

## Leadership Skills of College of Agriculture Graduates

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Leadership development has been identified as one of the objectives of undergraduate agriculture degree programs in land-grant colleges throughout the United States (Love & Yoder, 1989). Efforts to enhance the leadership skills of agriculture students have varied widely across degree programs, departments, and institutions. Leadership development efforts in some institutions have been promoted through courses to enhance leadership attributes of students. Other institutions have adopted a more *laissez faire* posture by encouraging leadership development through participation in departmental clubs, student organizations, and activities (Schumacher & Swan, 1993).

Recently, much attention has been directed toward re-defining the mission and goals of undergraduate programs in land-grant College of Agriculture. Baer (1980) prompted deans of agriculture to assess the quality of education provided to students at the undergraduate level. Baer noted that some critics had suggested that colleges of agriculture had deviated from their mission by devoting too much emphasis on technical information, at the expense of developing life-long learning skills within their students.

Love and Yoder (1989) reported that:

... as early as 1980 ... agricultural industry representatives were publicly criticizing the quality of higher education programs in general and agricultural education in particular. These representatives addressed the undergraduate's lack of practical experience, inability to solve problems and communicate effectively, lack of leadership, management, and accounting skills, and inability to "get along." (p. 3)

It was suggested that agriculture faculty were more oriented toward the development of technical expertise than interpersonal skills which were considered prerequisite to career success. Evidence

to support this claim was provided when two-thirds of the college of agriculture faculty surveyed by Love and Yoder reported that they were ill-prepared to teach communication, interpersonal, and leadership skills to their students.

Although college of agriculture faculty may not possess the skills needed to teach communication, interpersonal, and leadership skills; they acknowledged the importance of student development in those areas. Love and Yoder (1980) reported that over 80 percent of the faculty responding to their survey indicated that students should develop communication, interpersonal, and leadership skills. Student achievement in those areas was rated at 67 percent for communication skills, 52 percent for interpersonal skills, and 55 percent for leadership skills. The researchers concluded that student leadership development did not meet the expectations of the faculty. Some college of agriculture faculty further suggested that communication, interpersonal, and leadership skills should be enhanced through participation in student organizations and activities.

Love and Yoder (1980) reported that nearly two-thirds of the students surveyed indicated that they developed communication, interpersonal, and leadership skills as a 'direct' result of curricular or extracurricular activities in college. A number of other students reported that activities had 'indirectly' affected their leadership development. Collectively, nearly 90 percent of the students reported that curricular and extracurricular activities whether directly or indirectly contributed to the attainment of communication, interpersonal, and leadership skills. Although students recognized the benefits, Love and Yoder reported that a significant number of students were not satisfied that instruction in the college of agriculture had contributed sufficiently to the development of their leadership skills. It was suggested that colleges of agriculture should direct more attention to developing the interpersonal and leadership skills of undergraduate students.

The College of Agriculture, Food and Natural Resources at the University of Missouri has experimented over the past few years with leadership development efforts. In the early 1980s, a new course for undergraduate students was developed to enhance the leadership skills of agriculture students. Due to a faculty resignation, the course had not been taught for over ten years. A need existed to assess the perceptions of graduates regarding their leadership skills as a preliminary step toward increasing leadership development efforts within the college.

### **Problem**

The central problem for this research was an assessment of the leadership skills of College of Agriculture, Food and Natural Resources graduates from the University of Missouri. For the purpose of this research, communications skills and interpersonal skills were attributes incorporated within the definition of leadership. The following research questions guided the study:

How do College of Agriculture, Food and Natural Resources graduates perceive their leadership skills?

What is the relationship between student activity participation and leadership skills?

What activities and/or demographic characteristics can be used to explain the variance in the perceived leadership skills of College of Agriculture, Food and Natural Resources graduates?

### **Procedure**

The target population for this study consisted of baccalaureate degree graduates from the College of Agriculture, Food and Natural Resources at the University of Missouri. The size of the population was not known since it extended both into the past as well as into the future. The accessible population was limited to graduates who had registered their mailing address with the University of Missouri Alumni Association. A purposive cluster sample was selected to provide data for this study. The sample cluster included agriculture graduates who had completed their B.S. degree in agriculture at the University of Missouri between fall semester, 1981 and summer session, 1986. A five-year time frame was selected to

examine a cohort group which progressed through baccalaureate agriculture programs at approximately the same time, with similar opportunities for participation in student activities. The sample consisted of 635 baccalaureate graduates within the five-year time period.

