

Faculty Perceptions of the Undergraduate Mentoring Process in the College of Agriculture at  
Iowa State University

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Abstract

*Literature indicated that faculty and administrators are often uncertain about how to foster effective mentoring relationships with undergraduate students. This study analyzed the mentoring functions of faculty in the College of Agriculture at Iowa State University regarding the undergraduate mentoring process. Six mentoring functions (informal contact, role modeling, direct assistance, demonstration, assistance with professional development plans, and observation and feedback) were identified in the literature. A previous questionnaire was modified to measure the extent to which faculty practiced each mentoring functions. The findings indicated that faculty were “often” practicing all six mentoring functions. Analysis of variance tests revealed that there were no statistically significant differences in the practice of the mentoring functions across faculty titles, ages, responsibility areas, or departmental affiliations. These results indicate consistency in the mentoring process practiced by the faculty in the College of Agriculture. This study has implications related to faculty training and development. Because of the impact mentoring has on the psychosocial and career development of undergraduates, it is imperative that faculty address each of the six functions of mentoring.*

Introduction

Homer’s *Odyssey* (Butcher & Lang, 1890), an epic poem from Ancient Greece, is frequently cited as the original source for the concept of mentoring. The story began when the king, Odysseus, left on a voyage for the Trojan War. During his absence, Odysseus entrusted the care of his kingdom, Ithaca, and of his son, Telemachus, to an old friend, Mentor (Butcher & Lang). Throughout the epic, Mentor (Goddess of Wisdom) is portrayed as a classic transitional figure that helped Telemachus achieve his manhood and confirm his identity in the adult world. This story was the first to bring light to the structure of the first mentor-protégé relationship. The term “protégé,” though not as old, was derived from the past participle of the French verb “proteger,” which means one under the care and protection of another (Auster, 1984).

Today the concept of mentoring occurs in many different program settings and many different formats for many different reasons. Further, literature has indicated that mentoring is important for both youth and adults, whether in the work place or an educational setting. For example, programs such as Big Brother/Big Sister mentor youth on drug and alcohol abuse, peer pressure, violence, depression, and suicide (Smink, 1999). Studies such as those done by Chao

(1997), Fagenson-Eland (1989), Fagenson-Eland, Marks and Amendola (1997), and Scandura (1992) found that mentored individuals perform better on the job, advance more rapidly within the organization (e.g. get promoted more quickly and earn higher salaries), report more job and career satisfaction, and express lower turnover intentions than their nonmentored counterparts.

In education, the America's Choice: High Skills or Low Wages Report stated that many American students were not obtaining the educational skills necessary to compete globally or to become part of a highly skilled American workforce (National Center on Education and the Economy, Commission on the Skills of the American Workforce, 1990). Pressure from the government and American businesses and industries created momentum for the adoption of work-based learning experiences and youth apprenticeship programs that involved mentoring (School-to-Work Opportunities Act, 1994). As a result, dozens of colleges and universities have implemented mentoring programs. For instance, Anderson, Dey, Gray and Thomas (1995) researched whether mentoring has an impact on undergraduate student academic achievement. "Students who received advice and guidance about their educational program, intellectual challenge and stimulation, letters of recommendation, or faculty interest in their education progress [from mentors] had higher grade point averages than those who did not receive such much attention" (Anderson et al., p. 17).

Research has indicated that protégés benefited psychosocially from mentoring relationships. Kram (1985) found that when mentors were inviting and supportive, the protégé felt supported, respected, or admired, and she further explained that protégés reported feeling more competent, having more self-confidence, and having a more optimistic view of the future as a result of their mentor. In addition, mentoring has been known to benefit the mentors too. Kram reported that due to mentoring, mentors had new attitudes and values of support and nurture.

