

Becoming Employable: A Look at Graduates' and Supervisors' Perceptions of the Skills Needed for Employability



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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 skill constructs of entry-level College of Agriculture, Food and Natural Resources (CAFNR) graduates at the University of Missouri and their immediate supervisors. Sixteen employability skill constructs were identified through the literature. The Borich (1980) needs assessment model and the quadrant analysis model were used to assess the data. By combining the importance of the construct with the competence level of the graduate, both graduates and their supervisors agreed that the problem-solving and analytic skill construct was most in need of curriculum enhancement, while written communication was least in need of curriculum enhancement. Supervisors perceived graduates to be more competent at performing the employability skill constructs than graduates perceived themselves. Specifically, supervisors rated graduates higher on 11 of the 16 constructs on the competence scale.

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 and Kim, 2004). Candy and Crebert (1991), Martin et al. (2000), and Tanyel et al. (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, preparing students for all types of employment becomes difficult for higher education institutions.

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 et al. (1998) stated that "there is a need for a fundamental shift toward an emphasis on general skills in education" (p. 12) because "the skills most in demand are least in supply" (p. 16). 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. However, 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 transferable, employability skills are considered very basic and generic in nature and should assist every person entering the workforce.

However, Candy and Crebert (1991) stated that graduates are 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 et al. (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). Is it possible that colleges and universities are failing in their role to prepare graduates for the expectations of the workforce?

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Preparing students for industry infers a sense of application must be present. Morley (2001) suggested that students should “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” (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).

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 blame higher education institutions for not preparing graduates for work beyond the classroom. 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 institutions should exert more effort in preparing graduates in their employability skills.

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.

While many attempts have been made at defining the employability skills graduates need to possess upon entering the workforce, few studies have looked directly at employers of agriculture graduates. Specifically, there is a need to understand which employability skills are being sought by 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

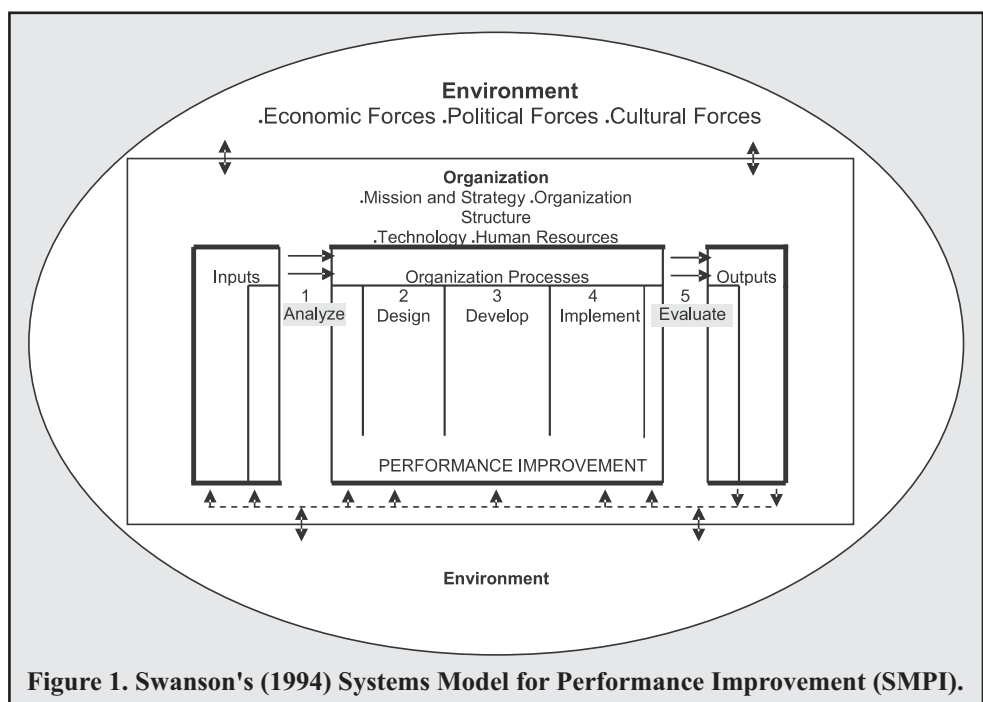


Figure 1. Swanson's (1994) Systems Model for Performance Improvement (SMPI).

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.

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 a company (Figure 1). The SMPI was designed to increase individual performance and productivity.

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 and 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 an organization. "Examples include..., from an educational perspective, the employment success of its graduates" (Finch and 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.

For the purpose of this study, supervisors represented the organization and provided feedback concerning graduate competencies. Graduates of the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri were referred to as the inputs and 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 CAFNR curriculum will be evaluated to assist future graduates in becoming more employable and successful in the workforce.

