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ATTITUDES OF UNIVERSITY OF ILLINOIS COLLEGE OF AGRICULTURE FRESHMEN TOWARD AGRICULTURE

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Abstract

The primary purpose of this study was to determine the attitudes and intentions of University of Illinois College of Agriculture freshmen toward high school and university agriculture programs and the field of agriculture in an effort to better identify, recruit, and retain students in the College. Results indicated that a majority of freshmen students were female, Caucasian, had no background in agriculture, and viewed agriculture as being both scientific and technical. Students also believed high school agriculture to be good preparation for college. Whereas attitudes were generally positive, only about 60% of the freshmen class intended to graduate with a major in the College of Agriculture. However, of the students who had completed some high school agriculture, approximately 95% intended to graduate with a major in the College. That percentage increased to nearly 98% if the student had been an FFA member. Also, 86% of students who had been members of 4-H indicated they intended to graduate with majors in the College of Agriculture. Freshmen who completed high school agriculture programs indicated more positive attitudes toward university agriculture programs, high school agriculture programs, and agriculture as a career than did students with no high school agriculture experience.

Enrollment in Colleges of Agriculture have closely paralleled that of high school agriculture programs over the past three decades. Reaching their peaks in the late 1970s, enrollment at the two levels plummeted with the onset of the farm crisis in the late 1970s and early 1980s. Dyer and Osborne (1994) noted that secondary agricultural education enrollment in Illinois dropped by over 60% during this time period.

Likewise, Manderscheid (1988) reported a 24% decline in Land Grant University agriculture enrollments and a 13% decrease in non-Land Grant University agriculture enrollments from 1978 to 1988. Over the past few years, however, enrollment at both the high school and college levels has begun to increase. Litzenberg, Whatley, and Scamardo (1992) reported that with the exception of the North Central Region, agricultural enrollments had recovered to early 1980 levels. However, the makeup of students now entering Colleges of Agriculture has changed (Russell, 1989). According to Russell, today's enrollees lack the agricultural background possessed by earlier students. He noted that for the three year period 1983-85, 46.3% of incoming College of Agriculture freshmen at the University of Illinois had, at a minimum, been enrolled in high school agriculture programs. From 1986-88, however, the average had declined to 32.3%. Scofield (1995) likewise noted that a greater percentage (40%) of students enrolling in the College of Agriculture at Iowa State University were from urban residences as compared to farm settings (36.7%).

During the ten-year period from 1985-94, a total of 4,847 freshmen enrolled in the College of Agriculture at the University of Illinois (Office of Academic Programs, 1994), over 70% of whom came from non-agricultural backgrounds (Gomes, 1994). However, during this same time period 1,840 students transferred out of the College of Agriculture to other colleges (Office of Academic Programs). From an enrollment viewpoint, this loss of students represents the approximate combined membership of the last four freshmen classes in the College. Fiscally, this translates to a loss of nearly 11 million dollars in instructional money (College of Agriculture, 1994). More important, however, may be the loss to the agricultural industry of individuals trained and experienced in agriculture. Russell (1993) warned of an impending "brain drain" in the agricultural industry, jeopardizing its long term future if the trend continues.

The problem addressed by this action research was how to identify and retain students who are likely to complete a program of instruction and seek employment in the industry of agriculture. The conceptual model for this study emphasized the need to study those factors which influence a student's selection and pursuit of a field of study and corresponding career choice. The theoretical framework was provided by Fishbein and Ajzen (1975). They determined that intentions to participate in an activity could be predicted based upon knowledge, observation, or other information about some issue. This suggested that a person's intent to pursue study in a field of agriculture or to become actively involved in an agricultural career may be predicted by analyzing his/her beliefs about agriculture. Greenwald (1989) supported this theory, reporting that individuals with positive attitudes toward a subject or situation tend to evaluate them positively.

Purpose

The primary purpose of this study was to determine the attitudes and intentions of College of Agriculture freshmen at the University of Illinois toward high school and university agriculture programs and the field of agriculture. The following questions were used to guide the study:

1. What were the attitudes of College of Agriculture freshmen toward the field of agriculture?

2. What were the attitudes of freshmen College of Agriculture students toward their major areas of study?

3. What was the influence of high school agriculture program experiences on the attitudes of students who are now pursuing agricultural majors?