Regardless the purpose of a specific mentoring program, a mentor has commonly been described as a coach, a guide, a counselor, a role model, a peer advisor, and/or a sponsor (Stanley & Lincoln, 2005). Most mentors have an ultimate goal of making a positive influence (Smink, 1999). This goal and the plethora of terms used to describe a mentor would suggest that something is known about the role a mentor plays. However, most mentoring research has focused on the benefits of mentoring, rather than the specific mentoring functions mentors are practicing (Fagenson-Eland, 1989; Scandura, 1992; & Chao, 1997). The lack of research on mentoring functions leaves mentors uneducated about mentoring (Hudson, 2005), often fostering negative mentoring experiences.

Perhaps a logical solution to negative mentoring experiences would be to educate mentors on explicit mentoring practices. However, in recent decades, colleges and universities have developed training programs for faculty members based on topics such as grant writing, laboratory management, and classroom teaching, but mentoring themes were virtually absent. Still, it seems imperative to understand what mentoring functions mentors are already practicing and how well they believe they are practicing mentoring before a training workshop for a group of mentors is developed.

## Theoretical Framework

Most of the research on mentoring has been conducted in business and industry rather than in education (Fagenson-Eland, 1989; Scandura, 1992; & Orpen, 1995). Though mentoring in education has traditionally been associated with higher education, particularly faculty to graduate student mentoring (Merriam, Thomas, & Zeph, 1987; Anderson, Dey, Gray, & Thomas, 1995), it has been somewhat less prevalent at the undergraduate level. The few undergraduate mentoring studies that have been conducted focused on the protégés' perceptions about their mentor or mentoring relationship (Anderson et al.; McCarthy & Mangione, 2000; Van Ast & Field, 2005) and not on the mentors' perceptions. In fact, faculty and administrators are often uncertain about how to foster effective mentoring relationships with undergraduates (Stanley & Lincoln, 2005).

Early mentoring researchers identified a wide range of mentoring functions, or roles, a mentor should practice (Levinson, Darrow, Klein, Levinson, & McKee, 1978; Kram, 1980). Kathy Kram (1985) described mentoring functions as “essential characteristics that differentiate developmental relationships from other relationships” (p. 22). She further explained that a mentor relationship with the correct mentoring functions has the potential to enhance career development and psychosocial development of both individuals. A mentoring relationship that only provides a few functions is characterized by Kram (1983) as having “little intimacy and weak interpersonal bonds” (p. 23), and are viewed as detrimental to both career and psychosocial development.

Within these findings, Kram (1985) identified nine individual mentoring functions which she classified into two broad categories of mentoring functions: career and psychosocial functions. Career functions are those aspects of the relationship that are directly associated with protégé career advancement. Kram explained that career functions “assist the protégé in learning the ropes of organizational life and in preparing for advancement opportunities” (p. 23). Functions that fit under the career functions category were: Sponsorship, Exposure-and-Visibility, Coaching, Protection, and Challenging Assignments. Psychosocial functions involve aspects that affect each mentorship partner on a more personal level. These functions enhance the sense of competence, identity, and effectiveness in a professional role. Functions in this category were: Role Modeling, Acceptance-and-Confirmation, Counseling, and Friendship.

Though many mentor functions studies have failed to advance beyond the findings of Kram, her work has been criticized for her model's irrelevance to education (Jacobi, 1991; Fowler & O'Gorman, 2005). In Jacobi's synthesis of mentoring literature in education, she explained that a major limitation is the lack of a theoretical model that describes the role of mentoring in an educational setting. Jacobi reported that many researchers have often suggested that Bandura's Social Learning Theory provides a theoretical framework for mentoring in education. However, according to Jacobi, the Social Learning Theory describes the role of mentoring only in the context of learning, yet fails to address other aspects of mentoring, such as professional or emotional support.

Jacobi's (1991) conclusion was affirmed when Fowler and O'Gorman (2005) repeated Kram's qualitative work and examined the relevance of her functions in other areas of life such as contemporary organizational life and education. Fowler and O'Gorman found that Kram's model indeed lacked a learning facilitator component, a function that focuses on meta-skills, self reflection, and collaborative learning. Therefore, it was concluded that Kram's model was not acceptable for mentoring in education.

