

Perceptions of Recent Graduates and Employers about Undergraduate Programs in the College of Agriculture and Natural Resources at Michigan State University: A Follow-up Study



Murari Suvedi¹
Michigan State University
East Lansing, MI 48824

Gwyn Heyboer²
Lansing Community College
Lansing, MI 48901

Abstract

This study was conducted to assess the undergraduate programs within the College of Agriculture and Natural Resources (CANR) at Michigan State University. The specific areas within the study included educational programs, quality of instruction, academic advising, extra-curricular activities and employment information. The target population of the study was comprised of 3,400 CANR bachelor's degree graduates from summer semester 1993 through spring semester 1998. Two questionnaires were designed for the study — one for the alumni and one for their employers.

Findings of this study provide indications for improvement. Alumni were very satisfied with their courses, however, they indicated that they needed more preparation in the areas of computer skills and knowledge of career opportunities. Academic advisors were also rated highly in terms of academic advising; yet the alumni indicated a need for improvement in career advising. Extracurricular activities were a very positive aspect of the graduates' educational experience, and one they found useful in preparation for employment. Employers rated the alumni highly in terms of preparation by the college and their career performance. However, both the employers and alumni suggested mathematics, computer skills and writing skills as areas needing improvement.

Introduction

Educators, administrators, employers and students have discussed the topic of improving agricultural undergraduate programs at major universities for many years. As the agricultural industry changes over time, the educational systems pertaining to agriculture and related subjects must not fall behind. Several reports have indicated the need for change in the curricula of agricultural

programs (Kunkel et al., 1996; W.K. Kellogg Foundation, n.d.).

Michigan State University (MSU) formed the Council to Review Undergraduate Education (CRUE) in 1988 to look into quality issues of undergraduate education. It evaluated and recommended changes from an analysis of not only the undergraduate admissions and graduation requirements but also the character and content of the undergraduate education at MSU (CRUE, 1988). Following the CRUE report, department chairpersons in the College of Agriculture and Natural Resources (CANR) recommended that a college-wide task force be assembled to review undergraduate programs. The Task Force for Curricular Revitalization compiled many recommendations to improve the quality of undergraduate programs within the college (Heinze, 1989).

The conceptual framework of this study was based on the challenge set forth by the W.K. Kellogg Foundation in its report "Visions of Change in Higher Education," which describes the efforts of 13 project teams across the United States to rethink the relationship between higher education and society. The report points out the need to find out whether undergraduate teaching programs of land-grant universities are still relevant to employers. Currently, universities are being challenged to improve undergraduate education, to achieve more balance between research and teaching, to globalize student learning, to create a more diverse student population, to re-examine fundamental values and to affirm that education is their primary mission (W.K. Kellogg Foundation, n.d.). These challenges should serve as an input for educational reform efforts. The workforce is continually reorganizing, and graduates should possess the knowledge and skills required by the industry of today.

Robson et al., (1986); Flores, (1996) and O'Malley,

¹Associate Professor, Agriculture & Natural Resources Education and Communication Systems, 409 Agriculture Hall

²Instructional Designer, Department of Distance Learning

(1992) used follow-up studies of alumni to assess how well an academic institution has met its objectives. The present study was designed to provide feedback for curricular improvements in the CANR at MSU. It was based on the assumption that the experiences of past students during their undergraduate education, and the perceptions of their current employers regarding their educational preparation, could provide insights to improve the academic offerings of the CANR. The results of this study will ensure that the educational process is responsive to both the learners and the industry.

The purpose of this study was to assess the effectiveness of the CANR undergraduate programs as perceived by alumni and employers. Specifically, the objectives of this study included:

1. Assess the perceptions of alumni toward the educational programs of the CANR, including courses taken and educational preparation.
2. Explore the opinions of the alumni about the quality of instruction received within the college.
3. Ascertain the opinions of alumni about their academic advising.
4. Determine whether the alumni found participation in extracurricular activities useful in relation to their current employment.
5. Seek the opinions of employers about the graduates' preparation by the college and their career performance.

Materials and Methods

Population and Sample

The target population of the study comprised of CANR bachelor's degree graduates from summer semester 1993 through spring semester 1998. A list of 3,400 graduates from all departments within the college was developed. A stratified random sample of 1,269 graduates was used in the study. The strata were proportional to the size of the 12 academic departments within the CANR.