A survey instrument was developed to collect the data. The instrument was originally developed by Luft (1988) and later revised by McKinley, Birkenholz, and Stewart (1993). Forty-four items related to leadership skills were included for respondents to indicate their level of agreement/disagreement on a six-point Likert-type response scale. Leadership items were written to allow respondents to rate their own leadership skills in which a response of "1" reflected a "strongly disagree" response and a "6" reflected a "strongly agree" response.

Respondents were asked to provide information about their participation in high school, college, and "other" activities which may have contributed to the development of leadership skills identify the activities they had participated in and the extent of their participation (i.e. participant, committee member, officer). It was hypothesized that as the level of participation increased, the opportunity for developing leadership skills might also be expected to increase. Activity participation was coded as follows: "0" = nonparticipant; "1" = participant/member; "2" = committee member; and "3" = officer. Demographic data were collected from respondents to analyze the relationship between perceived leadership skills and selected respondent characteristics.

Descriptive statistics were computed for each of the leadership statements, activity participation, and demographic characteristics. Principal component factor analysis with Promax rotation was performed to identify factors which comprised the leadership variable. Five factors produced eigen values greater than 1.0. The leadership statements which comprised each factor and the loading for each statement are presented in Table 1. The five leadership factors were labeled by the researchers with the following descriptive terms for discussion purposes: Administration, Achievement, Community, Empathy, and Problem-Solving. One leadership statement was eliminated since it did not load significantly on any of the four factors.

Table 1. Factor Loadings for Statements Comprising the Five Leadership Factors (n=293)

Factor statement	Factor loading
<b>Administration</b>	
Other people accept me as a leader	.81
I am able to inspire people	.78
I can motivate people	.76
I can persuade others to accept my point of view	.73
I am able to convince others of my ideas	.63
Other people accept my ideas	.58
People often allow me to lead group discussion	.58
I am an effective decision maker	.57
I am willing to take charge and lead a group	.55
People look to me for advice	.55
Making friends and getting along with others is easy for me	.55
People seek guidance from me when they have difficult times	.52
I have a good sense of humor	.38
People confide in me because they consider me trustworthy	.33
<b>Achievement</b>	
I strive to achieve my professional goals	.76
I am enthused about my work	.71
I consider myself to be an achiever in life	.66
I can work persistently for a just cause without giving up or backing off	.60
Once I begin a project, I feel I must see it through to completion	.58
I persevere on a project until it is completed	.55
I enjoy success and strive for it	.49
I view myself as a professional	.48
I feel I am proficient in my work	.46
<b>Community</b>	
I am the type of person who is involved with community activities	.77
Belonging to organizations is important to me	.75
I encourage others to become involved in activities	.71
It is easy for me to develop an interest in people	.65
I enjoy sharing information with others	.50
I am concerned about maintaining good interpersonal relationships	.41
<b>Empathy</b>	
I consider myself to be a flexible person	.65
I willingly listen to others	.56
I am a cordial person	.56
I use tact in everyday life	.54
I find it easy to consider another person's point of view	.54
I feel people respect and admire me for who I am	.37
I like to maintain good interpersonal relations with co-workers	.30
<b>Problem-Solving</b>	
I understand that other people have feelings, motives, and goals of their own	.58
I consider myself to be intelligent	.48
I can see both sides of an argument	.46
I enjoy expressing my ideas on a given issue	.41
I feel confident openly promoting issues I feel strongly about	.41
When someone comes to me with a problem, I try to put myself in their shoes so I can better understand the situation	.38
I like to see conflicts resolved	.32

Instrument reliability was assessed by computing Cronbach's alpha coefficients for the overall instrument (i.e. leadership statements only) and each of the five factors. Luft (1988) reported a Cronbach's alpha reliability coefficient of .905 for the original instrument. The overall reliability coefficient for the instrument used in this study was .93, and for each factor construct the Cronbach's alpha coefficient was as follows: Administration, alpha = .90; Achievement, alpha = .86; Community, alpha = .81; Empathy, alpha = .67; and Problem-Solving, alpha = .68.

