the name and contact information of your immediate supervisor as well as the number of months you have worked under his/her supervision. Remember that your responses will remain *completely* confidential. Your supervisor will NOT view your responses. Understand that only summarized data will be reported.

Name of supervisor: _____

E-mail address: _____

Address: _____

City, State: _____

Zip Code: _____

7. How many months you have worked for your supervisor? _____

Thank you!

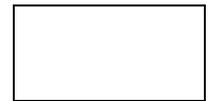
We appreciate your participation!

APPENDIX B:
SUPERVISOR'S QUESTIONNAIRE OF THE
EMPLOYABILITY SKILLS NEEDED IN THE WORKFORCE

An Industry Assessment of the Employability Skills Needed in the Workforce



College of
Agriculture
Food and
Natural
Resources



Purpose

The purpose of this questionnaire is to secure information from alumni of the College of Agriculture, Food and Natural Resources at the University of Missouri-Columbia-Columbia within the last two years. Specifically, the questionnaire is designed to assess your perceptions of the importance of selected employability skills and your perceived level of competence your CAFNR employee exhibits while performing the skills.

Your participation in this study is strictly voluntary and greatly appreciated. The information you provide will assist the College in evaluating the ways in which students are being prepared for employment. Therefore, your responses are vital. However, you are not required to participate in this study. It is strictly voluntary. Should you decide to participate in this study, please return the completed questionnaire in the pre-paid, stamped envelope no later than **Tuesday, Tuesday, March 14, 2006.**

The responses you provide will remain confidential. The number on the front of this questionnaire will be used as a method for tracking in the event that a follow-up mailing to non-respondents is needed. However, no names will be associated with the findings of this study. Please rest assured that your responses will NOT be shared with your CAFNR employee. The information you provide will be used to better prepare future graduates for employment.

Thank you for participating in this important study. Through your participation, we can continue to provide Mizzou students with a high quality education.

PART I – Employability Skills

Please respond to the following items by circling the response that most adequately reflects your perception of the importance and level of competence of the following skills to your CAFNR employee’s occupation.

- In the **LEFT column**, indicate how important you believe the corresponding skills are to the success of your CAFNR employee’s occupation.
- In the **RIGHT column**, indicate your perceived level of competence concerning your CAFNR employee’s ability to perform the corresponding skills.

<i>Sample Question</i>	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
Item								
<u>Circle your responses</u>								
#. Facilitating a panel discussion.	0	1	2	3	0	1	2	3
The supervisor perceived facilitating a panel discussion to be of major importance to his/her employment job and perceived them to have minor competence at performing that skill.								

Item	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
<u>Circle your responses</u>								
33. Identifying problems.	0	1	2	3	0	1	2	3
34. Prioritizing problems.	0	1	2	3	0	1	2	3
35. Solving problems.	0	1	2	3	0	1	2	3
36. Contributing to group problem solving.	0	1	2	3	0	1	2	3
37. Identifying essential components of the problem.	0	1	2	3	0	1	2	3

Item	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
38. Sorting out the relevant data to solve the problem.	0	1	2	3	0	1	2	3
39. Making decisions in a short time period.	0	1	2	3	0	1	2	3
40. Assessing long-term effects of decisions.	0	1	2	3	0	1	2	3
41. Making decisions on the basis of thorough analysis of the situation.	0	1	2	3	0	1	2	3
42. Identifying political implications of the decision to be made.	0	1	2	3	0	1	2	3
43. Knowing ethical implications of decisions.	0	1	2	3	0	1	2	3
44. Recognizing the effects of decisions made.	0	1	2	3	0	1	2	3
45. Establishing the critical events to be completed.	0	1	2	3	0	1	2	3
46. Assigning/delegating responsibility.	0	1	2	3	0	1	2	3
47. Monitoring progress against the plan.	0	1	2	3	0	1	2	3
48. Integrating strategic considerations in the plans made.	0	1	2	3	0	1	2	3
49. Revising plans to include new information.	0	1	2	3	0	1	2	3
50. Setting priorities.	0	1	2	3	0	1	2	3
51. Allocating time efficiently.	0	1	2	3	0	1	2	3
52. Managing/overseeing several tasks at once.	0	1	2	3	0	1	2	3
53. Meeting deadlines.	0	1	2	3	0	1	2	3
54. Taking reasonable job-related risks.	0	1	2	3	0	1	2	3
55. Identifying potential negative outcomes when considering a risky venture.	0	1	2	3	0	1	2	3
56. Monitoring progress toward objectives in risky ventures.	0	1	2	3	0	1	2	3
57. Recognizing alternative routes in meeting objectives.	0	1	2	3	0	1	2	3
58. Conveying information one-to-one.	0	1	2	3	0	1	2	3
59. Communicating ideas verbally to groups.	0	1	2	3	0	1	2	3
60. Making effective business presentations.	0	1	2	3	0	1	2	3
61. Making impromptu presentations.	0	1	2	3	0	1	2	3
62. Writing reports.	0	1	2	3	0	1	2	3