Procedures

The study used a descriptive survey design. The sample, target, and accessible populations were all 1994-95 University of Illinois College of Agriculture freshmen ($\underline{N}$ = 495). Since all freshmen students must enroll in an introductory agriculture course, class rosters served as the population frame. The entire population in attendance was surveyed. Instruments were administered by Teaching Assistants during the final week of the Fall 1994 semester. A total of 324 (65.5%) usable instruments were collected. Nonrespondents were determined from class rosters. Ten percent of the nonrespondents were randomly selected and contacted by telephone as outlined by Miller and Smith (1983). No significant differences were found in data obtained from nonrespondents and that obtained from initial participants. Therefore, data were generalized to the entire population.

A two-part questionnaire specific to the questions addressed by the study was developed by the researchers and reviewed for content and face validity by a panel of experts from the University of Illinois College of Agriculture staff. Part I of the

instrument contained demographic information, close-ended, and partially close-ended items. Part II identified attitudes of students toward the field of agriculture. A five-point Likert-type scale (1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree) was used for the 21 items comprising Part II of the questionnaire. The instrument was pilot tested using 12 freshmen students not enrolled in the College and 11 sophomore and junior College of Agriculture students (n = 23). Part II of the instrument was divided into three constructs: Attitudes Toward Agriculture as an Area of Study, Attitudes Toward High School Agriculture Programs, and Attitudes Toward University Agriculture Programs. Reliability estimates were determined for the three constructs using Cronbach's Alpha (r = .85, .78, .88, respectively). Data were analyzed using descriptive statistics, including measures of central tendency and variability.

Results

The majority of students in the sample were female (55.6%, n = 179) and Caucasian (90.7%, n = 283). Other races represented were African-American (1.9%, n = 6), Asian (5.4%, n = 17), Hispanic (1.3%, n = 4), and "Other" (0.6%, n = 6).

Only 59 students (18.4%) indicated that they had completed high school agriculture courses. A total of 44 students (13.8%) indicated that they had been FFA members in high school, while 86 students (27.3%) indicated they had been 4-H members. Of those who completed high school agriculture programs, 77.6% (n = 45) rated the program "Good." An additional 15.5% (n = 9) rated their programs as "Average" and 6.9% (n = 4) rated the programs as "Poor." The major reasons listed for not enrolling in high school agriculture courses were that no program was offered (54.6%, n = 177), the poor reputation of the program among students (19.1%, n = 62), and that agriculture programs are too vocational (16.4%, n = 53).

No significant differences were detected in high school grade point averages of students who had been enrolled in high school agriculture courses (M = 4.14) and those students who had not (M = 4.07). Likewise, no significant differences were found in ACT scores between the two groups (M = 25.44, M = 25.56, respectively).

Only 22.2% (n = 72) of the freshmen indicated they had farm backgrounds. A total of 66.4% (n = 215) of the students reported they were from large or medium urban areas (populations over 10,000). Remaining students came from towns of less than 10,000 (7.7%, n = 25) or rural areas not considered farms (3.7%, n = 12). Sixty-six (25.8%) students reported paid work experience in agriculture. Eighty students (31.3%) reported no prior experience of any kind with agriculture.

Research Question 1: *What were the attitudes of College of Agriculture freshmen toward the field of agriculture?*

Generally, the attitudes of College of Agriculture freshmen toward the field of agriculture were positive. As indicated in Table 1, students viewed the field of agriculture as both scientific and technical. They also believed the image of agriculture to be improving. Students disagreed that only students with a farm background should pursue agricultural careers.

A majority (81.6%) of freshmen did not complete high school agriculture courses. Correspondingly, students were generally uncertain in their attitudes toward high school agriculture programs (Table 2). A majority did agree, however, that high school agriculture is good preparation for college, that stronger ties should be made between high school agriculture and science curricula, and that more students should be encouraged to enroll in high school agriculture courses. The students disagreed with the statements that high school agriculture courses are better suited for male students and that only students pursuing

Table 1. Attitudes Toward Agriculture as an Area of Study

Statement	Agree f (%)	Uncertain f (%)	Disagree f (%)
Agriculture is a scientific area of study.	264 (87.7)	28 (9.3)	9 (3.0)
Agriculture is a blend of scientific principles and agricultural practices.	270 (89.7)	26 (8.6)	5 (1.7)
Agriculture is a highly technical field of study.	235 (78.3)	49 (16.3)	16 (5.3)
The image of agriculture is improving.	201 (66.6)	61 (20.2)	40 (13.2)
Only students with farm backgrounds should pursue careers in agriculture.	30 (10.0)	37 (12.3)	234 (77.8)

Note. The term "agree" refers to combined responses of "Strongly Agree" and "Agree." The term "disagree" refers to combined responses of "Strongly Disagree" and "Disagree."

careers in agriculture should enroll in high school agriculture.

