DEVELOPING SKILLS FOR THE FUTURE: GRADUATES' PERCEPTIONS OF CAREER SKILL PREPAREDNESS AND IMPORTANCE AFTER A FOUR-YEAR UNDERGRADUATE PROGRAM

DEVELOPING SKILLS FOR THE FUTURE: GRADUATES' PERCEPTIONS OF CAREER SKILL PREPAREDNESS AND IMPORTANCE AFTER A FOUR-YEAR UNDERGRADUATE PROGRAM

Abstract

Agricultural Education programs nationwide are challenged with producing well-prepared, career-oriented and competent graduates for the agricultural workforce. Institutions must continue to evaluate progress toward this goal. This study was a five-year (2000–2004) follow-up of graduates from a large land-grant institution in the southern region. The researchers sought to capture graduates' perceptions of the skills necessary to be successful in the agricultural workforce. The questionnaire gauged graduates' perceptions on two scales, their skill preparedness and skill importance in the workplace. The intent was for participants to respond using their initial job after graduation as a reference point. Overall findings indicate that graduates believe they were somewhat prepared for their careers, but they recognize the importance of being better prepared in the areas of interpersonal, communications, character, and computer skills. The Borich (1980) needs assessment model demonstrated that these four areas should be priorities for revision in the current departmental curriculum.

Introduction

The first charge to land-grant universities, when established in 1862, was to "... develop at the college level instruction relating to the practical realities of an agricultural and industrial society" (NASULGC, 1995, ¶13). In the 144 years of land-grant development, the face of agriculture has changed significantly, and colleges of agriculture subsequently were impacted by this shift (Manderschied, 1988). This shift was largely a result of the decline in U.S. agriculture production (McKinley, Brikenholz, & Stewart, 1993) and identification of agriculture industry needs over the past ten years has strengthened the argument to include non-traditional agriculture disciplines in colleges of agriculture nationwide (Kunkel & Skaggs, 2001; McKinley, Brikenholz, & Stewart, 1993).

As colleges of agriculture refocused curriculum options from traditional agriculture needs to non-traditional agriculture disciplines, student enrollment flourished, yet employers maintain that graduates are ill-prepared for their first job (Graham, 2001). The variety of skills and competencies desired by employers ranges from the technical competence to interpersonal competence and includes leadership competence (Graham, 2001; McKinley, Birkenholz, & Stewart, 1993). The increased focus on "computer-, people-, and teamwork-related skills" by employers (Litzenberg & Schneider, 1988) has challenged colleges of agriculture departments, including agricultural education and agricultural economics, to examine their graduates' skills.

Over the past twenty years, agricultural education departments have sought to identify the specific skills and competencies desired by employers (Andelt & Barrett, 1997; Graham, 2001a; Radhakrishna & Bruening, 1994; Wachenhim & Lesch, 2002) and those perceived important by graduates in their first job (Byler & Lamberth, 1988; Garton, Robinson, & Campbell, 2004; Graham, 2001b; Osmond & Hoover, 1995; Radhakrishna & Bruening, 1994; Riesenberg, 1988).

Whaley, Heird, and Pritchett (1994) recommended “an enhanced partnership between industry and academia ... and, if necessary, revision of specific course content” (p. 40).

Riesenberg (1998) reported six areas where colleges of agriculture could improve upon curriculum: decision-making capabilities, accounting, business and economics, agricultural marketing, written communications, and oral communications and public speaking. However, at that time graduates did not believe that an emphasis should be on humanities and social sciences, nor on foreign language. In 1992, Texas A&M University agricultural development majors recommended changes including, more management courses, public speaking courses, and a sales or marketing course.

Five years later, Andelt, Barrett, and Bosshamer (1997), confirmed employers’ perceptions of college graduates’ readiness. The areas identified by employers were communication (ability to listen and carry out instruction) and leadership abilities, including problem solving and team work. The highest ranked competency means were personal qualities: self-motivation and positive work attitude.