Item	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
63. Writing external business communication.	0	1	2	3	0	1	2	3
64. Writing internal business communication.	0	1	2	3	0	1	2	3
33. Using proper grammar, spelling, & punctuation.	0	1	2	3	0	1	2	3
34. Listening attentively.	0	1	2	3	0	1	2	3
35. Responding to others' comments during a conversation.	0	1	2	3	0	1	2	3
68. Working well with fellow employees.	0	1	2	3	0	1	2	3
69. Relating well with supervisors.	0	1	2	3	0	1	2	3
70. Establishing good rapport with subordinates.	0	1	2	3	0	1	2	3
71. Empathizing with others.	0	1	2	3	0	1	2	3
72. Understanding the needs of others.	0	1	2	3	0	1	2	3
73. Identifying sources of conflict among people.	0	1	2	3	0	1	2	3
74. Resolving conflicts.	0	1	2	3	0	1	2	3
75. Supervising the work of others.	0	1	2	3	0	1	2	3
76. Giving direction and guidance to others.	0	1	2	3	0	1	2	3
77. Delegating work to peers.	0	1	2	3	0	1	2	3
78. Delegating work to subordinates.	0	1	2	3	0	1	2	3
79. Coordinating the work of peers.	0	1	2	3	0	1	2	3
80. Coordinating the work of subordinates.	0	1	2	3	0	1	2	3
81. Providing novel solutions to problems.	0	1	2	3	0	1	2	3
82. Adapting to situations of change.	0	1	2	3	0	1	2	3
83. Initiating change to enhance productivity.	0	1	2	3	0	1	2	3
84. Keeping up-to-date with external realities related to your company's success.	0	1	2	3	0	1	2	3
85. Reconceptualizing your role in response to changing corporate realities.	0	1	2	3	0	1	2	3
86. Conceptualizing a future for the company.	0	1	2	3	0	1	2	3
87. Providing innovative paths for the company to follow for future development.	0	1	2	3	0	1	2	3
88. Combining relevant information from a number of sources.	0	1	2	3	0	1	2	3

Item	Importance				Competence			
	No importance	Minor importance	Moderate importance	Major importance	No competence	Minor competence	Moderate competence	Major competence
89. Applying information to new or broader contexts.	0	1	2	3	0	1	2	3
90. Integrating information into more general contexts.	0	1	2	3	0	1	2	3
91. Keeping up-to-date on developments in the field.	0	1	2	3	0	1	2	3
92. Gaining new knowledge in areas outside the immediate job.	0	1	2	3	0	1	2	3
93. Gaining new knowledge from everyday experiences.	0	1	2	3	0	1	2	3
94. Maintaining a high energy level.	0	1	2	3	0	1	2	3
95. Functioning at an optimal level of performance.	0	1	2	3	0	1	2	3
96. Responding positively to constructive criticism.	0	1	2	3	0	1	2	3
97. Maintaining a positive attitude.	0	1	2	3	0	1	2	3
98. Functioning well in stressful situations.	0	1	2	3	0	1	2	3
99. Ability to work independently.	0	1	2	3	0	1	2	3

Circle your responses

68. What skills are important to the success of your job that have NOT been included in this study?

Thank you!

We appreciate your participation!

APPENDIX C:
PANEL OF EXPERTS

Table 16

Dissertation Panel of Experts (n = 6)

Name	Role	Title
Dr. Bryan Garton	Chair	Associate Professor of Agricultural Education
Dr. Rob Terry	Member	Professor of Agricultural Education
Dr. Robert Torres	Member	Associate Professor of Agricultural Education
Dr. Paul Vaughn	Member	Associate Dean and Director of Academic Programs
Dr. James Spain	Member	Assistant Dean
Dr. Norman Rohrbach		Farm Business Management Specialist

APPENDIX D:
ITEMS COMPRISING
THE EMPLOYABILITY SKILL CONSTRUCTS

Table 17

Employability Skill Constructs and the Items Making up those Constructs

Problem Solving and Analytic

1. Identifying problems.
2. Prioritizing problems.
3. Solving problems.
4. Contributing to group problem solving.
5. Identifying essential components of the problem.
6. Sorting out the relevant data to solve the problem.

Decision-Making

7. Making decisions in a short time period.
8. Assessing long-term effects of decisions.
9. Making decisions on the basis of thorough analysis of the situation.
10. Identifying political implications of the decision to be made.
11. Knowing ethical implications of decisions.
12. Recognizing the effects of decisions to be made.

Organization and Time Management

13. Establishing the critical events to be completed.
14. Assigning/delegating responsibility.
15. Monitoring progress against the plan.
16. Integrating strategic considerations in the plans made.
17. Revising plans to include new information.
18. Setting priorities.
19. Allocating time efficiently.
20. Managing/overseeing several tasks at once.
21. Meeting deadlines.

Risk Taking

22. Taking reasonable job-related risks.
23. Identifying potential negative outcomes when considering a risky venture.
24. Monitoring progress toward objectives in risky ventures.
25. Recognizing alternative routes in meeting objectives.

Oral Communication

26. Conveying information one-to-one.
27. Communicating ideas verbally to groups.
28. Making effective business presentations.
29. Making impromptu presentations.

Written Communication

30. Writing reports.
31. Writing external business communication.
32. Writing internal business communication.
33. Using proper grammar, spelling, and punctuation.