Purpose and Objectives

The purpose of this study was to assess the employability skills of graduates of the College of Agriculture, Food and Natural Resources at the University of Missouri. 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. The following objectives were designed to guide the study:

1. Describe the demographics (gender, GPA, academic major) of the graduates.
2. Prioritize the employability skill constructs, according to graduates, in need of curriculum enhancement using the Borich needs assessment model.
3. Prioritize the employability skill constructs, according to supervisors, in need of curriculum enhancement using the Borich needs assessment model.
4. Identify the employability skill constructs as perceived by graduates and their supervisors using the quadrant analysis model.

Materials and Methods

The population for this study was graduates of the College of Agriculture, Food and Natural Resources at the University of Missouri from January, 2004 May, 2005 (N=711). Due to time constraints, a random sample of the population was established. Using a sampling technique designed by Krejcie and Morgan (1960), the population (N=711) of graduates was reduced to a sample size of 290. Eighteen graduate questionnaires were deemed undeliverable and were returned, resulting in 272 usable addresses. In all, 141 graduates responded for a 52% response rate. In addition, graduates were asked to provide the name and contact information of their immediate supervisors. Of the graduates who responded, 75 listed the name and contact information of their immediate supervisor. Forty-two of the 75 supervisors responded for a 56% response rate.

Two questionnaires were designed for the study; one for graduates and one for the graduates' immediate supervisor. The questionnaires consisted of identifying the importance and competence levels of 67 employability skills, taken from the work of Evers et al. (1998), 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). A pilot study resulted in a Cronbach's alpha ranging from .70 to .85 on each of the 16 constructs with the "listening" (.59) construct being the lone exception.

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The importance and competence constructs were analyzed using the Borich (1980) needs assessment model. The model determines if and where discrepancies exist. 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 calculated for each employability skill construct by multiplying the discrepancy score by the mean importance rating. Lastly, a mean weighted discrepancy score (MWDS) for each employability skill construct was calculated by taking the sum of the weighted discrepancy scores divided by the number of respondents ($n_{\text{graduates}} = 141$, $n_{\text{supervisors}} = 42$). 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 in need of curriculum enhancement and improvement.

Lastly, a quadrant analysis model was used to combine the findings of the graduates and their supervisors. A 2x2 matrix was used with one dimension representing the MWDS of the graduates and the other dimension representing the MWDS of the supervisors.

Because non-response error is a threat to external validity, early and late respondents were compared (Miller and Smith, 1983). 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. No differences were found between the two groups.

Results and Discussion

Objective one sought to describe the demographics (gender, GPA) of the graduates by academic major. Sixty-six (47%) of the respondents were male and 75 (53%) were female. The mean GPA was 3.18 with a standard deviation of .47 (Table 1).

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).

The purpose of objective two was to prioritize the employability skills, as perceived by graduates, in need of curriculum enhancement using the Borich needs assessment model. Problem-solving and analytic (MWDS = .74) was the employability skill construct possessing the greatest mean weighted discrepancy score (Table 2).

In addition to problem solving and analytic, eight employability skill constructs had a mean weighted discrepancy score greater than .50, including motivation (MWDS = .71), lifelong learning (MWDS = .69), creativity, innovation, and change (MWDS = .62), organization and time management (MWDS = .55), visioning (MWDS = .52), time management (MWDS = .51), and listening (MWDS = .50). The three employability skill constructs rated the lowest, all with mean weighted discrepancy scores of less than .20, included managing conflict (MWDS = .12), coordination (MWDS = .06) and written communication (MWDS = .03).

Objective three sought to prioritize the employability skills, according to supervisors, in need of curriculum enhancement using the Borich needs assessment model. As a result, problem-solving and analytic (MWDS = 1.08) was the employability skill construct possessing the greatest mean weighted discrepancy score (Table 3). The lowest rated employability skill construct was written communication (MWDS = -.10). Seven employability skill constructs

had a mean weighted discrepancy score greater than .60, including problem solving and analytic (MWDS = 1.08), risk taking (MWDS = .82), motivation (MWDS = .76), managing conflict (MWDS = .68), decision making (MWDS = .67), lifelong learning (MWDS = .62), and listening (MWDS = .62). The four employability skill constructs rated the lowest, all with mean weighted discrepancy scores of less than .20, included supervision (MWDS = .18), coordination (MWDS = .16), ability to conceptualize

Table 1. 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

Table 2. Graduates Perceptions of the Importance of the Employability Skills and their Competence at Performing the Skills (n=141)