Graham (2001a) researched the specific agricultural discipline of agricultural education. Her findings suggested that employers identified an inability to speak a second language as a weakness of current graduates, a drastic change from the graduates’ perceptions thirteen years prior (Riesenberg, 1988). Findings confirmed, however; the continued need for development in the areas of leadership, again including working in groups (Andelt et al., 1997).

In 2002, Wachenheim and Lesch focused specifically on agribusiness, but yielded similar findings. The highest ranked means scores were people skills, written and oral communication skills, evidence of teamwork, and leadership experience. Foreign language skills ranked lower, but were the highest-ranked mean reported for individuals seeking international responsibilities.

Garton, Robinson, and Campbell (2004) assessed the perceptions of agricultural education graduates on the importance of certain skill sets in their first jobs. They recommended modifications in course content to increase students’ “opportunities to analyze information in making decisions, interact with individuals of diverse personalities, define and solve problems, and gain an appreciation of cultural end ethnic differences” (p. 10). These findings provide a baseline for curriculum deficiencies, as identified by graduates from their institution. Zekeri (2004) found that former students’ perceptions of skills required by employers included oral and written communication, problem solving, motivating and managing, and setting personal and organizational goals. These skills were echoed from a number of previous studies (Andelt et al, 1997; Garton et al., 2004; Graham, 2001; and Wachenheim & Lesch, 2002).

Competencies desired by employers change. Therefore companies increasingly seek employees capable of working in a diverse workplace and prepared for the global nature of business (Zekeri, 2004). This supports the need to conduct follow-up studies with graduates confirming the direction and relevancy of curriculum to prepare students for employment.

This follow-up study aided the discussion about graduates’ career skills preparation provided by the department of agricultural education. This study encapsulated a five-year period of graduates

from 2000 to 2004 to better understand their perceptions of skill importance and skill preparedness in a post-graduation environment. Maintaining the involvement of graduates in the curriculum development is "an effective way of evaluating the merit of an educational program." (Byler & Lamberth, 1988, p. 30).

Purpose and Research Objectives

The purpose of this study, based on Graham's (2001) work, was to determine the difference in Texas A&M University graduates' perceived levels of skill preparation and skill importance. Three specific research objectives guided this study:

1. Describe the perceived level of skill preparation needed for career success of agricultural education graduates.
2. Describe the perceived level of skill importance needed for career success of agricultural education graduates.
3. Determine the discrepancies in the perceived levels of skills preparation and importance needed for career success.

Procedures

The target population for this study was all graduates between 2000 and 2004 (N = 1,484) from the Department of Agricultural Education at Texas A&M University. Names and last known e-mail addresses of the graduates were received from the university computing and information services. Three majors are represented by the department: agricultural science, agricultural development, and agricultural journalism.

A stratified, random sample of the three majors was utilized. A stratified sampling technique ensured adequate representation of the subgroups in the population (Gall, Gall, & Borg, 2003). Sample sizes for each stratum were determined based on the Bartlett, Kotrlik, and Higgins (2001) method.

A descriptive Web-based survey was developed based on the work of Graham (2001) and using a modified Borich (1980) needs assessment instrument. The modified Borich model allowed for calculation of discrepancies between "an educational goal and trainee performance in relation to this goal" (Borich, 1980, p. 39). Discrepancy scores for individual skills were calculated by subtracting skill preparation from importance ratings.

The instrument included five scales representing the global concepts of interpersonal skills, character, communication skills, computer skills, and technical competence. Global concepts were measured using Likert-type ten-point scales. For analysis, mean scores were calculated and the responses ranked for the five scales. Two additional scales, which are not reported in this research, measured impact of life experiences on career success and growth areas for the agricultural industry. Finally, demographic data about the respondents were collected.

A pilot test of the survey was conducted with students enrolled in an introductory leadership course. Students from all three agricultural education majors, as well as other majors at the Texas

A&M University, were enrolled in this course. Reliability analysis of the five scales between the pilot test and the study yielded Cronbach's Alpha coefficients ranging from .84–.92.