However, a model which included Kram's career and psychosocial functions existed for educational settings. This model, developed by Brzoska, Jones, Mahaffy, Miller, and Mychals (1987), contained six mentor functions: 1) informal contact, 2) role modeling, 3) direct assistance, 4) demonstration, 5) observation and feedback, and 6) professional development planning assistance. Brzoska et al. described informal contact as interactions or discussions that take place outside of the scheduled meeting sessions of the mentoring process, where a mentor "stops in and checks" on the protégé to offer advice, encouragement, and most of all, listen to any concerns or accomplishments. Brzoska et al. also reported that role modeling is exhibiting professionalism, demonstrating realistic ways of problem solving, and exhibiting enthusiasm, self-confidence, security, and competence.

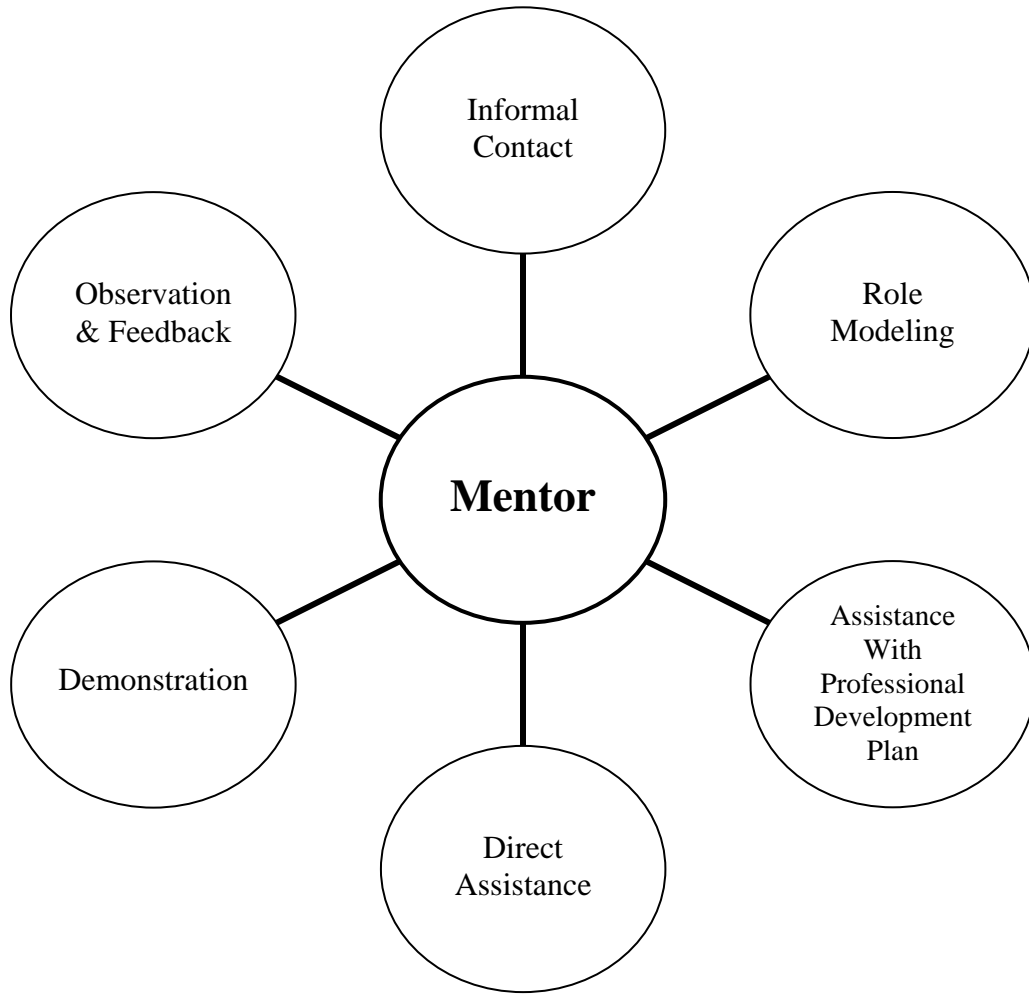


Figure 1. Brzoska et al. (1987) Mentor Functions Model

Note: From *The Mentor Teacher Handbook* (p. 8), by Thom Brzoska, Jan Jones, John Mahaffy, Kenneth Miller, and Joann Mychals, 1987, Portland, OR: Northwest Regional Educational Laboratory. Copyright 1999 by the Evergreen School District of Vancouver, Washington. Reprinted with permission.