Listening

34. Listening attentively.
35. Responding to others' comments during a conversation.

Interpersonal Relations

- 36. Working well with fellow employees.
- 37. Relating well with supervisors.
- 38. Establishing good rapport with subordinates.
- 39. Empathizing with others.
- 40. Understanding the needs of others.

Managing Conflict

- 41. Identifying sources of conflict among people.
- 42. Resolving conflicts.

Leadership and Influence

- 43. Supervising the work of others.
- 44. Giving direction and guidance to others.
- 45. Delegating work to peers.
- 46. Delegating work to subordinates.

Coordinating

- 47. Coordinating the work of peers.
- 48. Coordinating the work of subordinates.

Creativity, Innovation, and Change

- 49. Providing novel solutions to problems.
- 50. Adapting to situations of change.
- 51. Initiating change to enhance productivity.
- 52. Keeping up-to-date with external realities related to your company's success.
- 53. Reconceptualizing your role in response to changing corporate realities.

Visioning

- 54. Conceptualizing a future for the company.
- 55. Providing innovative paths for the company to follow for future development.

Ability to Conceptualize

- 56. Combining relevant information from a number of sources.
- 57. Applying information to new or broader contexts.
- 58. Integrating information into more general contexts.

Lifelong Learning

- 59. Keeping up-to-date on developments in the field.
- 60. Gaining new knowledge in areas outside the immediate job.
- 61. Gaining new knowledge from everyday experiences.

Motivation-Personal Strengths

- 62. Maintaining a high energy level.
 - 63. Functioning at an optimal level of performance.
 - 64. Responding positively to constructive criticism.
 - 65. Maintaining a positive attitude.
 - 66. Functioning well in stressful situations.
 - 67. Ability to work independently.
-

APPENDIX E:
POSTCARD TO GRADUATES



«FirstName»,«Next Record»

The College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia is in the process of conducting a study on the employability skills CAFNR graduates need to be successful in the workplace. You have been randomly selected to participate in this study. Because you have been randomly selected, you are representing a substantial number of your fellow classmates and colleagues; thus, your responses are vital. The findings from this study will be used to enhance the curriculum taught in the College of Agriculture, Food and Natural Resources at the University of Missouri-Columbia in an effort to better prepare tomorrow's graduates for employment.

The purpose of this postcard is to confirm your address and to alert you to the forthcoming questionnaire. You will be receiving a questionnaire in the near future, and we want to ensure it gets to you in a timely and orderly fashion; therefore, if you have a more current address than the one in which this postcard was sent, please reply to Shane Robinson, coordinator of the study, at jrdh4@mizzou.edu to update your address.

On behalf of the College, thank you in advance for your assistance and participation in this much needed study. With your help, we can continue to graduate the best of the best!

Sincerely,

Dr. Paul Vaughn, Associate Dean
College of Agriculture, Food and Natural
Resources

Dr. Mark R. Ryan, Director of The
School of Natural Resources

APPENDIX F:
INITIAL COVER LETTER TO GRADUATES

March 6, 2006



First Name Last Name
Address 1
Address 2
City, State Zip Code

Code Number

Dear First Name,

The College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia is conducting a study to assess the employability skills that graduates need to be successful in the workforce. As a recent CAFNR graduate, your insight is highly valued. The purpose of this letter is to invite you to participate in this important study.

Your participation in this study is completely voluntary; however, I ask that you take a few moments to complete this questionnaire and return it in the pre-addressed, stamped envelope provided no later than **Tuesday, March 14, 2006**. Use the enclosed \$1.00 bill to buy yourself a soft drink or cup of coffee to enjoy while you complete the form.

You will notice a code number on the front of the questionnaire. This number will be used to follow-up individuals who do not respond to the study. In no way will this number be used to match you with your responses to the questionnaire beyond this initial contact. Understand that your responses to this study will remain *completely* confidential. Only summated, group data will be reported. No names will be linked to responses. Please respond to each question openly and honestly without reservation. While you are not obligated to participate in this study, your responses are very important to the College as we consider modifying the curriculum and addressing the needs of our current and future students. Rest assured that your refusal to participate in this study will not affect your relationship with CAFNR.

Should you have questions concerning this letter and/or study, please do not hesitate to contact me via e-mail at vaughnpr@missouri.edu or by phone (573) 882-8301. Feel free to contact Shane Robinson, coordinator of the study, as well. He can be reached via e-mail at jrdh4@mizzou.edu or by phone (573) 882-2200. You may also contact the UMC Campus IRB Office at (573) 882-9585 for further information concerning human participation in research studies.

Thank you for your interest in this important study and in the academic preparation of graduates at the University of Missouri-Columbia. I look forward to receiving your responses!

Respectfully,

Paul Vaughn
Associate Dean of the College of Agriculture, Food, and Natural Resources
University of Missouri-Columbia-Columbia

APPENDIX G:
FOLLOW-UP POSTCARD TO GRADUATES



First Name,

Approximately two weeks ago, you were mailed a questionnaire for College of Agriculture, Food and Natural Resources (CAFNR) graduates of the University of Missouri-Columbia concerning a study on the employability skills CAFNR graduates need to be successful in the workplace. As of today, we have not received your response. Please take a few moments to complete the questionnaire and return it in the pre-paid, stamped envelope provided. Your responses are important to the College as we look to enhance the CAFNR curriculum in an effort to better prepare future students.

