

MENTORING FUNCTIONS PRACTICED BY UNDERGRADUATE FACULTY IN AGRICULTURE

Ashley J. Wolfe, Agriculture Instructor
Grinnell-Newburg Community Schools
Michael S. Retallick, Assistant Professor
Robert Martin, Professor and Chair
Iowa State University
Charles Steiner, Assistant Professor
University of Wisconsin – Platteville

Abstract

The literature has 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 and Life Sciences 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 used to measure the extent to which faculty practiced each mentoring function. Findings indicated faculty were “often” practicing the mentoring functions. Results indicated consistency in the mentoring process practiced by the faculty in the College of Agriculture and Life Sciences. 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. Throughout the epic, Athene (Goddess of Wisdom), disguised as Mentor, is portrayed as a classic transitional figure that helped Telemachus achieve his manhood and confirm his identity in the adult world. This story was one of the first to bring light to the structure of the mentor-protégé relationship. The term “protégé,” though not as old, was derived from the past participle of the French verb “protéger,” which means to care for or protect (Auster, 1984).

Today, mentoring occurs in many different program settings and many different formats for many different reasons. Furthermore, literature has indicated that mentoring is important for both youth and adults, whether in the workplace 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 an organization (e.g., are promoted more quickly and earn higher salaries), report more job and career satisfaction, and express lower turnover intentions than their nonmentored counterparts.

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 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. Anderson, Dey, Gray and Thomas (1995) reported improved academic achievement as a result of undergraduate mentoring.

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. 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. Mentoring has been known to benefit the mentors, too. Kram reported that because of personal involvement, mentors had new attitudes and values of support and nurture.

Regardless of 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, research on mentoring has often focused on the benefits of mentoring, rather than the practice of its specific functions (Fagenson-Eland, 1989; Scandura, 1992; Chao, 1997). The lack of research on mentoring functions leaves mentors uneducated about the mentoring process (Hudson, 2005), often fostering negative mentoring experiences.

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; mentoring themes have been virtually absent. Still, it seems essential to understand the mentoring functions being practiced and the extent to which faculty believe they are practicing them.

Theoretical Framework

Most of the research on mentoring has been conducted in business and industry settings rather than educational institutions (Fagenson-Eland, 1989; Scandura, 1992; Orpen, 1995). Though forms of mentoring have been traditionally associated with higher education, particularly faculty to graduate student mentoring (Merriam, Thomas, & Zeph, 1987; Anderson, et al., 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). Kram (1985) described mentoring functions as "essential characteristics that differentiate developmental relationships from other relationships" (p. 22). She further explained that a mentoring 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 is viewed as detrimental to both career and psychosocial development.

Within these findings, Kram (1985) identified nine individual mentoring functions that she classified into two broad categories: career and psychosocial functions. Kram explained that career functions “assist the protégé in learning the ropes of organizational life and in preparing for advancement opportunities” (p. 23). Psychosocial functions involve aspects that affect each mentorship partner on a more personal level.

Kram’s (1985) model has been criticized for its lack of relevance to education (Jacobi, 1991; Fowler & O’Gorman, 2005). In Jacobi’s synthesis of mentoring literature in education, she reported that Bandura’s Social Learning Theory often provided the theoretical framework for mentoring even though it fails to address other aspects of mentoring, such as professional or emotional support. Fowler and O’Gorman (2005) repeated Kram’s qualitative work and found that Kram’s model indeed lacked a learning facilitator component, a function that focuses on meta-skills, self-reflection, and

collaborative learning. As a result, the authors concluded that Kram’s model was not acceptable for mentoring in education.

However, Brzoska, Jones, Mahaffy, Miller, and Mychals (1987) developed a mentoring model for educational settings which included Kram’s career and psychosocial functions (Figure 1). The model 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, listens to any concerns or accomplishments. Brzoska et al. also reported that role modeling exhibits professionalism, demonstrates realistic ways of problem solving, and projects enthusiasm, self-confidence, security, and competence.