The relationship between student activity participation and the five leadership factor variables was analyzed by computing Spearman Rank correlation coefficients since the participation variables utilized an ordinal measurement scale. Research question three was addressed using stepwise regression analysis with demographic characteristics and activity participation included in the pool of predictor variables. Predictor variables were allowed to enter the prediction equation provided they met the .05 alpha level.

### Findings

Survey instruments were mailed to 635 B.S. degree graduates. Five instruments were returned as "undeliverable." Completed instruments were received from 173 respondents within two weeks of the initial mailing. An additional 120 completed instruments were returned after follow-up postcards were sent to nonrespondents. Usable data were collected from 293 respondents which comprised a 46.5 percent response rate.

Nonrespondent follow-up procedures were not employed due to resource limitations. The responses of "early" respondents were compared to a group of "late" respondents for each of the 44 leadership statements. Independent t-tests revealed no significant differences for any of the leadership statements. It was assumed (using the logic provided by Miller & Smith, 1983) that the respondents were representative of the sample and that the sample was representative of the population from which it was drawn.

Table 2 presents means, standard deviations, and minimum and maximum respondent means for the five leadership factors and the overall leadership score. Factor means ranged from a high of 5.22 on the Achievement factor to a low of 4.62 on the

Community factor. The overall leadership mean was 4.94 with a standard deviation of 0.45.

Table 2. Means, Standard Deviations, Maximum, and Minimum Mean Values of the Five Leadership Factors (n=293)

Factor	Mean	SD	Minimum	Maximum
Administration	4.78	0.57	2.50	6.00
Achievement	5.22	0.58	3.11	6.00
Community	4.62	0.75	2.14	6.00
Empathy	5.02	0.50	3.28	6.00
Problem-solving	5.12	0.48	3.57	6.00
Overall	4.94	0.45	3.39	5.86

The Administration and Achievement factors produced individual respondent means of 2.50 and 2.14, respectively. This finding indicated that at least one respondent tended to disagree with statements comprising the respective leadership factors. More specifically, the Community factor was the only factor that resulted in an individual respondent mean at or below the 2.50 scale midpoint. The respondents tended to agree with statements in each leadership factor as evidenced by factor means above the 4.00 level.

Table 3 presents Spearman rank order correlation coefficients computed for activity participation and the five leadership factors and the overall leadership mean score. Participation in a fraternity/sorority was the student activity that produced the highest correlation coefficient for the Administration and Community factors and the overall leadership score. Membership in a livestock association produced the highest correlation coefficient for the Achievement factor. High school class officer and college student government participation were the two activities related to the Problem Solving factor. No activities produced a significant correlation coefficient with the Empathy factor.

Three high school activities, five college activities, and one "other" activity were found to be significantly related to the overall leadership score. High school participation in student council, class officer, and 'other' clubs produced significant correlation coefficients. College participation in departmental clubs, fraternities/sororities, student government, professional/honorary societies, and intramurals were activities that were significantly related to the perceived leadership development of

Table 3. Relationship Between Activity Participation and Leadership (n=293)

Activity	Leadership factors					Problem solving	Overall
	Administration	Achievement	Community	Empathy			
<b>High School</b>							
Athletics	.07	.05	.05	-.05		-.01	.06
National Honor Society	-.03	.09	.14*	.02		.02	.08
Student council	.17*	.07	.18*	.06		.02	.15*
Class officer	.14*	.12*	.14*	.05		.12*	.16*
Foreign language club	.10	.06	.20*	-.02		.08	.11
Band	.02	.02	.14*	-.01		-.03	.06
FFA	.04	-.01	.12*	-.02		-.02	.04
Other	.09	.09	.16*	.03		.07	.13*
<b>College</b>							
Departmental clubs	.10	.11	.16*	.09		.01	.13*
Fraternity/sorority	.37*	.13*	.22*	.07		.10	.28*
Student government	.13*	.09	.16*	.07		.12*	.16*
Professional/honorary	.09	.12*	.10	.04		.06	.12*
Intramurals	.14*	.15*	.15*	-.09		.07	.15*
Band	-.02	-.05	.07	-.03		-.02	.01
ROTC	.02	-.02	-.06	-.01		-.01	-.01
Other	-.02	-.02	.08	.10		.02	.02
<b>Other</b>							
Church	.04	.09	.11*	-.04		.07	.08
4-H	.03	.02	.11	.01		-.01	.05
Boy/girl scouts	-.02	-.12*	-.08	-.10		-.06	-.11
Livestock association	.16*	.14*	-.17*	.01		.11	.17*
Military	.01	-.01	.02	.04		.06	.04
Other	.04	-.03	.07	-.11		.03	.01