If you have already completed and returned the questionnaire, thank you very much for your response and please disregard this message. If you have misplaced your questionnaire, please call (573) 882-2200 or e-mail Shane Robinson, coordinator of the study, at jrdh4@mizzou.edu and he will send another one to you.

On behalf of the entire College, thank you for your assistance and participation in this much needed study. With your help, we can continue to graduate the best of the best!

Respectfully,

Dr. Paul R. Vaughn
Associate Dean,
College of Agriculture, Food and Natural
Resources

Dr. Mark R. Ryan
Director,
School of Natural Resources

APPENDIX H:
FOLLOW-UP COVER LETTER TO GRADUATES

February 9, 2006



First Name Last Name
Address 1
Address 2
City, State Zip Code

Code Number

Dear First Name,

Approximately three weeks ago, a questionnaire was sent to you on behalf of the College of Agriculture, Food and Natural Resources (CAFNR) concerning the employability skills CAFNR graduates need to be successful in the workforce. Our records indicate that of this date your questionnaire has not been received.

To date, many of your colleagues have responded and have included a wide range of skills they deem important in their careers. Our goal with this study is to obtain all of the questionnaires distributed to our recent graduates in an effort to fully understand the needs of our students and prepare them for their future careers. The results of this study will be useful to modify the CAFNR curriculum to better prepare our future graduates for the ever-changing workforce. I am writing again because of the importance your responses have to this study.

You will notice a number on the front of the questionnaire. This number is used to track the participants who respond to the study and those who do not. Once your questionnaire is returned, your name will be checked off of the mailing list. The list of names will then be destroyed so that no one will be able to match you with your responses. Protecting your privacy is very important to the College and University.

Please take a few moments to complete the questionnaire and return it in the pre-paid, stamped envelope provided no later than **Friday, March 3, 2006**. Should you have questions concerning this letter and/or study, please do not hesitate to contact Shane Robinson, coordinator of the study, via e-mail at jrdh4@mizzou.edu or by phone (573) 882-2200. You may also contact the UMC Campus IRB Office at (573) 882-9585 for further information concerning human participation in research studies.

Thank you for your interest in this important study and in the academic preparation of graduates at the University of Missouri-Columbia. I look forward to receiving your responses!

Respectfully,

Paul R. Vaughn
Associate Dean of the College of Agriculture, Food, and Natural Resources
University of Missouri-Columbia-Columbia

APPENDIX I:
INITIAL POSTCARD TO SUPERVISORS

Mr./Ms. Last Name,

The College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia is conducting a study of the employability skills that CAFNR graduates need to be successful in the workplace. This study assesses the perceptions of CAFNR graduates as well as those of their immediate supervisors. A random sample of graduates was taken for this study and (first and last name of CAFNR graduate) was selected as a participant. Therefore, your input is also needed. The information you provide will remain confidential and will not be shared with (first name of CAFNR graduate). The findings from this study will be used to enhance the curriculum taught in CAFNR at the University of Missouri-Columbia in an effort to better prepare tomorrow's graduates for employment.

The purpose of this postcard is to inform you that you will be receiving a questionnaire in the near future. Should you have any questions or concerns about this project, please contact Shane Robinson, coordinator of the study, at jrdh4@mizzou.edu.

On behalf of the College, thank you in advance for your assistance and participation in this much needed study. With your help, we can continue to produce quality graduates!

Sincerely,

Dr. Paul R. Vaughn, Associate Dean
College of Agriculture, Food and Natural Resources

APPENDIX J:
INITIAL COVER LETTER TO SUPERVISORS

March 6, 2006



First Name Last Name
Address 1
Address 2
City, State Zip Code

Dear Mr./Ms. Last Name,

The College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri-Columbia is conducting a study to assess the employability skills that CAFNR graduates need to possess to be successful in the workforce. The purpose of this letter is to invite you to participate in this important study.

Your participation in this study is completely voluntary; however, in order to assess the employability skills of our graduates, I would appreciate you taking a few moments to complete the enclosed questionnaire on (first and last name of CAFNR graduate) and return it in the pre-addressed, stamped envelope that has been provided. The findings of this study will be used to enhance the existing CAFNR curriculum at the University of Missouri-Columbia.

You will notice a code number on the front of the questionnaire. This number will be used to follow-up with individuals who do not respond to the study. In no way will this number be used to match you with your responses to the questionnaire beyond this initial contact. Please understand that your responses to this study will remain *completely* confidential. Only summated, group data will be reported to the College. No names will be linked to responses. Nor will Brooke see your responses. Therefore, please respond to each question openly and honestly without reservation. While you are not obligated to participate in this study, your responses are very important to the College as we consider modifying the curriculum and addressing the needs of our current and future students.

Should you have questions concerning this letter and/or study, please do not hesitate to contact Shane Robinson, coordinator of the study, via e-mail at jrdh4@mizzou.edu or by phone (573) 882-2200. In addition, please feel free to contact the UMC Campus IRB Office at (573) 882-9585 for further information concerning human participation in research studies.

With your assistance in this study, we can continue to graduate some of the nation's best employees. Thank you for your interest in this important study and in the academic preparation of graduates at the University of Missouri-Columbia. I look forward to receiving your responses!