As indicated in Table 3, only slightly over half of the respondents (57.8%) believed that more students should be encouraged to enroll in university agriculture programs. Also, a frequent comment on the questionnaire was that too many "non-agriculture" students were enrolled, and that their negative attitudes toward agriculture detracted from classes. Likewise, slightly over half of the respondents (52.3%) disagreed with the statement that only students pursuing careers in agriculture should enroll in college agriculture courses. Nearly two-thirds of the students (65.1%) disagreed that college agriculture courses are better suited to male students.

Research Question 2: *What were the attitudes of freshmen College of Agriculture students toward their major areas of study?*

Many students indicated that they were not happy in the College of Agriculture. Only 60.4% of the students (n = 195) indicated they planned to graduate with majors in the College. Eighty-six students (26.7%) reported they were definitely transferring to another college. An additional 42 students (13.0%) indicated they were considering a change of colleges. Likewise, 110 students (34.2%) indicated they were planning a change of majors before graduating. An additional 47 students (14.6%) reported they were considering a change of majors. Six of the twelve majors represented in the study had intended attrition rates in excess of 50%.

Research Question 3: *What was the influence of high school agriculture program experiences on the attitudes of students who are now pursuing agricultural majors?*

Almost all students (94.9%, n = 56) from high school agriculture programs indicated that they intended to graduate from the College of Agriculture and pursue a career in agriculture. Only three students indicated otherwise. By comparison, only 52.9% (n = 138) of those students who did not enroll in high school agriculture programs indicated that they plan to graduate in the College of Agriculture. Of the 44 students who had been enrolled in high school agriculture programs and were also FFA members, 43 (97.7%) indicated intentions to graduate with a degree in the College of Agriculture. The remaining student entered the College with an undeclared major. Likewise, of the 86 students who had been 4-H members, 74

Table 2. Attitudes Toward High School Agriculture Programs

Statement	Agree f (%)	Uncertain f (%)	Disagree f (%)
Students can complete a high school agriculture program and still meet college preparatory requirements.	140 (46.7)	122 (40.7)	38 (12.7)
College-bound students should be encouraged to enroll in high school agriculture courses.	122 (40.6)	127 (42.2)	52 (17.3)
High school agriculture is good preparation for college study in agriculture.	161 (53.5)	119 (39.5)	21 (7.0)
Stronger ties should be made between high school agriculture and science curricula.	182 (60.9)	89 (29.8)	28 (9.4)
High school agriculture should become less vocational.	111 (37.0)	158 (52.7)	31 (10.3)
High school agriculture should become more scientific.	145 (48.3)	123 (41.0)	32 (10.7)
More students should be encouraged to enroll in high school agriculture programs.	156 (52.3)	105 (35.2)	37 (12.4)
High school agriculture courses are better suited to male students.	40 (13.4)	107 (35.8)	152 (50.8)
High school agriculture courses are beneficial for higher-achieving students.	66 (22.0)	179 (59.7)	55 (18.3)
High school agriculture courses are beneficial for lower-achieving students.	53 (17.8)	175 (58.9)	69 (23.2)
Most high school students should take some course work in agriculture.	117 (39.1)	130 (43.5)	52 (17.4)
Only students pursuing careers in agriculture should enroll in high school agriculture.	58 (19.3)	84 (28.0)	158 (52.7)

Note. The term "agree" refers to combined responses of "Strongly Agree" and "Agree." The term "disagree" refers to combined responses of "Strongly Disagree" and "Disagree."

(86.0%) indicated intentions to graduate from the College of Agriculture.

Students who had completed high school agriculture courses displayed different attitudes toward the field of agriculture than did students who were not high school agriculture program participants (Table 4). Generally, students who were products of high school agriculture programs possessed attitudes which were much more supportive of agriculture as a career field, high school agriculture programs, and university agriculture programs.

Conclusions

1. A high percentage of College of Agriculture freshmen do not plan to complete their undergraduate degree in the College. Furthermore, for those students without high school agriculture coursework, this percentage is even higher (nearly 50%).