Instrumentation

The instrumentation for the study was a mail questionnaire. Two questionnaires were designed--one for the alumni and one for their employers. The instruments included both open-ended and closed questions. The researchers developed the instruments after a careful review of previous follow-up studies; most scalar questions included in the instrument were adapted from these studies. The validity of the instrument was established through a panel of experts. The panel consisted of members who were knowledgeable about the CANR programs.

The instrument was tested for reliability. According to Babbie (1994), reliability refers to likelihood that a given measurement procedure will yield the same description of a given phenomenon, if

the measurement is repeated. Reliability is the degree to which a test or an instrument consistently measures whatever it measures. Statistical Package for the Social Science software was used to compute Cronbach's alpha coefficient to determine the survey instruments' reliability. For the alumni questionnaire, an alpha coefficient of .72 was determined for the scale pertaining to perceptions of educational preparation by required general courses outside the college; .76 for their education within the college; .79 for the preparation for work by the college; .89 for the quality of instruction; .89 for academic and career advising; .84 for extracurricular activities; and .75 for the graduates' satisfaction with their current positions. For the employer questionnaire, reliability was computed after the data were collected. An alpha value of .87 for the scale relating to preparation for work by the college and .94 for the scale relating to career performance was determined. These Cronbach alpha values were considered adequate to establish reliability for the scales included in this study.

Data Collection

The data collection procedure used in this survey followed the recommendations of Dillman and Salant (1994). The first mailing was sent to all members of the sample and included a personalized cover letter, the questionnaires and return envelopes. A follow-up postcard thanking the respondents and asking those who had not responded to send in the questionnaire was sent out a week after the first mailing. The third and final mailing was sent out with a new cover letter to those who had not responded three weeks after the initial mailing. Twelve percent or 156 of the questionnaires were returned as undeliverable.

Altogether, 359 usable questionnaires were received from the alumni population, resulting in a response rate of 32%. The researchers recognize the need to have a higher response rate to be able to generalize findings to the population. However, early and late respondents were compared to determine if they differed significantly on selected variables under study, and no differences were observed. Therefore, as suggested by Miller and Smith (1983), we generalized the findings to the study population.

All alumni included in the sample also received a second survey packet designed for their employers. They were requested to give the employer survey packet--including a cover letter, questionnaire and pre-addressed stamped envelope--to their respective supervisor. We received responses from 85 employers.

Analysis of Data

The data were analyzed using the Statistical Package for the Social Science (Norusis, 1998). Statistical methods such as means, frequencies,

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percentages, cross tabs, standard deviations and t-tests were used to analyze data for the closed-ended questions. The non-response error was dealt with through a t-test comparing responses from early and late respondents on select variables as suggested by Miller and Smith (1983).

Limitations

A limitation of this study is that it includes only CANR graduates from 1993 to 1998 and their current employers. An employer population did not exist. We requested the alumni to give the instrument to their respective employers. This study assumes that the alumni identified appropriate employers and that they represent the views of employing agencies. The lower response rate could be another limitation.

Results and Discussion

Graduates within the CANR were asked to assess their education at MSU in terms of educational programs, quality of instruction, academic advising and extracurricular activities. Additionally, they were asked for information pertaining to their employment. Of the 359 alumni who responded in this study, 52.6% were female. Their ages ranged from 23 to 53 years, with the majority (93%) being younger than 30.

The majority (86.5%) indicated they were employed. Also, 42.5% indicated that they found their first position in less than a month after graduation as shown in Table 1. Male respondents reported taking less time to find their first employment related to their undergraduate degree than female respondents,

Table 1. Length of time to their first position related to their degree (N=372)

How long it took to find their first position	Frequency of Response	%
Less than one month	158	42.5
1 to 3 months	68	18.6
3 to 6 months	33	8.9
6 to 12 months	34	9.1
12 to 24 months	17	4.6
More than 24 months	11	3.0
Never	44	11.8
Not currently employed	7	1.9

and this time difference was statistically significant ($t=3.5$, $p<.05$). Interestingly, 33.3% of the respondents had two or more job offers at the time of their graduation.