Respectfully,

Paul R. Vaughn
Associate Dean of the College of Agriculture, Food and Natural Resources
University of Missouri-Columbia-Columbia

APPENDIX K:
FOLLOW-UP POSTCARD TO SUPERVISORS



Mr./Ms. Last Name,

Approximately two weeks ago, you were mailed a questionnaire for College of Agriculture, Food and Natural Resources (CAFNR) graduates of the University of Missouri-Columbia concerning a study on the employability skills CAFNR graduates need to be successful in the workplace. As of today, we have not received your response. Please take a few moments to complete the questionnaire and return it in the pre-paid, stamped envelope provided. Your responses are important to the College as we look to enhance the CAFNR curriculum in an effort to better prepare future students.

If you have already completed and returned the questionnaire, thank you very much for your response and please disregard this message. If you have misplaced your questionnaire, please call (573) 882-2200 or e-mail Shane Robinson, coordinator of the study, at jrdh4@mizzou.edu and he will send another one to you.

On behalf of the entire College, thank you for your assistance and participation in this much needed study. With your help, we can continue to graduate the best of the best!

Respectfully,

Dr. Paul R. Vaughn
Associate Dean,
College of Agriculture, Food and Natural
Resources

APPENDIX L:
FOLLOW-UP COVER LETTER TO THE SUPERVISORS

March 22, 2006



First Name Last Name
Address 1
Address 2
City, State Zip Code

Dear Mr./Ms. Last Name,

A couple of weeks ago, a questionnaire was sent to you on behalf of the College of Agriculture, Food and Natural Resources (CAFNR) concerning the employability skills supervisors believe are necessary for CAFNR graduates to be successful in the workforce. Our records indicate that of this date your questionnaire has not been received.

To date, many supervisors have responded and have included a wide range of skills they deem important for graduates in the workforce. Our goal with this study is to obtain all of the questionnaires distributed to our recent graduates' supervisors in an effort to fully understand the needs of our students to prepare them for their future careers. The results of this study will be useful in modifying the CAFNR curriculum to better prepare our future graduates for the ever-changing workforce. I am writing again because of the importance your responses have to this study.

You will notice a number on the front of the questionnaire. This number is used to track the participants who respond to the study and those who do not. Once your questionnaire is returned, your name will be checked off of the mailing list. The list of names will then be destroyed so that no one will be able to match you with your responses. Protecting your privacy is very important to the College and University.

Please take a few moments to complete the questionnaire and return it in the pre-paid, stamped envelope provided no later than **Thursday, March 30, 2006**. Should you have questions concerning this letter and/or study, please do not hesitate to contact Shane Robinson, coordinator of the study, via e-mail at jrdh4@mizzou.edu or by phone (573) 882-2200. You may also contact the UMC Campus IRB Office at (573) 882-9585 for further information concerning human participation in research studies.

Thank you for your interest in this important study and in the academic preparation of graduates at the University of Missouri-Columbia. I look forward to receiving your responses!

Respectfully,

Paul R. Vaughn
Associate Dean of the College of Agriculture, Food, and Natural Resources
University of Missouri-Columbia-Columbia

APPENDIX M:
INDIVIDUAL ITEMS COMPRISING THE EMPLOYABILITY SKILL
CONSTRUCTS ACCORDING TO GRADUATES

Table 18
Individual Items that make up the Construct of Problem Solving and Analytic as Perceived by Graduates

Problem Solving and Analytic	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Solving problems	2.87	.38	2.39	.57	1.30
2. Identifying problems	2.75	.47	2.40	.53	.92
3. Identifying essential components of the problem	2.57	.55	2.22	.61	.86
4. Prioritizing problems	2.65	.51	2.32	.64	.85
5. Sorting out the relevant data to solve the problem			2.12	.59	.49
6. Contributing to group problem solving	2.27	.68	2.14	.63	.29

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 18
Individual Items that make up the Construct of Decision Making as Perceived by Graduates

Decision Making	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Recognizing the effects of decisions made	2.63	.54	2.27	.66	.90
2. Assessing long-term effects of decisions	2.50	.66	2.14	.65	.89
3. Making decisions on the basis of thorough analysis of the situation	2.54	.63	2.22	.64	.76
4. Making decisions in a short time period	2.46	.64	2.24	.69	.55
5. Knowing ethical implications of decisions	2.39	.82	2.24	.77	.35
6. Identifying political implications of the decision to be made	1.53	.90	1.46	.80	.11

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 20

Individual Items that make up the Construct of Organization and Time Management as Perceived by Graduates

Organization and Time Management	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Allocating time efficiently	2.76	.52	2.31	.71	1.22
2. Establishing the critical events to be completed	2.49	.74	2.19	.70	.73
3. Managing/overseeing several tasks at once	2.69	.51	2.45	.65	.64
4. Setting priorities	2.77	.50	2.53	.65	.64
5. Revising plans to include new information	2.40	.71	2.19	.75	.47
6. Monitoring progress against the plan	2.21	.75	2.01	.74	.43
7. Assigning/delegating responsibility	2.17	.76	2.17	.76	.42
8. Meeting deadlines	2.66	.63			.39
9. Integrating strategic considerations in the plans made	2.00	.74	1.87	.71	.25