Employability Skill Constructs	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Problem Solving and Analytic	2.57	.33	2.26	.40	.74
2. Motivation	2.73	.32	2.45	.50	.71
3. Lifelong Learning	2.51	.54	2.26	.58	.69
4. Creativity, Innovation, and Change	2.29	.60	2.01	.50	.62
5. Organization and Time Management	2.49	.39	2.26	.47	.55
6. Visioning	1.92	.86	1.63	.74	.52
7. Decision Making	2.35	.41	2.10	.46	.51
8. Listening	2.67	.42	2.48	.57	.50
9. Risk Taking	2.20	.58	2.00	.62	.44
10. Oral Communication	2.32	.56	2.12	.58	.43
11. Ability to Conceptualize	2.22	.60	2.10	.54	.28
12. Supervision	2.24	.72	2.16	.62	.22
13. Interpersonal Relations	2.59	.47	2.51	.48	.20
14. Managing Conflict	2.20	.75	2.15	.63	.12
15. Coordination	2.08	.84	2.06	.75	.06
16. Written Communication	2.11	.69	2.12	.64	-.03

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

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

^cMean Weighted Discrepancy Score

Table 3. Supervisors' Perceptions of the Importance of the Graduates' Employability Skills and their Competence at Performing the Skills (n = 42)

Employability Skill Construct	Importance ^a		Competence ^b		MWDS ^c
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Problem Solving and Analytic	2.70	.31	2.27	.49	1.08
2. Risk Taking	2.45	.51	2.06	.57	.82
3. Motivation	2.81	.30	2.52	.55	.76
4. Managing Conflict	2.39	.75	2.08	.75	.68
5. Decision Making	2.49	.35	2.20	.58	.67
6. Lifelong Learning	2.62	.47	2.37	.57	.62
7. Listening	2.72	.40	2.49	.56	.62
8. Organization and Time Management	2.49	.38	2.25	.51	.60
9. Creativity, Innovation, and Change	2.44	.57	2.17	.66	.59
10. Interpersonal Relations	2.53	.45	2.39	.69	.39
11. Oral Communication	2.32	.57	2.18	.64	.33
12. Visioning	1.94	.96	1.91	.81	.23
13. Supervision	1.93	1.02	1.96	.75	.18
14. Coordination	1.90	.99	1.96	.70	.16
15. Ability to Conceptualize	2.25	.74	2.20	.70	.13
16. Written Communication	2.02	.78	2.14	.71	-.10

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

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

^cMean Weighted Discrepancy Score

(MWDS = .13), and written communication (MWDS = -.10).

The purpose of objective four was to identify the employability skill constructs as perceived by graduates and their supervisors using the quadrant analysis model. A 2x2 matrix was used to represent the areas of greatest need of attention for curriculum enhancement according to both graduates and supervisors on the importance of the constructs and competence of the entry-level graduates at performing the constructs (Figure 2).

The grand mean MWDS of the employability skill constructs of graduates was .41, while the grand

mean MWDS of the employability skill constructs of supervisors was .49. As a result, all constructs falling into quadrant I represented the greatest need for curriculum enhancement. In all, eight constructs were targeted (Figure 2). Two constructs comprised quadrant II, one construct comprised quadrant III, and five constructs comprised quadrant IV. The numbers used in the quadrants represented constructs found in Table 4.

The constructs with the greatest need for curriculum enhancement were identified in category I because of their high discrepancy scores. In all, eight constructs were represented consisting of problem-solving and analytic, decision making, organization and time management, risk taking, listening, creativity, innovation, and change, lifelong learning, and motivation. Two constructs (oral communication and visioning) had a moderate discrepancy score and comprised category II, indicating a moderate need for curriculum enhancement. Managing conflict was the construct that comprised quadrant III indicating a low discrepancy score and a low need for curriculum enhancement. Five constructs comprised quadrant IV, indicating negligible discrepancy scores. These five consisted

of: interpersonal relations, supervision, coordination, ability to conceptualize, and written communication.