\*Spearman Rank Correlation coefficients significant at  $p < .05$ .

the respondents. Membership in a livestock association was also found to be significantly related to the overall leadership mean score.

The third research question sought to identify activities and demographic characteristics that were predictive of greater perceived leadership skills. Stepwise regression analysis was employed to sequentially isolate the predictive qualities of student activities and characteristics relative to the five leadership factors and the overall leadership score. Table 4 presents the results of the stepwise regression analyses which were performed to identify significant leadership predictor variables. Four variables were found to be predictive of the Administration factor. Significant predictor variables included participation in a fraternity/sorority, hours employed in a business outside agriculture, and membership in a livestock association. Each of the significant predictor variables were positively related to the

Administration factor.

Three variables were found to be significant predictors of the Achievement factor. Significant variables included participation in a fraternity/sorority, number of semesters of residence in a dormitory, and participation in boy/girl scouts. The two predictor variables relating to student residence were positively related to the achievement factor and participation in boy/girl scouts was found to be negatively related to leadership skills.

Seven variables were found to be predictive of the Community factor. The variables listed in order of inclusion in the prediction model were: participation in a course, activity or organization which contributed to leadership development, student council, foreign language clubs,

Table 4. Regression Analysis of Activity Participation and Demographic Characteristics on Leadership Scores

Factor	Variable	b	Partial R <sup>2</sup>	F	p
<b>Administration</b>					
	Intercept	4.54			
	Fraternity/sorority	0.42	.12	39.74	.01
	Hours employed outside agriculture	0.01	.02	5.93	.02
	Livestock association	0.21	.02	7.45	.01
<b>Achievement</b>					
	Intercept	5.10			
	Fraternity/sorority	0.30	.03	8.74	.01
	Semesters in dormitory	0.03	.02	5.82	.02
	Boy/girl scouts	-.015	.01	4.52	.03
<b>Community</b>					
	Intercept	4.33			
	Course, activity or organization	0.28	.05	14.40	.01
	Student council	0.20	.04	11.41	.01
	Foreign language club	0.27	.02	7.49	.01
	Fraternity/sorority	0.02	.02	6.48	.01
	Semesters in dormitory	0.04	.02	6.38	.01
	High school band	0.18	.01	4.43	.04
	Other high school clubs	0.17	.01	4.08	.04
<b>Empathy</b>					
No variables met the .05 significance level for entry in the model.					
<b>Problem-Solving</b>					
No variables met the .05 significance level for entry in the model.					
<b>Overall</b>					
	Intercept	4.69			
	Fraternity/sorority	0.32	.08	24.21	.01
	Other high school clubs	0.11	.02	6.77	.01
	Class officer	0.13	.01	4.10	.04
	Semesters in dormitory	0.02	.01	4.82	.03

fraternity/sorority, semesters in a dormitory, high school band, and other high school clubs. Although the seven variables were each statistically significant, the prediction model was able to account for only 17 percent of the variance associated with the community factor.

No student activities or demographic characteristics were found to be predictive of the Empathy or Problem Solving factors. In each case, no predictor variable was able to meet the .05 alpha level required for inclusion in the prediction equation.

Four variables were found to be significant predictors of overall leadership scores. The significant variables included membership in a fraternity/sorority, other high school clubs, high school class officers, and number of semesters in a

dormitory. Each of the significant predictor variables were positively related to the overall leadership score.

### Major Findings

Graduates of the College of Agriculture, Food and Natural Resources at the University of Missouri agree that they possess leadership skills.

Participation in student activities at the high school and college level is positively related to overall leadership development.