Dillman's (2007) Tailored Design Method (TDM) for Internet surveys was followed. A pre-notice, personalized e-mail was sent to all participants, followed ten days later by a cover letter with a link to the Web survey. Two follow-up e-mails were sent to non-respondents eight and twenty-days after the initial cover letter. The survey was closed sixty days after the initial contact.

The overall response rate was 29% (n = 63). A one-way ANOVA compared early and late respondents (Ary, Jacobs, Razavieh, & Sorenson, 2006) on all five global concepts, no statistically significant differences were found. Early and late respondents were identified by response waves. Three response waves existed based on TDM prompts. Therefore the results of this study may be generalized to the study population.

Findings

Survey respondents were predominantly white/Caucasian (89%, n = 56), ages 25 or younger (65%, n = 41), and in the same job since graduation (54%, n = 34). They were raised in towns of less than 50,000 people (61%, n = 38) and resided in cities of 50,001 – 200,000 people (25%, n = 16). Respondents' demographical data are reported in Table 1.

Table 1.

Demographic frequencies of respondents

Variables	*f*	%
Race:		
White/Caucasian	56	88.9
African American	4	6.3
Multi-racial	2	3.2
Age:		
25 or younger	41	65.1
26 – 30	17	27.0
Same job since graduation:		
No	28	44.4
Yes	34	54.0
Childhood Residence:		
Rural farm or ranch	15	23.8
Rural community (less than 5,000)	12	19.0
Town (5,000–50,000)	11	17.5
Small city (50,001–200,000)	7	11.1
City (200,001–1 million)	8	12.7
Metropolis (more than 1 million)	9	14.3
Current Residence:		
Rural Farm or ranch	6	9.5
Rural community (less than 5,000)	6	9.5

Town (5,000–50,000)	11	17.5
Small city (50,001–200,000)	16	25.4
City (200,001–1 million)	7	11.1
Metropolis (more than 1 million)	15	23.8

Note. Frequencies may not equal 100% because of missing data

The first research objective was to describe the perceived level of skill preparation for career success by graduates of the Department of Agricultural Education from 1999 to 2004. Graduates perceived that they were thoroughly prepared for the interpersonal skill of teamwork (M = 9.05) and somewhat prepared for all other interpersonal skills.

For the global concept of character skills, graduates perceived that they were thoroughly prepared for dependability (M = 9.37), work ethic (M = 9.27), honesty (M = 9.24), and integrity (M = 9.24). They indicated that they were somewhat prepared for all other character skills. Mean responses for all scales are reported in Table 2.

Respondents perceived that they were not thoroughly prepared for any skills in the communication global concept. They did perceive themselves to be somewhat prepared for all skills except foreign language, for which they indicated they were unprepared (M = 2.86).

Table 2.

Perceived Level of Skill Preparation Needed for Career Success of Agricultural Education Graduates (n= 62)

Global Concept	Variables	*M*	*SD*
Interpersonal Skills	Teamwork skills	9.05	1.22
	Professional appearance	8.81	1.45
	Leadership skills	8.69	1.46
	Initiative/self-motivation	8.45	1.71
	Dedication to job	8.41	1.75
	Problem-solving skills	8.35	1.28
	Organizational skills	8.27	1.72
	Open-minded to new experiences or ideas	8.19	1.98
	Etiquette	8.13	1.99
	Decision-making skills	8.03	1.63
	Time management	7.85	1.88
	Creativity skills	7.81	1.75
	Cultural awareness	7.45	2.24
	Management/business skills	7.24	2.41
	Global awareness	7.00	2.12
Character	Dependability	9.37	.96
	Work ethic	9.27	1.23
	Honesty	9.24	1.33
	Integrity	9.24	1.22
	Competence	8.89	1.33