Table 3. Attitudes Toward University Agriculture Programs

Statement	Agree f (%)	Uncertain f (%)	Disagree f (%)
More students should be encouraged to enroll in university agriculture programs.	174 (57.8)	102 (33.9)	25 (8.3)
College agriculture courses are better suited to male students.	38 (12.8)	66 (22.1)	194 (65.1)
College study in agriculture is easier than in most other majors.	67 (22.3)	86 (28.7)	147 (49.0)
Only students pursuing careers in agriculture should enroll in college agriculture courses.	66 (22.0)	77 (25.7)	157 (52.3)

Note. The term "agree" refers to combined responses of "Strongly Agree" and "Agree." The term "disagree" refers to combined responses of "Strongly Disagree" and "Disagree."

2. The number of students enrolling in the College of Agriculture at the University of Illinois who have completed high school agriculture courses, who have farm backgrounds, or who have experience in agriculture represent a clear minority of those freshmen enrolling in the College.

3. Students who have completed high school agriculture courses, and those who were FFA and/or 4-H members, are much more likely to complete a degree in the College of Agriculture than are freshmen who have not had those experiences.

4. College of Agriculture freshmen view agriculture as being both scientific and technical, and view high school agriculture courses as good preparation for college.

5. College of Agriculture freshmen who completed high school agriculture programs have more positive attitudes toward university agriculture programs, high school agriculture programs, and agriculture as a career than do freshmen with no high school agriculture courses.

Recommendations

1. A revised admission and/or counseling program should be implemented to better identify and retain students who are interested in pursuing degrees from the College of Agriculture.

2. A greater number of students who completed high school agriculture programs or who have been FFA and/or 4-H members should be recruited by the College of Agriculture.

3. Most secondary students in Illinois do not have an opportunity to enroll in high school agriculture programs. The number and location of agriculture programs in secondary schools should be expanded so that all students in Illinois have the opportunity for agricultural experience.

4. Additional qualitative research should be conducted to explore the relationships between groups of students in the College of Agriculture and their attitudes toward the College and various majors.

5. This study should be replicated at the beginning of the Fall semester to assist in determining if students enter the College of Agriculture with

Table 4. Comparison of Attitudes of High School Agriculture Program Versus Non-Program Graduates

Statement	High School Agriculture			No High School Agriculture	
	M	SD		M	SD
Agriculture as an Area of Study					
Agriculture is a scientific area of study.	4.54[a]	.70		4.20	.78
Agriculture is a blend of scientific principles and agricultural practices.	4.64[a]	.52		4.23	.73
Agriculture is a highly technical field of study.	4.30	.70		3.98	.86
The image of agriculture is improving.	4.11	.91		3.60	.94
Only students with farm backgrounds should pursue careers in agriculture.	1.86	1.18		1.80	1.08
High School Agriculture Programs					
Students can complete a high school agriculture program and still meet college preparatory requirements.	3.90[a]	1.09		3.36	.88
College-bound students should be encouraged to enroll in high school agriculture courses.	3.79[a]	.91		3.21	.93
High school agriculture is good preparation for college study in agriculture.	4.08	1.07		3.54	.84
Stronger ties should be made between high school agriculture and science curricula.	4.12	.84		3.67	.96
High school agriculture should become less vocational.	3.09	1.07		3.41	.85
High school agriculture should become more scientific.	3.51[a]	.98		3.46	.94
More students should be encouraged to enroll in high school agriculture programs.	4.25[a]	.90		3.41	.94
High school agriculture courses are better suited to male students.	2.60[a]	1.25		2.27	1.10
High school agriculture courses are beneficial for higher-achieving students.	3.26	.96		3.00	.86
High school agriculture courses are beneficial for lower-achieving students.	3.19	.95		2.84	.91
Most high school students should take some course work in agriculture.	3.85[a]	.93		3.16	.94

Only students pursuing careers in agriculture should enroll in high school agriculture.	2.26[a]	1.08		2.61	1.11
University Agriculture Programs					
More students should be encouraged to enroll in university agriculture programs.	4.00	1.02		3.59	.87
College agriculture courses are better suited to male students.	2.27	1.24		2.08	1.21
College study in agriculture is easier than in most other majors.	2.67	1.21		2.52	1.16
Only students pursuing careers in agriculture should enroll in college agriculture courses.	2.28[a]	1.18		2.62	1.11

[a]Means were categorically different. Categories of agreement were: "Strongly Disagree" ($\underline{M}$ = 0-1.49), "Disagree" ($\underline{M}$ = 1.50-2.49), "Uncertain" ($\underline{M}$ = 2.50-3.49), "Agree" ($\underline{M}$ = 3.50-4.49), and "Strongly Agree" ($\underline{M} \geq 4.50$).

the intention of leaving or if they are disillusioned by their experiences in the College. In addition, a follow-up study of these students should be conducted during their senior year to determine if their expressed intentions have been realized.