Summary

The 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,

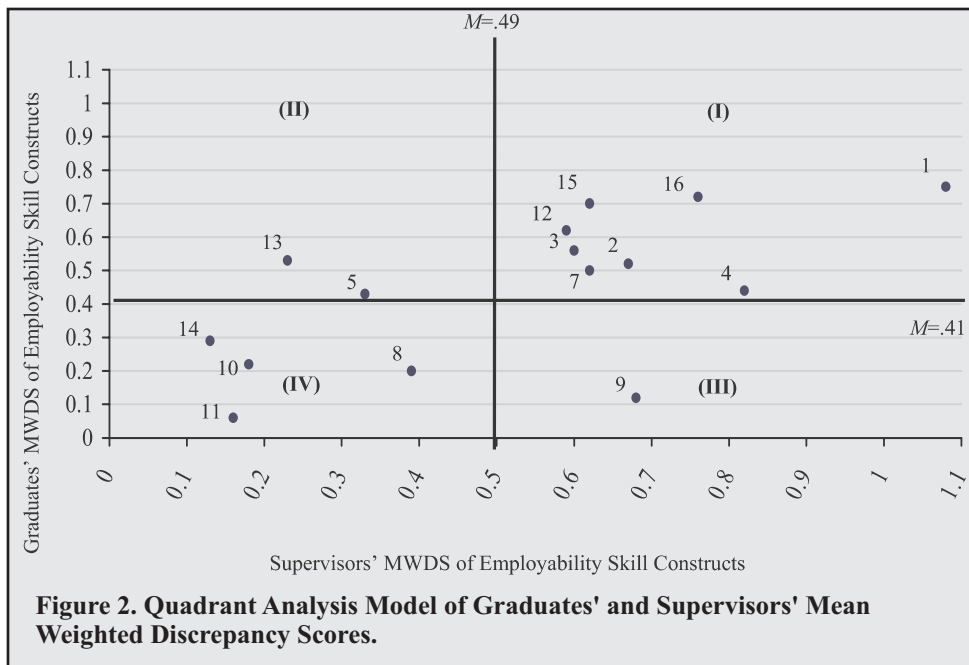


Figure 2. Quadrant Analysis Model of Graduates' and Supervisors' Mean Weighted Discrepancy Scores.

Table 4. The Employability Skill Constructs Represented in the Quadrant Analysis Model

Quadrant	Number	Employability Skill Construct
I	1.	Problem Solving and Analytic
	2.	Decision-Making
	3.	Organization and Time Management
	4.	Risk Taking
	7.	Listening
	12.	Creativity, Innovation, and Change
	15.	Lifelong Learning
II.	5.	Oral Communication
	13.	Visioning
III.	9.	Managing Conflict
IV.	8.	Interpersonal Relations
	10.	Supervision
	11.	Coordination
	14.	Ability to Conceptualize
	16.	Written Communication

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 entry-level graduates from traditional degree programs at this institution had a higher response rate than non-traditional degree programs. While 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 there be a disconnect with these graduates and the College? Could it be that these graduates do not feel a sense of belongingness or connectedness to the College and therefore chose not to participate?

According to graduates, none of the 16 employability skill constructs were perceived to be in high need of curriculum enhancement. However, graduates perceived the employability skill constructs problem-solving and analytic, motivation, lifelong learning, creativity, innovation, and change, organization and time management, visioning, decision making, and listening to be the eight possessing a moderate need for curriculum enhancement. Risk taking and oral communication were perceived by graduates to be of low need of curriculum enhancement, while ability to conceptualize, supervision, interpersonal relations, managing conflict, coordination, and written communication were all deemed negligible. Interestingly, all seven of the lowest rated employability skill constructs are cornerstones taught in CAFNR leadership courses.

Therefore, it can be implied that students may be acquiring these skills in leadership courses offered by the College. While written communication had the lowest mean weighted discrepancy score of all the employability skill constructs, it should still be retained in the curriculum because of its importance rating by graduates and supervisors.

Supervisors perceived problem-solving and analytic and risk taking as the two employability skill constructs in high need of curriculum enhancement. Motivation, managing conflict, decision making, lifelong learning, listening, organization and time management, creativity and innovation, and change were the seven employability skill constructs possessing a moderate need for curriculum enhancement. Interpersonal relations and oral communication were both perceived to be a low need in terms of curriculum enhancement. These five employability

skill constructs were perceived to be negligible to supervisors: visioning, supervision, coordination, ability to conceptualize, and written communication.

When comparing graduates and supervisors, graduates rated 15 of the 16 employability skill constructs higher on importance than their perceived competence level to perform them, with written communication being the exception. 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. Supervisors rated 13 of the 16 employability skill constructs higher on importance than their perception of the graduate's ability to perform them, with supervision, coordination, and written communication being the exceptions. Based on these findings, it can be concluded that CAFNR graduates at the University of Missouri possess competence at performing the written communication construct. It could be implied that this is a result of the nationally acclaimed writing intensive program that has been implemented at the institution.