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 21

Individual Items that make up the Construct of Risk Taking as Perceived by Graduates

Risk Taking	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Recognizing alternative routes in meeting objectives	2.36	.68	2.07	.69	.69
2. Identifying potential negative outcomes when considering a risky venture	2.27	.86	2.04	.80	.52
3. Monitoring progress toward objectives in risky ventures	2.05	.83	1.87	.81	.37
4. Taking reasonable job-related risks	2.11	.77	2.02	.79	.18

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 22

Individual Items that make up the Construct of Oral Communication as Perceived by Graduates

Oral Communication	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Communicating ideas verbally to groups	2.64	.61	2.22	.75	1.09
2. Conveying information one-to-one	2.63	.59	2.36	.71	.70
3. Making effective business presentations	2.11	.93	2.04	.78	.13
4. Making impromptu presentations	1.88	.96	1.89	.87	-.01

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 23

Individual Items that make up the Construct of Written Communication as Perceived by Graduates

Written Communication	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Writing internal business communication	2.01	.91	1.96	.82	.11
2. Writing external business communication	1.87	1.00	1.91	.85	-.07
3. Writing reports	1.98	.95	2.21	.76	-.44
4. Using proper grammar, spelling, and punctuation	2.57	.71	2.43	.77	-1.53

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 24

Individual Items that make up the Construct of Listening as Perceived by Graduates

Listening	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Listening attentively	2.79	.43	2.55	.64	.62
2. Responding to others' comments during a conversation	2.55	.58	2.40	.67	.37

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 25

Individual Items that make up the Construct of Interpersonal Relations as Perceived by Graduates

Interpersonal Relations	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Establishing good rapport with subordinates	2.67	.67	2.52	.66	.37
2. Working well with fellow employees	2.77	.49	2.65	.58	.31
3. Relating well with supervisors	2.75	.54	2.65	.55	.25
4. Understanding the needs of others	2.49	.66	2.39	.67	.24
5. Empathizing with others	2.25	.79	2.27	.77	-.05

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 26

Individual Items that make up the Construct of Managing Conflict as Perceived by Graduates

Managing Conflict	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Resolving conflicts	2.30	.82	2.19	.68	.29
2. Identifying sources of conflict among people	2.09	.83	2.12	.77	-.02

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 27

Individual Items that make up the Construct of Leadership and Influence as Perceived by Graduates

Leadership and Influence	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Giving direction and guidance to others	2.46	.71	2.28	.70	.41
2. Delegating work to peers	2.09	.87	2.01	.75	.20
3. Delegating work to subordinates	2.14	.91	2.08	.81	.15
4. Supervising the work of others	2.25	.89	2.24	.70	.09

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 28

Individual Items that make up the Construct of Coordinating as Perceived by Graduates

Coordinating	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Coordinating the work of peers	2.01	.88	1.98	.78	.08
2. Coordinating the work of subordinates	2.14	.96	2.14	.83	.03

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 29

Individual Items that make up the Construct of Creativity, Innovation, and Change as Perceived by Graduates

Creativity, Innovation, and Change	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Adapting to situations of change	2.62	.63	2.30	.70	.81
2. Keeping up-to-date with external realities related to your company's success	2.27	.95	1.93	.77	.73
3. Initiating change to enhance productivity	2.40	.79	2.14	.72	.60
4. Providing novel solutions to problems	2.33	.67	2.08	.66	.57
5. Reconceptualizing your role in response to changing corporate realities	1.84	1.01	1.63	.86	.37

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 30

Individual Items that make up the Construct of Visioning as Perceived by Graduates

Visioning	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Conceptualizing a future for the company	1.94	.93	1.66	.83	.56
Providing innovative paths for the company to follow for future development	1.90	.95	1.61	.78	.53

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 31

Individual Items that make up the Construct of Ability to Conceptualize as Perceived by Graduates

Ability to Conceptualize	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Combining relevant information from a number of sources	2.43	.74	2.24	.65	.46
2. Applying information to new or broader contexts	2.11	.74	1.95	.59	.32
3. Integrating information into more general contexts	2.14	.74	2.09	.69	.12

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 32

Individual Items that make up the Construct of Lifelong Learning as Perceived by Graduates

Lifelong Learning	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Keeping up-to-date on developments in the field	2.56	.68	2.19	.70	.95
2. Gaining new knowledge from everyday experiences	2.67	.58	2.49	.66	.47
3. Gaining new knowledge in areas outside the immediate job	2.30	.77	2.11	.80	.42

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

Table 33
Individual Items that make up the Construct of Motivation-Personal Strengths as Perceived by Graduates

Motivation-Personal Strengths	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Responding positively to constructive criticism	2.65	.61	2.24	.75	1.07
2. Functioning well in stressful situations	2.84	.38	2.49	.61	.97
3. Functioning at an optimal level of performance	2.74	.53	2.42	.65	.84
4. Maintaining a positive attitude	2.81	.46	2.52	.59	.79
5. Ability to work independently	2.84	.45	2.69	.56	.44
6. Maintaining a high energy level	2.51	.66	2.34	.71	.42

^a0 = No Importance, 1 = Minor Importance, 2 = Moderate Importance, 3 = Major Importance