Implications

Whereas the majority of freshmen indicated they were happy with the College of Agriculture, nearly 40% were contemplating a transfer to another college. Additionally, over one-third of the students indicated an imminent change of majors within the College. Based upon student responses, some programs are serving as "warehouses" for transient students. If the mission of the College of Agriculture is to produce graduates for entry into the agricultural industry, valuable resources are being wasted. Improvement needs to be made in both the identification and retention of students who are accepted into many departments and who are expected to complete a degree within the College. Currently, nearly one half of the programs in the College may lose 50% or more of their freshmen enrollment. These programs may need special counseling assistance in an effort to stabilize enrollment. By implementing more stringent identification, recruitment, and counseling programs, a more efficient utilization of College of Agriculture and departmental resources should be possible.

According to the results of this research, students who completed high school agriculture courses represent the best investment by the College of Agriculture. Almost all (94.9%) College of Agriculture freshmen who were enrolled in high school agriculture programs reported they planned to graduate in the College of Agriculture. If the student were an FFA member, the percentage increased to 97.7%.

According to Bekkum (1993), the agricultural industry places considerable importance on the background and experience of graduates. However, only 22.2% of the students reported farm backgrounds. Likewise, the majority of students in Illinois are not afforded the opportunity gain

agricultural experience and/or training at the secondary level. According to Guilinger (1995), only 296 of 522 schools in Illinois offered any type of agriculture program during the 1993-94 school year. At the University of Illinois, the number of students with high school agriculture experience has decreased from 46.3% in 1983-85, to 32.3% in 1986-88, and finally to 18.4% in 1994-95. As a result, students are not entering the University with the agricultural experience desired by employers. By increasing the number of high school agriculture programs, the College of Agriculture should reap benefits from increased numbers of majors who remain in the College through graduation.

Based upon comments from the questionnaires, attitudes of agricultural majors appeared very unfavorable toward transient students, and vice versa. Whereas slightly over half of the freshmen class responded that classes should be open to non-majors, almost an equal number complained that "non-agriculture" students detracted from their opportunity to learn because of the non-agricultural focus of the classes. Likewise, some comments indicated that majors in areas generally considered traditional agriculture were being ignored by the College. Clearly, both the "traditional" and "non-traditional" students are unhappy with the direction of the College. Additional study is needed to identify and solve this phenomenon.

References

Bekkum, V. A. (1993). Experience needs of College of Agriculture graduates as perceived by business and industry. NACTA Journal, 37(2), 48-51.

College of Agriculture. (1994). Annual report, 1993-94. University of Illinois at Urbana-Champaign.

Dyer, J. E., & Osborne, E. W. (1994, February). The influence of science-based agriculture courses on attitudes of Illinois guidance counselors. Paper presented at the 48th Annual Central Region Research Conference in Agricultural Education, St. Louis, MO.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior. Reading, MA: Addison-Wesley Publishing.

Gomes, R. (1994). Address to University of Illinois Agricultural Education Advisory Council, October 12.

Greenwald, A. G. (1989). Attitude structure and function. Hillsdale, NJ: Erlbaum Associates.

Guilinger, J. (1995). [Agriculture programs and Illinois high schools]. Unpublished raw data.

Litzenberg, K. K., Whatley, S. S., & Scamardo, J. (1992). 1991 U.S. enrollment for agriculture and renewable natural resources. NACTA Journal, 36(2), 4-7.

Manderscheid, L. V. (1988). Undergraduate educational opportunities in the face of declining enrollments. American Journal of Agricultural Economics, 70(5), 985-993.

Miller, L. E., & Smith, K. L. (1983). Handling nonresponse issues. Journal of Extension, 21, 45-50.

Office of Academic Programs. (1994, Fall). Enrollment and related statistics. College of Agriculture, University of Illinois at Urbana-Champaign.

Russell, E. B. (1993). Attracting youth to agriculture: How colleges of agriculture can expand their role. Journal of Extension, 31(Winter), 13-14.

Russell, E. B. (1989). Youth development: Needed high priority in the college of agriculture.

Proposal submitted to University of Illinois College of Agriculture Priorities Committee, dated May 16.

Scofield, G. G. (1995, March). College of agriculture new student profile. Paper presented at the Central Region 49th Annual Research Conference in Agricultural Education, St. Louis, MO.