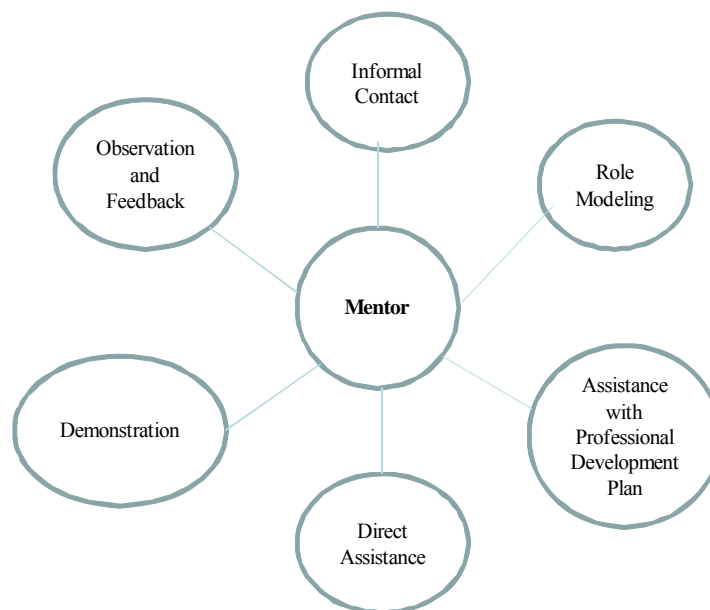


Figure 1. Brzoska et al. (1987) mentor functions model.

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

According to Brzoska et al. (1987), mentors should directly assist their protégé with setting and achieving goals, organizing and managing materials or equipment, and suggesting techniques on how to keep records or form strategies 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, an observation, and a post-observation conference. Brzoska et al. defined professional development planning as not just teaching specific job skills, but serving as a resource to provide information or opportunities for potential careers or further education.

In summary, a review of literature revealed that mentoring in educational settings is essential for career and psychosocial development. Although there is an increase in interest in academia regarding undergraduate mentoring, little research has been conducted on the extent to which faculty are fulfilling the mentoring role. Using the Brzoska et al. (1987) mentor functions model as the frame, the research question for this study was: To what extent do faculty in the College of Agriculture and Life Sciences (CALs) practice each of the six functions of the undergraduate mentoring process?

Purpose and Objectives

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

Objectives of this study were to:

1. Determine selected demographics of the faculty participants
2. Determine the mentoring functions practiced by CALs faculty
3. Determine the extent to which the faculty practiced the mentoring functions

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 CALs faculty members at Iowa State University. A list of the current CALs faculty was obtained from the college dean's office, which resulted in a total accessible population of 378.

A four-part survey instrument was developed. The first two sections of the questionnaire were designed to determine which mentoring functions were practiced and the extent to which each function was practiced by CALs faculty. Noe's (1988) mentor function instrument was used for these two sections. Some wording was changed to better communicate with the participants of the study. The questionnaire consisted of 30 questions, 5 questions for each of the six mentoring functions listed in the Brzoska et al. (1987) model. Dillman's (2000) pre-testing approach was used to determine content and face validity of the instrument. Internal consistency was determined post hoc using Cronbach's alpha for each of the six functions. Using the rules of thumb suggested by George and Mallery (2003), informal contact function had a poor alpha ($\alpha > .5$), and the other five constructs were either acceptable ($\alpha > .7$) or good ($\alpha > .8$).

The next section of the instrument focused on general mentoring information and was designed to generate information such as how many hours faculty interacted with and actually mentored undergraduates per week. The last section contained demographic questions.

Faculty were contacted following Dillman's (2000) recommended five contacts: 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 (www.surveymonkey.com) was used to administer the questionnaire and track respondents and nonrespondents. 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 usable return rate of 49.7%.

Nonresponse error was controlled by using a strategy suggested by Linder, Murphy, and Briers (2001). A random sample of 20 nonrespondents were contacted via telephone and administered the questionnaire to ensure the statistical power necessary to detect differences between respondents and nonrespondents. Analysis confirmed no statistically significant differences existed between the groups.

Demographic questions associated with objective one were analyzed using frequencies and percentages. Objectives 2 and 3 were analyzed using means and standard deviations. A summated mean was calculated for each function to determine the extent to which faculty members practiced each function.

Findings

Objective 1: Determine selected demographics of the faculty participants

The majority of the respondents were 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%). Remaining respondents (19.7%) were non-tenure track faculty within the CALS. Respondents' primary responsibility area was research (51.6%), followed by teaching (24.2%) and extension (13.4%). The average age of the respondents was 49.9 years old ($SD = 9.1$)

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.

Respondents believed they primarily mentored undergraduate student employees (25.4%) and advisees (16.5%). Respondents reported that, on average, they spent 9.12 hours ($SD = 7.9$) interacting with students per week. Faculty-student interaction ranged from half an hour to 50 hours per week, averaging 4.96 hours per week on mentoring ($SD = 6.36$).