^b0 = No Contribution, 1 = Minor Contribution, 2 = Moderate Contribution, 3 = Major Contribution

^cMean Weighted Discrepancy Score

APPENDIX N:
INDIVIDUAL ITEMS COMPRISING THE EMPLOYABILITY SKILL
CONSTRUCTS ACCORDING TO SUPERVISORS

Table 34

Individual Items that make up the Construct of Problem Solving and Analytic as Perceived by Supervisors

Problem Solving and Analytic	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Solving problems	2.88	.34	2.23	.62	1.78
2. Identifying problems	2.80	.40	2.40	.59	1.33
3. Prioritizing problems	2.73	.45	2.25	.59	1.24
4. Identifying essential components of the problem	2.68	.52	2.30	.61	.96
5. Sorting out the relevant data to solve the problem	2.66	.48	2.29	.68	.95
6. Contributing to group problem solving	2.41	.63	2.15	.70	.63

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 35

Individual Items that make up the Construct of Decision Making as Perceived by Supervisors

Decision Making	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Making decisions on the basis of thorough analysis of the situation	2.63	.54	2.17	.70	1.19
2. Recognizing the effects of decisions made	2.80	.40	2.39	.77	1.13
3. Assessing long-term effects of decisions	2.49	.60	2.12	.71	.89
4. Knowing ethical implications of decisions	2.54	.60	2.37	.73	.42
5. Identifying political implications of the decision to be made	1.95	.87	1.75	.84	.42
6. Making decisions in a short time period	2.51	.60	2.44	.60	.18

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 36

Individual Items that make up the Construct of Organization and Time Management as Perceived by Supervisors

Organization and Time Management	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Setting priorities	2.85	.36	2.32	.69	1.49
2. Allocating time efficiently	2.85	.36	2.41	.67	1.22
3. Managing/overseeing several tasks at once	2.73	.50	2.37	.77	.98
4. Meeting deadlines	2.83	.38	2.54	.55	.81
5. Establishing the critical events to be completed	2.63	.54	2.38	.71	.63
6. Revising plans to include new information	2.29	.75	2.08	.69	.55
7. Assigning/delegating responsibility	1.93	.88	1.84	.75	.37
8. Integrating strategic considerations in the plans made	2.02	.69	1.93	.62	.24
9. Monitoring progress against the plan	2.28	.72	2.21	.62	.22

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 37

Individual Items that make up the Construct of Risk Taking as Perceived by Supervisors

Risk Taking	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Recognizing alternative routes in meeting objectives	2.61	.54	2.07	.72	1.37
2. Identifying potential negative outcomes when considering a risky venture	2.54	.60	2.00	.63	1.33
3. Monitoring progress toward objectives in risky ventures	2.33	.77	2.03	.75	.67
4. Taking reasonable job-related risks	2.28	.65	2.08	.66	.43

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 38

Individual Items that make up the Construct of Oral Communication as Perceived by Supervisors

Oral Communication	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Communicating ideas verbally to groups	2.59	.63	2.24	.80	.86
2. Conveying information one-to-one	2.71	.46	2.54	.67	.45
3. Making effective business presentations	2.05	.97	2.03	.80	.10
4. Making impromptu presentations	1.93	.85	1.93	.83	.05

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 39

Individual Items that make up the Construct of Written Communication as Perceived by Supervisors

Written Communication	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Using proper grammar, spelling, and punctuation	2.54	.75	2.37	.80	.42
2. Writing external business communication	1.68	1.08	2.03	.79	-.32
3. Writing internal business communication	1.85	.99	2.00	.80	-.10
4. Writing reports	2.00	1.04	2.10	.75	-.05

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 40

Individual Items that make up the Construct of Listening as Perceived by Supervisors

Listening	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Listening attentively	2.76	.44	2.46	.67	.79
2. Responding to others' comments during a conversation	2.68	.47	2.51	.60	.45

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 41

Individual Items that make up the Construct of Interpersonal Relations as Perceived by Supervisors

Interpersonal Relations	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Understanding the needs of others	2.58	.50	2.20	.82	.92
2. Working well with fellow employees	2.93	.26	2.61	.74	.91
3. Relating well with supervisors	2.71	.51	2.68	.61	.65
4. Establishing good rapport with subordinates	2.34	1.02	2.27	1.02	.28
5. Empathizing with others	2.20	.79	2.28	.78	-.16

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 42

Individual Items that make up the Construct of Managing Conflict as Perceived by Supervisors

Managing Conflict	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Resolving conflicts	2.41	.84	2.05	.82	.80
2. Identifying sources of conflict among people	2.37	.77	2.12	.75	.56

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 43

Individual Items that make up the Construct of Leadership and Influence as Perceived by Supervisors

Leadership and Influence	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Supervising the work of others	2.00	1.16	2.00	.91	.29
2. Delegating work to subordinates	1.79	1.13	1.81	.89	.21
3. Giving direction and guidance to others	2.07	.96	1.98	.85	.20
4. Delegating work to peers	1.80	1.04	1.97	.83	-.04

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 44

Individual Items that make up the Construct of Coordinating as Perceived by Supervisors

Coordinating	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Coordinating the work of peers	2.00	.95	2.03	.64	.24
2. Coordinating the work of subordinates	1.82	1.10	1.92	.87	.09