According to Brzoska et al. (1987), mentors should directly assist their protégé by: assisting them at setting and achieving goals; helping them organize and manage materials or equipment; suggesting techniques on how to keep records or to reflect in order to make improvements. Demonstration is incorporated when the mentor shows the protégé how to properly use any strategy, technique, or skill. Formal observation and feedback was described as a three step procedure including a pre-conference, the observation, and a post-observation conference. Lastly, Brzoska et al. defined professional development planning as not just teaching specific job skills, but serving as a resource to provide information or opportunities to potential

careers or further education.

In summary, mentoring functions are essential to career and psychosocial development in an educational mentoring relationship. If students are going to benefit from a mentoring relationship, all six mentoring functions should be part of the mentoring process. Faculty, as well as college administrators, must be aware of the extent to which faculty practice the undergraduate mentoring process.

### Purpose and Objectives

The purpose of this study was to determine the extent to which the faculty in the College of Agriculture at Iowa State University practice the undergraduate mentoring process.

The objectives of this study were to:

1. Determine selected demographics of the faculty participants.
2. Determine the mentoring functions practiced and the extent to which they are practiced by faculty in the College of Agriculture.
3. Compare the mentoring functions practiced using selected demographic variables.

### Methods and Procedures

A descriptive census research design was used for the collection and analysis of data for this study. The population for this study consisted of the 2006 College of Agriculture faculty members at Iowa State University. A list of the current College of Agriculture faculty was obtained from the College of Agriculture Dean's Office. The list, consisting of 408 faculty members, was purged for duplications and any collaborating faculty members were removed giving a total accessible population of 378. Collaborators at the university were faculty members that assisted with scientific research, but were primarily associated with another agency or organization (e.g. United States Department of Agriculture – USDA). For this study, faculty collaborators were removed from the list because their faculty responsibilities involved little to no contact with undergraduate students.

The questionnaire developed for this study was a modified version of Noe's (1988) mentor function instrument. The instrument was designed to determine which mentoring functions were practiced and the extent to which *each* function was practiced by the College of Agriculture faculty. The questionnaire consisted of 30 questions, five questions for each of the six mentoring functions listed in the Brzoska et al. Mentor Function Model (1987). The General Mentoring Information section of the questionnaire was designed to generate information such as how many hours faculty interacted and actually mentored undergraduates per week. The last section contained demographic questions such as professor status, primary responsibility, number of years employed by the institution, and age. Post hoc reliability coefficient for the survey instrument was determined by Cronbach's alpha reliability test. The reliability coefficient was .89. Dillman's (2000) pre-testing approach was used to determine content and face validity of the instrument.

Faculty were contacted following Dillman's (2000) recommended five contacts, which were: 1) a pre-notice letter, 2) the questionnaire, 3) a thank-you/reminder, 4) a replacement questionnaire, and 5) a final contact. A web-based program called SurveyMonkey (1999) was used to administer the web-based questionnaire and track respondents and nonrespondents. Non-response error was controlled for by using Linder, Murphy, and Briers (2001) recommendation of using a minimum of 20 responses from a random sample of nonrespondents to ensure the statistical power necessary to detect differences between respondents and nonrespondents. Nonrespondents were contacted via telephone and administered the questionnaire. Analysis confirmed no statistically significant differences existed between the groups. Of the 378 questionnaires sent, a total of 203 questionnaires were returned for a response rate of 53.7%. In all, a total of 188 questionnaires were usable, giving a useable return rate of 49.7%.