Respondents were asked questions about their present employment. The majority (81.9%) of the respondents said they worked full-time. Also, over two-thirds (70.4%) indicated their positions were in the occupations they prepared for at Michigan State

University. When asked about the starting annual salary, almost half (47%) indicated a range of \$10,000 to \$24,999. About one third of the respondents (29.4%) indicated their current annual salaries ranged between \$25,000 and \$34,999.

Table 2. Respondents opinions towards satisfaction with current position (% of respondents)

	N	Poor	Fair	Good	Very good	Excellent	Mean (SD)
Challenging work	354	3.1	12.1	18.9	25.1	40.7	3.9 (1.2)
Opportunities for advancement	350	10.9	15.4	17.7	24.6	31.4	3.5 (1.2)
Overall working conditions	355	2.3	8.7	27.3	29.6	32.1	3.8 (1.1)
Salary	354	11.3	20.9	34.2	20.1	13.6	3.0 (1.2)
Your own job performance	354	0.0	2.3	20.6	45.8	31.4	4.0 (.78)

A series of five questions were asked about their satisfaction with their current positions and findings are shown in Table 2. Respondents felt that the job they were working was challenging and the working conditions were very good. The indicated that their salary as "good". However, they rated their own job performance as "very good" or "excellent." Overall, a scale mean of 3.7 (SD = .79) was computed on a scale from 1 (poor) to 5 (excellent), indicating that graduates were satisfied with their current positions.

Perceptions of Educational Programs

Graduates were asked to rate their educational preparation in terms of required courses, college courses and their preparation by the college for their career. Ratings for required courses are presented in Table 3.

Table 3. The opinions of alumni about educational preparation in required courses (% of respondents)

	N	Poor	Fair	Good	Very good	Excellent	Mean (SD)
Basic Sciences	356	1.1	10.7	36.5	37.6	14.0	3.5 (.90)
Math	351	7.7	26.5	35.6	21.7	8.5	3.0 (1.1)
Computer related courses	341	15.8	27.3	38.7	14.1	4.1	2.6 (1.0)
Economics	330	6.1	21.2	42.4	23.9	6.4	3.0 (.97)
Basic Social Sciences	339	2.1	13.3	49.0	28.3	7.4	3.3 (.95)
Arts and Humanities	317	4.1	17.7	47.9	21.8	8.5	3.1 (.94)

Findings in Table 3 show that majority (51.6%) of alumni rated the preparation in the basic sciences as "very good" or "excellent." Over one-third (35.8%) indicated the preparation in the basic social sciences as "very good" or "excellent." The ratings for the preparation in math, computers, economics, and art and humanities were "good."

Graduates were also asked to indicate their agreement or disagreement with a series of statements about their education within the College of Agriculture and Natural Resources. Respondents viewed their educational preparation within the college very positively in terms of their present positions. The specific questions asked are shown in Table 4. A scale mean of 4.0 (SD = .63) indicated that the majority of graduates "agreed" or "strongly agreed" with statements pertaining to their educational experience with the college. They "agreed" that the college prepared them to be problem solvers

and to work easily with others, and that their education was current in relation to issues within their specific fields.

Quality of instruction

The alumni were asked to rate the quality of instruction they received in the college, on a scale of 1 (poor) to 5 (excellent), in terms of the teachers' knowledge, teaching skills, classroom discipline, helping the students outside of the classroom, evaluation of students' work and classroom assignments. Almost half (49.6%) rated their teachers' knowledge "very good" and one-fourth (25.1%) rated it "excellent." Most respondents rated the remaining categories as "good." Findings in Table 6 show a scale mean of 3.5 (SD=.70), which was computed for the alumni's overall opinions of their quality of instruction received in the college.

Table 4. Opinions of alumni toward their preparation within college courses (% of respondents).

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (St.Dev.)
Relates to my present job.	7.4	8.9	6.8	26.5	50.3	4.0 (1.3)
Was current in relation to issues within my field.	2.1	6.5	6.5	47.8	37.2	4.1 (.93)
Prepared me to be a problem solver when faced with new situations.	.30	5.7	11.1	51.3	31.6	4.1 (.82)
Prepared me to work easily with others.	.90	3.2	11.5	43.8	40.7	4.2 (.83)
Prepared me to be a leader.	1.4	8.3	22.1	38.1	30.1	3.9 (.98)
Taught me skills for my present job.	3.2	8.3	14.7	44.0	29.8	3.9 (.98)
Taught me the importance of being motivated.	1.7	7.8	21.8	38.8	29.9	3.9 (.98)

Graduates and their employers were asked to rate the college on how well it prepared students in certain aspects of their careers. These items, consisting of various aspects of work, are shown in Table 5. Of these items, computer skills, math skills and knowledge of career opportunities were rated the lowest by alumni. The majority of alumni rated the remaining six categories as "good" or "very good". Over one-third of the graduates (36.5%) and 44% of employers indicated they were very well prepared to work in a team setting. Also, the employers rated ethical standards and getting along with people very high, while rating computer skills, math skills and writing skills the lowest.