	Confidence	8.40	1.57
Communication	Understand/follow instructions	8.97	1.03
	Presentation skills	8.80	1.40
	Listening	8.67	1.55
	Verbal expression in speaking	8.18	2.00
	Technical writing	7.66	1.95
	Creative writing	7.32	2.22
	Telephone skills	7.31	2.73
	Foreign language skills	2.86	2.32
Computer	Internet use	9.51	1.28
	Word processing	9.10	1.58
	Spreadsheets	7.88	2.65
	Databases	6.20	3.20
	Computer graphics	5.75	3.26
	Web page development	5.46	3.13
	Computer-aided design	5.37	3.45
	Computerized accounting	4.39	3.22
Technical Competence	Agricultural Sciences (AGRO, ANSC, etc.)	8.53	1.73
	Communication (ENGL, COMM, etc.)	8.19	2.06
	Cultural Diversity (HIST, SOCI, etc.)	7.07	2.35
	Mathematics (MATH, PHIL, etc.)	7.03	2.49
	Biological sciences (BIOL, CHEM, etc.)	6.42	2.69
	Social Sciences (ANTH, PSYC, etc.)	6.25	2.63
	Humanities/Fine Arts (ARTS, MUSC, etc.)	6.05	2.78
	Physical sciences (GEOL, GEOG, etc.)	6.02	2.66

Note. Responses were made on 10-point scales (1=Unprepared, 10= Thoroughly Prepared).

The second research objective sought to describe the levels of skill importance within each global concept, as perceived by graduates in their job. The means for each skill are found in Table 3. Within the interpersonal concept, graduates perceived that decision-making (M = 9.29), organizational (M = 9.29), time management (M = 9.26), initiative/self-motivation (M = 9.21), and problem-solving (M = 9.05) skills were extremely important to their career success. All other skills, except global awareness, were perceived to be important.

Graduates perceived that all six character skills were extremely important. The communications skills of understanding/following directions (M = 9.44), listening (M = 9.39), and verbal expression in speaking (M = 9.28) were all perceived to be extremely important. Only the computer skills of Internet use (M = 9.10) and word processing (M = 9.07) were considered to be extremely important. None of the technical competencies were perceived to extremely important.

Table 3.

Perceived Levels of Skill Importance Needed for Career Success of Agricultural Education Graduates (n= 62)

Global Concept	Variable	*M*	*SD*
Interpersonal Skills	Decision-making skills	9.29	1.12
	Organizational skills	9.29	1.16
	Time management	9.26	1.19
	Initiative/self-motivation	9.21	1.40
	Problem-solving skills	9.05	1.50
	Dedication to job	8.98	1.69
	Leadership skills	8.95	1.83
	Teamwork skills	8.90	1.76
	Professional appearance	8.56	1.73
	Management/business skills	8.50	1.86
	Etiquette	8.26	1.84
	Open-minded to new experiences or ideas	8.13	2.03
	Creativity skills	7.79	2.31
	Cultural awareness	7.60	2.57
	Global awareness	6.93	2.26
Character Skills	Dependability	9.76	.56
	Honesty	9.60	1.00
	Integrity	9.50	1.10
	Work ethic	9.50	1.24
	Competence	9.48	1.04
	Confidence	9.34	1.19
Communication Skills	Understand/follow instructions	9.44	1.07
	Listening	9.39	1.16
	Verbal expression in speaking	9.28	1.52
	Presentation skills	8.50	2.38
	Telephone skills	8.11	2.37
	Technical writing	7.79	2.46
	Creative writing	6.92	2.73
	Foreign language skills	5.15	2.94
Computer Skills	Internet use	9.10	2.04
	Word processing	9.07	2.07
	Spreadsheets	8.24	2.49
	Databases	7.17	3.03
	Computer-aided design	6.10	3.39
	Computer graphics	6.05	3.51
	Computerized accounting	5.85	3.43
	Web page development	5.69	3.51

Technical Competence	Communication (ENGL, COMM, etc.)	8.69	2.15
	Mathematics (MATH, PHIL, etc.)	7.14	2.89
	Agricultural Sciences (AGRO, ANSC, etc.)	7.04	3.55
	Cultural Diversity (HIST, SOCI, etc.)	6.98	2.71
	Biological sciences (BIOL, CHEM, etc.)	6.07	3.34
	Social Sciences (ANTH, PSYC, etc.)	5.68	2.82
	Physical sciences (GEOL, GEOG, etc.)	5.35	3.27
	Humanities/Fine Arts (ARTS, MUSC, etc.)	5.02	3.09

Note. Responses were made on 10-point scales (1=Unimportant, 10= Extremely Important).