Objective 2: Determine the mentoring functions practiced by faculty in CALS

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

Table 1.
Distribution of Means and Standard Deviations of the Mentoring Function Items

Function	N	μ	SD
Role model function items			
<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
Demonstration function items			
<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
Observation and feedback function items			
<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
Professional Development Assistance Function Items			
<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

Function	<i>N</i>	μ	<i>SD</i>
Informal contact function items			
<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, extracurricular 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
Direct assistance function items			
<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	0.87

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

Objective 3: Determine the extent to which the faculty practiced the mentoring functions

To determine the overall extent to which each mentor function was practiced, a summated mean was calculated for each function. The summated means were evaluated on the following scale: 0 to 1.49 = Never, 1.50 to 2.49 = Sometimes, 2.50 to 3.49 = Often, 3.50 to 4.00 = Always. The summated means 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.

Because of the lack of internal consistency with the responses for the informal contact function, those statements should be analyzed and reviewed individually. Because of the personal nature of these questions, there seemed to be a greater inconsistency in faculty responses. The five questions covered a wide variety of types of informal contact ranging from confidentiality ($\mu = 3.780$) to socializing outside of work ($\mu = 1.99$) (Table 1).

Table 2.

Summated Mean Scores for the Six Mentor Functions (n = 188)

Mentor function	n	Summated μ	α	Extent
Role modeling	188	3.27	.70	Often
Demonstration	188	3.17	.79	Often
Observation and feedback	188	3.05	.72	Often
Professional development assistance	188	3.00	.79	Often
Informal contact	188	3.00	.55	Often
Direct assistance	188	2.80	.81	Often

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

Conclusions/Recommendations/ Implications

CALS faculty reported regularly practicing the six functions of the mentoring process. The mentoring functions that received the highest ratings were those most directly related to teaching and learning as well as those that occur in professional settings. Perhaps such findings suggest that faculty are more comfortable practicing the more formal, structured aspects of mentoring like those attributes associated with the role modeling and demonstration functions. Conversely, the direct assistance function had the lowest summated mean. The questions representing the direct assistance function were more personal in nature and focused on emotional relationships. Perhaps faculty are less comfortable providing mentorship in those areas. Further research is needed determine the cause of lower summated means for the direct assistance function.

CALS should use these findings to further enhance the mentoring process. Two areas of focus for professional development should be informal contact and direct assistance. The results of this study indicate that faculty are less likely to practice those functions that are not part of the professional setting or are a result of a more personal relationship. Faculty may be less aware of what is appropriate in such situations. Professional development activities that

outline ethical principles, professionalism, and best practices in these two mentoring areas may increase the extent to which faculty practice them. Improved mentoring may lead to the increased development of positive relationships, resulting in students who are more likely to have a positive self-concept, realize higher academic achievement (Anderson et al., 1995) and experience greater career and psychosocial development (Kram, 1985). Further study is needed to confirm these findings.

The findings of this study have implications for CALS and universities throughout the country. The mentoring function model (Brzoska et al., 1987) provides a framework for formalizing the mentoring process and sets the stage for providing appropriate faculty professional development. Any improvements to the process may positively affect the mentoring relationships and advance the career and psychosocial development of students. Improvements in mentoring may have long-term implications because those students who are mentored today will become tomorrow's mentors and will most likely model their mentoring experiences.

Faculty mentors have the opportunity to enhance undergraduate education by initiating and facilitating learning experiences (Merriam et al., 1987). Unless faculty mentors are using all six functions and practicing them to the highest extent possible, student learning may be hindered.

Therefore, CALS can benefit by investigating the mentoring functions practiced by faculty members in order to determine what information should be included in mentor training workshops and seminars.

Findings and conclusions of this study suggest several intriguing questions that deserve further investigation. Although the faculty reported they were practicing the mentoring functions "often," is there a correlation between what they espouse and the mentoring behaviors they actually practice? 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 have a positive impact on students as suggested in the literature? How do students in the CALS perceive their mentoring experiences in relation to the conceptual framework and findings of this study? How would the results of this study compare with responses of faculty in other colleges at this institution as well as at other universities and CALS throughout the country? Can universal mentoring functions be determined for faculty in CALS? These are questions for future studies.