Academic and Career Advising

Questions about academic advising were asked using a scale from "strongly disagree" to "strongly agree" and included items such as helping the students find their first positions, choosing courses, preparing their resumes, assisting with interviewing skills and being easily accessible. As shown in Table 7, a scale mean of 2.8 (SD=1.1) was computed for the participants' rating of their academic and career advising.

A t-test was computed to find any significant differences between the alumni and employers' views concerning the preparation of students by the college. A significant t-value of 3.3, p<.05, was found between alumni and employers for their perceptions about the graduates' preparation for work. The employers perceived the preparation by the college more favorably than the alumni, as shown in Table 5.

The majority of respondents "strongly agreed" that their academic advisors helped them in deciding which courses to take and that they were easily accessible to students. However, over 60% of the respondents "disagreed" or "strongly disagreed" that their advisor helped them in finding their first positions, preparing their resumes and assisting with interview skills.

Participation in Extracurricular Activities

Several questions were asked about respondents' opinions of internships, involvement in student organizations/clubs/teams and overseas study programs. Of the respondents, 68.5% had participated in internships. The majority (57.4%) found their internships themselves, 31.7% reported receiving assistance from their academic advisors' and 26.3% received assistance from other faculty members. Furthermore, alumni were asked a series of questions on a Likert-type scale about whether their internships were useful in finding their first employment,

Table 5. Comparison of alumni and employers' perceptions of graduates' preparation for work.

Areas	Alumni ¹		Employer ²	
	(N)	Mean (St.Dev.)	(N)	Mean (St.Dev.)
Writing skills	354	3.1 (.94)	82	3.4 (.85)
Oral communication skills	354	3.3 (.96)	84	3.6 (.97)
Math skills	347	2.8 (.96)	80	3.3 (.90)
Computer skills	352	2.5 (1.0)	83	3.4 (1.0)
Technical knowledge	350	3.1 (1.0)	84	3.6 (.93)
Getting along with people	349	3.5 (.95)	84	3.9 (.91)
Working in teams	353	3.7 (.94)	84	3.8 (.90)
Knowledge of career opportunities in your field	352	2.9 (1.2)	76	3.6 (.99)
Ethical standards	350	3.3 (1.0)	84	4.0 (.98)

¹Scale mean for alumni = 3.1 (St.Dev.=.61)
²Scale mean for employers = 3.5 (St.Dev.=.65)

Table 6. The opinions of alumni toward the quality of instruction within the college (% of respondents).

	Poor	Fair	Good	Very good	Excellent	Mean (SD)
Teachers' knowledge of subject areas.	0.6	4.5	20.3	49.6	25.1	3.9 (.83)
Teaching skills.	2.0	11.3	39.5	38.1	9.0	3.4 (.88)
Classroom discipline.	0.6	8.5	42.2	39.9	8.8	3.5 (.80)
Helping students outside the classroom.	3.4	12.1	32.2	29.7	22.6	3.6 (1.1)
Evaluation and grading of students' work.	0.8	9.9	41.7	39.2	8.5	3.4 (.82)
Classroom assignments.	1.4	8.7	44.5	37.5	7.9	3.4 (.81)

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Table 7. The opinions of alumni toward academic and career advising (% of respondents).