No activities or characteristics examined in this study were found to be predictive to the Empathy factor.

Numerous activities were related to the

community factor.

Residing in a fraternity/sorority or dormitory while in college was related to higher leadership scores of graduates.

Participation in boy/girl scouts was negatively related to perceived leadership skills.

The most important activity related to the development of leadership skills was membership in a fraternity/sorority.

Graduates of the College of Agriculture, Food and Natural Resources at the University of Missouri perceived themselves to possess leadership skills. Although delineating a cause and effect relationship was beyond the scope of this study, a number of high school and college activities were found to be related to the perceived leadership skills of respondents.

### **Discussion**

The location of residence during college appeared to be the variable which revealed the greatest relationship with leadership skill development. The number of months that respondents lived in fraternities/sororities or dormitories was positively related to their perceived leadership skills. Living in a structured housing arrangement as an undergraduate may have contributed to the development of leadership skills. If so, college faculty and administrators should consider developing policies which encourage (or possibly require) undergraduate students to live in a fraternity/sorority or dormitory during a portion of the undergraduate degree program.

A number of other high school and college activities were found to be related to the perceived leadership skills of respondents. The researchers were unable to reach a conclusion regarding causality or if there was a symbiotic relationship between activity participation and leadership development.

The overall leadership skills of respondents produced a low to moderate relationship to participation in high school and college activities. Membership in a social fraternity/sorority was the activity which related most closely to the respondents' perception of their leadership skills. Membership in other high school clubs and service

as a high school class officer were also found to be significant predictors of leadership skills. The number of semesters that students lived in a dormitory during college was also related to the level of their perceived leadership skills. It was interesting to note that living in an apartment during college, which could be viewed as an act of independence, was not found to be related to the leadership skills of respondents. It was concluded that structured living in either a fraternity, sorority, or a dormitory enhances the leadership skills of College of Agriculture students.

Thirteen activities included in this study were found to be related to the Community factor. It was concluded that student activity participation contributed to the development of interpersonal skills which comprised the Community factor, including a sense of belonging, community involvement, and civic mindedness.

Six factors were related to the Administration and Achievement factors. Activities related to both leadership factors included service as a high school class officer, membership in a fraternity/sorority, participation in intramural sports, and membership in a livestock association. Participation in high school student council or college student government activities were also related to the Administration factor. Participation in a college-level professional/honorary fraternity and Boy/Girl Scouts were the two additional activities which were related to the Achievement factor. Interestingly, participation in Boy/Girl scouts was negatively related to the Achievement factor. Students who had participated in scouting activities produced lower Achievement factor scores.

There were only two activities (high school class officer and college student government) which were related to the Problem-Solving factor. No activities were related to the Empathy factor. It was concluded that participation in student activities did not contribute significantly to the development of leadership skills comprising the Problem-Solving or Empathy constructs.

### **Recommendations**

College of Agriculture faculty should encourage students to participate in activities, clubs, and organizations as suggested by Schumacher and Swan (1993). Student participation should be beneficial for leadership development and/or

improving the educational environment in the college. It is apparent that student participation produces a "win-win" situation. College of Agriculture faculty should also encourage students to live in fraternities/sororities or dormitories to enhance their leadership skills. This research found that students in structured living arrangements had higher leadership scores.

The development of leadership skills is a complex phenomenon (Stogdill, 1974). This study substantiated that view when the researchers were unable to identify student activities which were able to account for a major portion of leadership score variance. As with so many social science constructs, researchers have been unable to isolate major factors which are of practical significance in explaining personal leadership characteristics. Personal characteristics may be individualized to such a degree that it may not be possible to generalize. Future leadership development studies should incorporate qualitative methods to analyze situational factors that may relate to leadership development. Such factors may include role models, family structure, parental support, and psychological profiles. Individual case studies of leadership development are needed to gain additional insight into the leadership development process.

The demand for future agriculture leaders is great. Bennis (1989) described the emergence of an "unconscious conspiracy" which has prevented leaders from exercising their leadership skills. Changes in agriculture will undoubtedly create an environment in need of strong leadership. Educators in agriculture must recognize that need and implement strategies to develop leaders who are able to effectively guide and direct the industry in the future.

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