Demographic questions were analyzed using frequencies and percentages. To analyze the data of objective two, first means and standard deviations were figured for each mentor function item to determine which ones were practiced. Second, a composite score was formed for each function by grouping the means for each set of five items, which represented a mentor function from the model. Means and standard deviations for each mentor function were reported. For objective three, the selected demographic variables compared were: faculty title, responsibility area, faculty age, and department. The faculty title categories were: full professors, associate professors, and assistant professors. Extension, teaching, and research made up the responsibility area group and the three faculty age categories formed were: 27 to 40 years, 41 to 60 years, and 61 to 80 years. The 15 departments were classified into four common groups: Biological Sciences, Social Sciences, Plant & Environmental Sciences, and Biosystems/Pre-Vet based on commonalities in discipline focus. Analysis of variance (ANOVA) was used to identify statistically significant differences among the four groups of departments. An alpha level of .05 was set a priori.

## Findings

The purpose of this study was to determine the extent to which perceptions of the faculty in the College of Agriculture at Iowa State University regarding the undergraduate mentoring process. The study sought to identify the extent to which specific mentoring functions were practiced by faculty. The findings of this study are presented in three major sections relating to the study's objectives: 1) determine selected demographics of the faculty participants, 2) determine the mentoring functions practiced and the extent to which they are practiced by faculty in the College of Agriculture, and 3) compare the mentoring functions practiced using selected demographic variables.

### *Objective 1: Determine selected demographics of the faculty participants.*

The majority of the respondents were full professors (39.9%), associate professors (24.5%) and assistant professors (15.9%), and were predominately from the departments of Agronomy (18.5%) and Animal Science (15.8%). Respondents' primary responsibility area was research (51.6%). Teaching constituted 24.2% and extension made up 13.4% of the respondents'

areas of responsibility. The average age of the respondents was 49.9 years ( $SD = 9.1$ ) with a range of 27 to 80 years old. The average number of years faculty were employed by the institution was 15.4 years ( $SD = 10.7$ ), with a range of 1 to 50 years.

Undergraduate student employees (25.4%) and advisees (16.5%) were the groups that respondents believed they primarily mentored. The respondents reported that on average, they spent 9.12 hours ( $SD = 7.9$ ) interacting with students per week. Faculty-student interaction ranged from a half an hour to 50 hours per week. Faculty reportedly mentored students for 4.96 hours per week ( $SD = 6.36$ ), with a range of zero hours to 50 hours per week.

*Objective 2: Determine the mentoring functions practiced and the extent to which they are practiced by faculty in the College of Agriculture.*

To accomplish this objective, respondents were asked to identify the extent to which they practiced each mentor function item based on the following scale: 1 = Never, 2 = Sometimes, 3 = Often 4 = Always. Items were based on the six mentoring functions: informal contact, role modeling, direct assistance, demonstration, observation and feedback, and professional development assistance. Table 1 displays means and standard deviations of each mentor function item. The role modeling function item, *As a mentor, I model the work behavior I expect my students to imitate*, received the highest mean value ( $M = 3.89$ ;  $SD = .69$ ). The informal contact function item, *As a mentor, I interact with my students socially outside of work*, received the lowest mean value ( $M = 1.99$ ;  $SD = 0.60$ ).

Table 1.  
*Distribution of means and standard deviations of the mentoring function items*

Function	n	Mean	SD
<b>Role Model Function Items</b>			
<i>As a mentor I . . .</i>			
model the work behavior I expect my students to imitate.	188	3.89	0.69
display professionalism while on the job.	187	3.73	0.50
exhibit commitment to my students' educational/career growth and development.	188	3.56	0.56
demonstrate realistic ways of solving problems.	188	3.41	0.57
believe my students will strive to be like me if they obtain a similar career.	185	2.24	0.81

Scale: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Always

Table 1.