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (SD)
Helped me find my first position.	35.7	28.9	6.5	15.0	13.9	2.4 (1.5)
Helped me decide the courses to pursue.	9.2	15.2	33.9	6.0	35.6	3.4 (1.3)
Helped me prepare my resume.	31.2	29.9	15.4	10.0	13.5	2.4 (1.4)
Helped me with interviewing skills.	31.5	30.2	13.5	13.5	11.3	2.4 (1.4)
Was easily accessible.	6.0	10.8	39.0	5.7	38.5	3.6 (1.3)

helped them decide on their first employment and helped them become more attractive to employers. Findings are shown in Table 8. A scale mean of 4.4

Table 8. Usefulness of internship experiences (% of respondents)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (St.Dev.)
Was useful in preparing you for your first position.	2.6	7.0	4.8	22.2	63.5	4.4 (1.0)
Helped you with deciding on your first position.	2.6	7.0	11.0	23.7	55.7	4.2 (1.1)
Helped you become more attractive to employers.	1.7	3.8	8.4	22.3	63.9	4.4 (.92)
Was a waste of your time.	75.6	16.9	4.5	2.1	.80	1.4 (.74)

(SD=.77) was found, indicating the internship experience was very useful in finding employment opportunities.

Findings also indicated that a majority of the respondents (72.8%) were involved in on-campus student organizations, clubs or teams. Of those who were involved, 60.7% reported holding leadership positions. They were further asked on a scale from “strongly disagree” to “strongly agree” whether they felt their participation had a positive impact on their career preparation. A mean of 4.2 (SD=.96) indicated that most people “agreed” or “strongly agreed” that their participation had a positive impact on their career preparation.

Those who were involved in campus student organizations, clubs or teams were more favorable toward their courses in the college ($t=3.7, p<.05$), preparation for their careers ($t=2.4, p<.05$), academic advising ($t=3.6, p<.05$) and satisfaction with current positions ($t=2.6, p<.05$) than those who were not involved in such activities.

Additionally, the respondents were asked whether they had participated in an overseas study program. About one out of six (16.4%) had participated in one of the study abroad programs at MSU. Almost all of those who had participated in a study abroad program, (94.7%) indicated they would recommend similar experiences to other students.

Employers' Opinions of CANR Graduates

The employer survey asked questions about the preparation of students by the college and employers' opinions on the graduates' job performance. The questions on the students' preparation by the college were discussed previously in this paper. The ques-

tions concerning the graduates' job performance included items such as having adequate theoretical and practical knowledge; the ability to follow directions, work independently, ask relevant questions, supervise subordinates, report to supervisors and work with colleagues; and a rating of their overall job performance. A scale mean of 3.8 (SD=.76) was found on a scale from 1 (poor) to 5 (excellent), indicating that the employers rated the students highly in career performance.

Summary

Findings indicated that the alumni were overall very favorable toward their college courses but rated their general education courses slightly lower. The general education courses could be enhanced by smaller classes, an increase in tutors and teaching assistants, and improved instructional methods. Further studies could also be conducted focusing on how alumni feel general education courses could be improved.

On preparation of students by the college, respondents indicated that they need more preparation in computer skills and knowledge of career opportunities. Computer skills could be increased by integrating a more technical computer emphasis in courses and by having more computer labs available. Computer skills are an essential requirement for the 21st century workforce. Knowledge of career opportunities could be increased through strengthening relationships between the faculty and industry by having faculty members attend workshops, conferences and career fairs.

Alumni were very satisfied with the overall quality of instruction in classes within the college. They rated the teachers' knowledge of subject areas the highest. However, they indicated a need to strengthen instructors' teaching skills, evaluation and grading skills, and classroom assignments. The teachers could go through a series of training sessions to improve their instruction skills.

Academic advisors were rated highly in helping students decide on their courses and being easily accessible. However, the alumni saw the need for improvement in helping them find their first positions, in preparing their resumes and in helping with interviewing skills. The college could offer academic advisors training on how to advise students. Similarly, the academic advisors may be encouraged to visit prospective employers and to get a better understanding of industry needs. Also, a one-credit class could be offered to juniors and seniors focusing

on career searching, resumes and interviewing skills.

Extracurricular activities were a very positive aspect of the graduates' educational experience, and one they found useful in preparation for their employment. The college should provide more support and guidance to student organizations. Also, the study abroad program is an emerging trend in the undergraduate program that has helped expose students to cross-cultural experiences. The majority of the students who participated in the study abroad program recommended the experience to other students. Thus, colleges should encourage students to participate in study abroad programs and continue to create new programs.

The employers found math, computer and writing skills as areas needing improvement. These skills were also identified as areas needing improvement by graduates of the college. Curricular improvement efforts should take into account these expressed needs.

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