References

- Anderson, G., Dey, E., Gray, M., & Thomas, G. (1995). *Mentors and protégés: The influence of faculty mentoring on undergraduate academic achievement*. (ERIC Document No. 400761)
- Auster, D. (1984). Mentors and protégés: Power-dependent dyads. *Sociological Inquiry*, 54(2), 142-153.
- Brzoska, T., Jones, J., Mahaffy, J., Miller, J. K., & Mychals, J. (1987). *The mentor teacher handbook*. Portland, OR: Northwest Regional Educational Laboratory.
- Butcher, S. H., & Lang, A. (1890). *The odyssey of homer done into English prose*. London: Macmillan.
- Chao, G. T. (1997). Mentoring phases and outcomes. *Journal of Vocational Behavior*, 51(1), 15-28.
- Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method* (2nd ed.). New York: John Wiley and Sons.
- Fagenson-Eland, E. A. (1989). The mentor advantage: Perceived career/job experiences of protégé verses non-protégé. *Journal of Organizational Behavior*, 10(4), 309-320.
- Fagenson-Eland, E. A., Marks, M. A., & Amendola, K. L. (1997). Perceptions of mentoring relationships. *Journal of Vocational Behavior*, 51(1), 29-42.
- Fowler, J. L. & O'Gorman, J. G. (2005). Mentoring functions: A contemporary view of the perceptions of mentees and mentors. *British Journal of Management*, 16(1), 51-57.
- George, D., & Mallery, P. (2003). *SPSS for windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.
- Hudson, P. (2005). Identifying mentoring practices for developing effective primary science teaching. *International Journal of Science Education*, 27(14), 1723-1739.
- Jacobi, M. (1991). Mentoring and undergraduate academic success: A literature review. *Review of Educational Research*. 61(4), 505-532.
- Kram, K. E. (1980). Mentoring processes at work: Developmental relationships in managerial careers. *Dissertation Abstracts International*, 41, (05), 1960B. (UMI No. 8025206)
- Kram, K. E. (1983). Phases of the mentor relationship. *Academy of Management Journal*, 26(4), 608-625.
- Kram, K. E. (1985) *Mentoring at work*. Glenview, IL: Scott, Foresman and Company.
- Levinson, D. J., Darrow, C. N., Klein, E. B., Levinson, M. H., & McKee, B. (1978).

The seasons of a man's life. New York: Alfred A. Knopf.

Linder, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education*, 42(4), 43-53.

McCarthy, M. C. & Mangione, T. L. (2000). How undergraduate student identify and utilize informal mentors. *NACADA Journal*, 20(2), 31-37.

Merriam, S. B., Thomas, T. K. & Zeph, C. P. (1987). Mentoring in higher education: What we know now. *The Review of Higher Education*, 11(2), 199-210.

National Center on Education and the Economy, Commission on the Skills of the American Workforce. (1990). *America's choice: High skills or low wages!* Rochester, NY: National Center on Education and the Economy.

Noe, R. A. (1988). An investigation of the determinants of successful assigned mentoring relationships. *Personnel Psychology*, 41(3), 457-479.

Orpen, C. (1995). The effects of mentoring on employees' career success. *Journal of Social Psychology*, 135(5), 667-668.

Scandura, T. A. (1992). Mentor and career mobility: An empirical investigation. *Journal of Organizational Behavior*. 13(2), 169-174.

School-to-Work Opportunities Act of 1994, Pub. L. No. 103-239. § 1, 108 Stat. 568 (1994).

Smink, J. (1999). *A training guide for mentors*. Clemson, SC: National Dropout Prevention Center.

Stanley, C. A., & Lincoln, Y. S. (2005). Cross-race faculty mentoring. *Change*, 37(2), 44-50.

Van Ast, J., & Field, D. W. (2005). Reflections of community college students regarding mentee/instructor teaching and learning effectiveness. *Community College Journal of Research and Practice*, 29, 173-189.

ASHLEY J. WOLFE is an agriculture instructor at Grinnell-Newburg Community Schools, 1333 Sunset Street, Grinnell, Iowa 50112. E-mail: awolfe@grinnell.k12.ia.us.

MICHAEL S. RETALLICK is an Assistant Professor in the Department of Agricultural Education and Studies at Iowa State University, 206 Curtiss Hall, Ames, IA 50011. E-mail: msr@iastate.edu.

ROBERT MARTIN is Professor and Chair of the Department of Agricultural Education and Studies at Iowa State University, 201 Curtiss Hall, Ames, IA 50011. E-mail: drmartin@iastate.edu.

CHARLES STEINER is an Assistant Professor in the School of Agriculture at University of Wisconsin – Platteville, 320 Pioneer Tower, Platteville, WI 53818. E-mail: steinerc@uwplatt.edu.

This paper is a product of the Iowa Agriculture and Home Economics Experiment Station, Ames, Iowa. Project No. 3613 and sponsored by the Hatch Act and State of Iowa.