*Distribution of means and standard deviations of the mentoring function items (continued)*

Function	n	Mean	SD
<b>Demonstration Function Items</b>			
<i>As a mentor I . . .</i>			
demonstrate effective listening skills in conversations with my students.	186	3.34	0.64
encourage my students to prepare for career advancement.	188	3.34	0.69
share ideas with my students about their projects.	188	3.21	0.67
suggest specific strategies for accomplishing project goals.	188	3.10	0.68
share history of my career with my students.	188	2.87	0.73
<b>Observation and Feedback Function Items</b>			
<i>As a mentor I . . .</i>			
convey feelings of respect for my students as individuals.	187	3.64	0.56
encourage my students to explore alternatives rather than just providing solutions.	187	3.16	0.66
provide suggestions concerning current problems my students encounter.	187	3.04	0.69
provide my students with objective feedback by citing specific examples.	185	2.88	0.65
encourage my students to try new ways of behaving on the job.	183	2.50	0.79
<b>Professional Development Assistance Function Items</b>			
<i>As a mentor I . . .</i>			
provide my students with support regarding their performances.	185	3.11	0.66
provide my students with assistance on how to solve problems they may face on the job.	188	3.00	0.73
give assignments that present opportunities to learn new skills.	188	2.99	0.72
speak highly of my students' abilities and skills to others.	188	2.96	0.66
help my students clarify their career goals.	187	2.94	0.75
<b>Informal Contact Function Items</b>			
<i>As a mentor I . . .</i>			
keep feelings and doubts my students have shared with me in strict confidence.	187	3.78	0.53
am easy to approach when my students have questions.	188	3.47	0.61
show interest in my students' activities outside of work (e.g. academics, extra curricular activities, etc.).	188	3.00	0.74
am available outside of working hours for help.	187	2.74	0.80
interact with my students socially outside of work.	188	1.99	0.60

Scale: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Always

Table 1.

*Distribution of means and standard deviations of the mentoring function items (continued)*

Function	n	Mean	SD
<b>Direct Assistance Function Items</b>			
<i>As a mentor I . . .</i>			
convey empathy for the concerns my students have discussed with me.	187	3.12	0.70
help my students meet new colleagues in the department.	188	2.82	0.76
share personal experiences as an alternative perspective to my students' problems.	187	2.74	0.70
give my students responsibilities that increase personal contact with other individuals on and off campus.	186	2.73	0.77
encourage my students to talk openly about anxiety and fears that detract them from their work.	187	2.60	0.877

Scale: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Always

To determine the overall extent to which each mentor function was practiced, a composite score for each function was formed by grouping the means of the five items for each function. The composite scores ranged from 2.80 to 3.27 (Table 2). Each mentor function had a composite score greater than 2.50 indicating respondents practiced these functions "often". The role modeling function had the highest composite score value of 3.27, and the direct assistance function had the lowest composite score value (2.80) of the six functions.

Table 2.

*Composite scores of the six mentor functions (n = 188)*

Mentor Function	n	Composite Score	Extent
Role Modeling	188	3.27	Often
Demonstration	188	3.17	Often
Observation and Feedback	188	3.05	Often
Professional Development Assistance	188	3.00	Often
Informal Contact	188	3.00	Often
Direct Assistance	188	2.80	Often

Scale: 1 = Never, 2 = Sometimes, 3 = Often, 4 = Always

*Objective 3: Compare the mentoring functions practiced using selected demographic variables.*

Respondents were grouped by selected demographic variables to compare mentoring function composite scores for the six mentor functions. The selected groups were: faculty title, department, responsibility area, and faculty age. Analysis of variance (ANOVA) was used to identify statistically significant differences among these groups. An alpha level of .05 was set a priori.

To determine if differences existed in the way each mentor function was practiced across faculty title, the three most common titles, full professors, associate professors, and assistant professors, were compared. Statistically, no significant differences in the mentoring functions practiced by professors, associate professors, or assistant professors were found. The mentoring function composite scores were also compared among the 15 College of Agriculture departments at the university. The 15 departments were classified into four groups: Biological Sciences, Social Sciences, Plant & Environmental Sciences, and Biosystems/Pre-Vet. When composite scores for the six mentor functions were compared among these four groups, no statistically significant differences were observed.

Further, faculty with primary extension, teaching, and research appointments were compared to determine if differences existed in the way each mentor function was practiced across responsibility area. ANOVA tests revealed that there were no statistically significant differences in the practice of the six mentoring functions based on faculty responsibility area.