Research objective three was completed using mean weighted discrepancy scores based on the needs assessment model developed by Borich (1980). Weighting the discrepancy score allows for sensitivity to perceived importance (Borich, 1980). The mean weighted discrepancy scores indicated that graduates believe the highest priority should be placed on communication (*M* = 5.83) and computer (*M* = 5.30) concepts. As shown in Table 4, graduates did not place importance on the technical skills (*M* = .77).

Table 4.

Mean Weighted Discrepancy Scores for Global Concept Scales (*n*=62)

Global Concept	*M*	*SD*
Computer	5.30	14.85
Technical	.77	11.38
Communication	5.83	11.15
Character	4.68	9.41
Interpersonal	4.51	8.51

Note. Preparedness Scale ranged from 1=unprepared to 10=thoroughly prepared; Importance scale ranged from 1=unimportant to 10 = extremely important

Conclusions

Perceptions of employers and employees are different. Students may graduate from a university believing that they know all they need to know to be successful in the workplace. Courses within a student's major and departmental curriculum are developed to provide students with this confidence and competence. A desire to prepare students for career success is what motivates researchers to conduct follow up studies with graduates. Employers want new hires that demonstrate communication and leadership abilities (Andelt et al, 1997). These are skills that employers expect to be taught in the university curriculum.

Throughout this study, graduates confirmed previous research, whether it was based on employers' or employees' perceptions. Career success is aided by competency in communication, character, and interpersonal skills (Andelt, Barrett, & Bosshamer, 1997; Garton, Robinson, & Campbell, 2004; Graham, 2001b; Wachenheim & Lesch, 2002; Zekeri, 2004)

Department of Agricultural Education graduates from Texas A&M University indicated that they were somewhat prepared to be successful in their careers. However, they recognized the need for

more preparation, especially in communication and character skills. These findings are inconsistent with employer perceptions that graduates were ill-prepared for their first job (Graham, 2001a). But they do provide an opportunity for programmatic development within the department.

Graduates indicated that the most important skills related to decision making, organizing, time management, self motivation, problem-solving, the global concept of character, understanding instructions, listening, Internet use, and similar skills were extremely important to career success. Although most of these skills are taught in college classrooms, success in their use comes from a lifetime of learning: they are components of life-long lessons that begin in the home.

The findings from this study indicated a continued need to evaluate and revise departmental curriculum. The modified Borich (1980) assessment illustrated graduates perceptions about a non-existent need to modify the curriculum for technical competencies. Many of the competencies were addressed through university core curriculum requirements and provided enough exposure for student preparation. Conversely, graduates indicated a need to review and possibly revise the other four competency areas (communication, character, computer, and interpersonal). Respondents perceived these areas as important to career success.

Recommendations

A limitation of follow-up studies is the inability to generalize beyond the study population. All recommendations from this research specifically addressed the Texas A&M University Department of Agricultural Education. However, many of these recommendations may be valid at other programs and should be considered by other researchers.

Faculty members at the Texas A&M University should review the curriculum and courses for all majors to determine if the global concept areas of communication, computer, character and interpersonal skills are being incorporated into the course goals. These competencies can not, and should not, be addressed in only one course or at one point in time. They need to be continually practiced and consistently applied throughout a students' academic career.

Internships or cooperative education opportunities are times when these global concepts are practiced in the workplace. Faculty need to emphasize reflection on the global concepts during and after the experience through written products. Reflecting on the development and practice of these skills will help students to understand why the concepts are important. It will also aid them in recognizing courses and course activities where these skills are being applied and practiced.