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 45

Individual Items that make up the Construct of Creativity, Innovation, and Change as Perceived by Supervisors

Creativity, Innovation, and Change	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Adapting to situations of change	2.78	.57	2.41	.84	.99
2. Initiating change to enhance productivity	2.49	.71	2.13	.79	.89
3. Keeping up-to-date with external realities related to your company's success	2.37	.77	2.15	.73	.51
4. Reconceptualizing your role in response to changing corporate realities	2.25	.81	2.05	.83	.43
5. Providing novel solutions to problems	2.24	.70	2.12	.68	.27

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 46

Individual Items that make up the Construct of Visioning as Perceived by Supervisors

Visioning	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Conceptualizing a future for the company	1.90	1.01	1.84	.93	.27
2. Providing innovative paths for the company to follow for future development	1.97	.99	1.97	.83	.19

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 47

Individual Items that make up the Construct of Ability to Conceptualize as Perceived by Supervisors

Ability to Conceptualize	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Combining relevant information from a number of source	2.46	.75	2.34	.73	.29
2. Applying information to new or broader contexts	2.15	.82	2.12	.78	.05
3. Integrating information into more general contexts	2.15	.88	2.12	.78	.05

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 48

Individual Items that make up the Construct of Lifelong Learning as Perceived by Supervisors

Lifelong Learning	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Gaining new knowledge from everyday experiences	2.73	.51	2.40	.67	.85
2. Keeping up-to-date on developments in the field	2.66	.53	2.39	.67	.70
3. Gaining new knowledge in areas outside the immediate job	2.45	.68	2.33	.76	.29

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

Table 49

Individual Items that make up the Construct of Motivation-Personal Strengths as Perceived by Supervisors

Motivation-Personal Strengths	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Functioning well in stressful situations	2.90	.30	2.38	.74	1.45
2. Responding positively to constructive criticism	2.80	.41	2.43	.75	1.00
3. Functioning at an optimal level of performance	2.76	.44	2.46	.71	.79
4. Ability to work independently	2.90	.30	2.63	.58	.76
5. Maintaining a positive attitude	2.88	.40	2.73	.59	.41
6. Maintaining a high energy level	2.66	.53	2.51	.60	.38

^a1 = No Importance, 2 = Minor Importance, 3 = Moderate Importance, 4 = Major Importance

^b1 = No Contribution, 2 = Minor Contribution, 3 = Moderate Contribution, 4 = Major Contribution

^cMean Weighted Discrepancy Score

VITA

J. Shane Robinson was born September 8, 1974 in Hollis, Oklahoma. After attending public schools in the Hollis Public School System, he received the following degrees: B.S. in Agricultural Education from Oklahoma State University (1998); Master's of Agriculture from Oklahoma State University (2000); Ph.D. in Agricultural Education from the University of Missouri-Columbia (2006). He is married to the former Erin Elizabeth Lamb of Cushing, Oklahoma. They have one son, Parker. Shane is starting a faculty position as Assistant Professor of Agricultural Education with the Department of Community and Leadership Development at the University of Kentucky in Lexington, Kentucky on July 1, 2006.

RESEARCH JOURNAL ARTICLES

- Garton, B. L. & Robinson, J. S. (in press). Career paths, job satisfaction, and employability skills of agricultural education graduates. *North American Colleges and Teachers of Agriculture Journal*.
- Burris, S., Robinson, J. S., & Terry, Jr., H. R. (2005). Preparation of pre-service teachers in agricultural mechanics. *Journal of Agricultural Education*, 46 (3), 23-34.

RESEARCH CONFERENCE PAPERS AND PRESENTATIONS

- Garton, B. L. and Robinson, J. S. (2006). Tracking agricultural education graduates' career choice, job satisfaction, and employability skills. *Proceedings of the American Association for Agricultural Education National Research Conference*, Charlotte, NC.
- Campbell, J. L., Garton, B. L., & Robinson, J. S. (2006). An assessment of teaching interns' level of proficiency on state standards prior to and at the completion of the teaching internship. *Proceedings of the American Association for Agricultural Education National Research Conference*, Charlotte, NC.

- Grigsby, M., Robinson, and J. S. (2005). The influence of role play exercises in large classes on student engagement and perceptions of relevance of course content. *Rural Sociological Society 68th Annual Meeting*. Tampa, FL.
- Burris, S., Robinson, J. S., & Terry, Jr., H. R. (2004). How are ag education programs preparing their students to teach ag mechanics? *Proceedings of the 2004 National Agricultural Education Research Conference*, St. Louis, MO.
- Robinson, J. S., Garton, B.L., & Campbell, J. (2004). Where are they today? A follow-up of agricultural education graduates. *Proceeding of the North Central Agricultural Education Research Conference* (p. 114-127), Lafayette, IN.

POSTER PRESENTATIONS

- Robinson, J. S., Kitchel, T., & Torres, R. M. (accepted for AAAE, 2006). Servant leadership...Providing application to theory. *Research Paper Proposal for the 2005 American Association for Agricultural Education National Conference*.
- Robinson, J. S., Kitchel, T., & Torres, R. M. (2005). Servant leadership...Providing application to theory. *North Central Research Conference*. Columbus, OH. (*1st Runner-up*)