The last comparison made was based on the age of the faculty. The three age categories formed were: 27 to 40 years, 41 to 60 years, and 61 to 80 years. Analysis revealed that there were no statistically significant differences when composite scores for the six mentoring functions were compared to the age of faculty members.

#### Conclusions/Recommendations/Implications

Based on the findings of this study, the typical faculty member in the College of Agriculture at Iowa State University was a full professor. The faculty member's primary responsibility area was research. The average faculty member was about 50 years old and has been employed by the university for 15 years. The average faculty member primarily mentored undergraduate student employees and advisees. The typical faculty member also spent approximately nine hours interacting and five hours mentoring students per week. These conclusions are similar to the findings of Eastman (1988), who surveyed agricultural education faculty at Iowa State University as protégés, researching the effect of mentors on their career development.

According to the overall mentor function composite scores of this study, faculty in the College of Agriculture at Iowa State University "often" practiced each of the six mentoring functions as presented in the Brzoska et al. (1987) Mentor Function Model. Actual composite scores revealed faculty were practicing the role modeling function most often and the direct assistance function least often. Kram (1985) and Fowler and O'Gorman (2005) reported similar findings of the mentor functions practiced by mentors in organizational/business settings.

When comparing mentoring function composite scores, analysis of variance (ANOVA) tests revealed that there were no statistically significant differences in the practice of the six mentoring functions across faculty titles, ages, responsibility areas, or departmental affiliations. Eastman (1988) also found no statistically significant differences when composite mentoring scores were compared across academic ranks (full professor, associate professor, and assistant professor) or age among the mentors of agricultural education faculty. These results indicate a

very significant finding for teaching and learning within this institution. The findings suggest that there is consistency in the mentoring process practiced by the faculty in the college.

It could be concluded that students in the College of Agriculture at Iowa State are benefiting from the faculty's ability to "*often*" mentor students using all six functions. Because of the development of these positive relationships, students are more likely to have a positive self-concept, realize higher academic achievement (Anderson, et al., 1995), and greater career and psychosocial development (Kram, 1985). Further study is needed to confirm whether this is actually the case.

It is recommended that the College of Agriculture at Iowa State University use these findings to further enhance the mentoring process. Because it had the lowest composite score, the direct assistance function should be the initial area of professional development. Topics that should be addressed include setting and evaluating goals, as well as organizing and managing materials and equipment. Additional professional development should include topics related to informal contact and assistance with professional development plans.

The findings of this study have implications for Colleges of Agriculture and universities throughout the country. Establishing an understanding of the mentoring processes that are occurring within departments, colleges, and universities will enable decision-makers to identify strengths and weaknesses. Faculty training and development can be designed around the findings. Any improvements to the process will positively impact the mentoring relationships and improve the career and psychosocial development of students. Improvements in mentoring have long-term implications because those students who are mentored today will become tomorrow's mentors, and will most likely model their mentoring experiences.

Implications of this study can be drawn from relating mentoring and its involvement in the learning process. By serving as a mentor, faculty members have the opportunity to enhance undergraduate students learning by initiating and facilitating learning experiences (Merriam et al., 1987). Unless faculty mentors are using all six functions and practicing them to a high extent, student learning may be hindered. Therefore, a College of Agriculture can benefit by investigating the mentoring functions practiced by faculty members in order to determine what information is necessary for mentor training workshops or seminars to include.

The findings and conclusions of this study produce several intriguing questions that deserve further investigation. Though the faculty reported they were practicing the mentoring functions "*often*," is there consistency between what they say they are doing in regards to mentoring and their actual mentoring behaviors? Likewise, is it possible the respondents did not understand the significance of the mentoring functions? In addition, is the rating of "*often*" a high enough rating to positively impact in the manner that the literature suggests? How do the perceptions of students in the College of Agriculture compare to this study's findings related to the faculty's perceptions related to mentoring functions? How would the results of this study compare to responses of faculty in other colleges at this institution, as well as other universities and Colleges of Agriculture throughout the country? Can universal mentoring functions be determined for faculty in Colleges of Agriculture?

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