The ultimate goal of the curriculum is to develop graduates that are prepared to enter the workforce and be productive employees. As indicated by the findings of this study that goal is not being met. It is recommended that a course with assessment modules be developed to focus on the global concept areas and their relevance to future employment. Students should be able to assess their competency in the global concept areas and receive feedback on areas for improvement. This would allow students and faculty to recognize deficiencies and recommend courses or develop projects to enhance the deficient areas for students.

The results of this study also highlight the importance of involving graduates in curriculum evaluation. The department should consider the development of an advisory committee to provide continuous feedback on the skills needed by entry-level employees.

Finally, continued follow-up studies should be conducted to track the curriculum changes and determine if those changes are reflected in graduates' responses. Additional studies may evaluate the differences in global concepts between departmental or college majors.

References

Andelt, L.L., Barrett, L.A., and Bosshamer, B.K. (1997). Employer assessment of the skill preparation of students from the college of agricultural sciences and natural resources University of Nebraska-Lincoln: Implications for teaching and curriculum. *NACTA Journal 41(4),* 47-5 1.

Ary, D.; Jacobs, L.C.; Razavieh, A; & Sorenson, C. (2006). I*ntroduction to research in education.* (7th ed.).. Belmont, CA: Thompson Higher Education.

Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational research: determining appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal, 19* (1), 43-50.

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education, 31* (3), 39-42.

Byler, B.L. and Lamberth, E.E. (1988). Using alumni follow-up studies for program and curricular improvements. *NACTA Journal, 32(2),* 30-3 3.

Dillman, D. A. (2007). *Mail and internet surveys: The tailored design method.* (2nd ed.). Hoboken, NJ: John Wiley & Sons.

Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: an introduction* (7th ed.). Boston: Allyn and Bacon.

Garton, B.L., Robinson, J.S., and Campbell, J.L. (2004). Where are they today? A follow-up of agricultural education graduates. *Proceedings from the 2004 American Association for Agricultural Education North Central Region Conference.* Lafayette, IN.

Graham, D.L. (2001a). Are we preparing the society ready graduates? *Proceedings of the 28th Annual National Agricultural Education Research Conference,* 269-281. Las Vegas, NV.

Graham, D.L. (200 1b). Employer perception of the preparation of agricultural and extension education graduates. *Journal of Southern Agricultural Education, 51* (1), 88-101.

Kunkel, H.O. and Skaggs, C.L. (2001). *Revolutionizing higher education in Agriculture: Framework, principles and agenda for action.* Iowa State University Press, Ames:Iowa.

Manderscheid, L. V. (1998). Undergraduate educational opportunities in the face of declining enrollments. *American Journal of Agricultural Economics, 70(5),* 985-993.

McKinley, B.G., Birkenholz, R.J., and Stewart, B.R. (1993). Characteristics and experiences related to the leadership skills of agriculture students in college. *Journal of Agricultural Education, 34(3),* 76-83.

Office of Public Affairs, NASULGC. (1995). *The land grant tradition: Development of the land-grant system (1862-1994).* Retrieved September 15, 2006 from NASULGC Publications Web site: http://www.nasulgc.org/publications/Land Grant/Development.htm

Osmond, J. and Hoover, T. (1995). Follow-up study of graduates from the college of agriculture, University of Florida. *Journal of Agricultural Education, 2(2),* 41-48.

Radharkrishna, R.B. and Bruening, T.H. (1994). Pennsylvania study: Employee and student perceptions of skills and experiences needed for careers in agribusiness. *NACTA Journal, 38(1),* 15-18.

Riesenberg, L.E. (1988). Future curriculum emphasis for colleges. *NACTA Journal, 32(2),* 34-37.

Wachenheim, C.J. and Lesch, W.C. (2002). Assessing new-graduate applicants: Academic perceptions and agribusiness realities. *Journal of Agribusiness, 20(2),* 163-173.

Whaley, D., Heird, J.C., and Pritchett, J. (1994). Taking the pulse: A case study of undergraduate agriculture students' opinions. *NACTA Journal, 38(1),* 37-41.

Zekeri, A.A. (2004). College curriculum competencies and skills former students found essential to their careers. *College Student Journal, 38(3),* 412-422.