Eight employability skill constructs were deemed to possess a high need for curriculum enhancement when combining responses of graduates and supervisors on the quadrant analysis model. Therefore, faculty in the College should investigate ways of enhancing the curriculum in the areas of: problem-solving and analytic, decision making, organization and time management, risk taking, listening, creativity, innovation, and change, lifelong learning, and motivation. Constructs perceived to possess a moderate need for curriculum enhancement comprised quadrant II. These constructs included: oral communication and visioning. One skill construct, managing conflict, was deemed a low need for curriculum enhancement and was represented in quadrant III. Four skill constructs were deemed negligible in terms of curriculum enhancement and were represented in quadrant IV. These constructs consisted of: interpersonal relations, supervision, coordination, and ability to conceptualize. As a result of the quadrant analysis, modifications should be made to the existing CAFNR curriculum to include the skill constructs represented in quadrant I. Once all skill constructs in quadrant I have been adequately addressed in the curriculum, skill constructs in quadrant II should be addressed followed by skill constructs in quadrant III.

The findings of this study should be shared with CAFNR faculty as a means to improve future graduates' competencies at performing the employability skill constructs most in demand. In addition, the findings should be shared with industry professionals in an effort to build and sustain rapport and keep communication lines open. While this study revealed baseline data for the CAFNR as a whole, future research should consist of more focused studies for each academic department represented in the CAFNR. This would bring more clarity to each

department as to the exact skill(s) in need and thus would allow for adequate enhancements to be made to all curricula. In addition, further research should be directed at identifying and determining the specific items and variables comprising the constructs.

Literature Cited

- Askov, E.N. and E.E. Gordon. 1999. The brave new world of workforce education. *New directions for adult and continuing education* 83, 59-68.
- Billing, D. 2003. Generic cognitive abilities in higher education: An international analysis of skills sought by stakeholders. *Compare* 33(3), 335-350.
- Borich, G.D. 1980. A needs assessment model for conducting follow-up studies. *The Jour. of Teacher Education* 31(3), 39-42.
- Brown, P., A. Hesketh, and S. Williams. 2003. Employability in a knowledge-driven economy. *Jour. of Education and Work* 16(2), 107-123.
- Carnevale, A.P., L.J. Gainer, and J. Villet. 1990. *Training in America*. Jossey-Bass Publishers: CA.
- Candy, P.C. and R.G. Crebert. 1991. Ivory tower to concrete jungle. The difficult transition from the academy to the workplace as learning environments. *Jour. of Higher Education* 62(5), 570-592.
- Dunne, E. and M. Rawlins. 2000. Bridging the gap between industry and higher education: Training academics to promote student teamwork. *Innovations in Education and Training International* 37(4), 361-371.
- Evers, F.T., J.C. Rush and I. Berdrow. 1998. *The bases of competence. Skills for lifelong learning and employability*. Jossey-Bass Publishers, San Francisco.
- Finch, C.R. and J.R. Crunkilton. 1999. *Curriculum development in vocational and technical education: Planning, content, and implementation* (5th ed.). Needham Heights, MA: Allen and Bacon.
- Heldrich, J.J. 2005. Survey of New Jersey employers to assess the ability of higher education institutions to prepare students for employment.
- Hofstrand, R. 1996. Getting all the skills employers want. *Techniques: Making education and career connections* 71(8), 51.
- Krejcie, R.V. and D.W. Morgan. 1960. Small-sample techniques. *The NEA Research Bul*, Vol. 38, p. 99.
- Martin, A.J., J. Milne-Home, J. Barrett, E. Spalding, and G. Jones. 2000. Graduate satisfaction with univ. and perceived employment preparation. *Jour. of Education and Work* 13(2), 201-213.
- Miller, L.E. and K.L. Smith. 1983. Handling nonresponse issues. *Jour. of Extension* 21, 45-50.
- 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.

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- 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. *Jour. of Regional Analysis and Policy* 30(1) 23-40.
- Radhakrishna, R.B. and T.H. Bruening. 1994. Pennsylvania study: Employee and student perceptions of skills and experiences needed for careers in agribusiness. *North American Colleges and Teachers of Agriculture Jour.* 38(1), 15-18.
- 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 Jour.* 43(4), 31-38.
- Shivpuri, S. and B. Kim. 2004. Do employers and colleges see eye-to-eye? *National Association of Colleges and Employers* 37-44.
- 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., M.A. Mitchell, and H.G. McAlum. 1999. The skill set for success of graduates: Do prospective employers and univ. faculty agree? *Jour. of Education for Business* 75(1), 33-37.
- Taylor, A. 1998. Employability skills: From corporate 'wish list' to government policy. *Jour. of Curriculum Studies* 30(2), 143-164.
- Tetreault, P. 1997. Preparing students for work. *Adult Learning* 8(4), 8-14.

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