American Association for Agricultural Education

NORTH CENTRAL REGION CONFERENCE

PROCEEDINGS
Monday, September 22, 2008

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AN EXPLORATION OF THE RELATIONSHIP BETWEEN THE MOTIVATIONAL
PROFILE OF SECONDARY STUDENTS ENROLLED IN A COMPREHENSIVE AG
PROGRAM AND ACADEMIC ACHIEVEMENT

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Abstract

This study examined the personal factors that may affect the self-determination of students who elected to enroll in a comprehensive agriculture program. A group of 114 freshmen were randomly selected through a computerized lottery from approximately 1500 applicants from various public and private grade schools throughout the city to attend the Chicago High School for Agricultural Sciences. The personal factors, also known as the motivational profile, consisted of the student's academic aptitude, the type of motivation to attend school, influences in the decision to attend the high school, satisfaction with the decision to attend, and perceived effort during academic tasks related to agriculture. The results show that the sample reported having a choice in the decision to attend the school. This perceived autonomy may have contributed to the effort they put into academic tasks and thus improved academic achievement. In addition, significant relationships were found between gender and the motivational profile, between the factors influencing autonomy support and outcomes of self-determination, and among factors in the motivational profile and academic achievement. The indented use of the motivational profile is to help understand the relationship among personal, environmental and behavior factors in students in order to develop interventions that target student engagement and academic achievement.

Introduction

Engagement and motivation towards learning has been related to positive adaptation in academic environments; including the reduction of dropout rates and increase in levels of student success (Blank, 1997; Kushman, 2000; Woods). However, maintaining students' interest in school and motivating them to succeed are challenges that even the most experienced of teachers face. Studies have shown that student engagement in school drops periodically as students get older. Lack of interest in schoolwork, homework and school related activities come into consideration around the time students reach middle school (Anderman & Midgley, 1998; Sullivan, Tobias, & McDonough, 2006; Lumsden, 1994). Furthermore, motivation to complete academic tasks is affected by various unique factors (Bandura, 1986). One factor that affects motivation is an individual's environment; the influence of teachers, parents, siblings, classmates, friends, and the existence of other activities that compete for the attention and time of the student. Another factor is personal; the individual's aptitude, self-efficacy, self-regulatory processes, and other abilities (Bandura). There are important individual differences among learners both in motivation to perform academic tasks and preferences about when, where, how, and with whom they prefer to perform (Hong & Milgram, 2000). A number of studies have shown that an individual's learning techniques and the conditions under which academic tasks are done increase compliance with these tasks and raises academic progress (Hong, Tomoff,

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Wozniak, Carter, & Topham, 2000). The question remains, what can an educator do to engage students who lack motivation to persist in educational endeavors?

Dewey (1938) highlighted two strong and opposing viewpoints about what motivates a learner and how to structure education in accord with each viewpoint. First, there is the theory that motivation for learning comes from outside the learner. They must receive structures, rewards, and incentives in order to be successful in school. This viewpoint emphasizes the teacher providing extrinsic controls to motivate students. The other theory assumes that motivation is already present and can be catalyzed or facilitated in the context of school. This is accomplished by the teacher and parents providing encouragement or nurturing the students' educational interests. The initiation, direction, intensity and persistence of such human behavior is called *motivation* (Green, 1994).

Since its inception, motivation has been studied from several perspectives (e.g. deCharms, 1976; Deci, 1975; Deci & Ryan, 2000; Evelein, Korthagen, & Brekelmans, 2008; McClelland, 1987; Rutter, Smith, & Hall, 2002; Stanford & Couch, 1985; Vallerand & Bissonette, 1992). Some studies have focused on the delineation of types of motivation while others have focused on understanding the regulatory processes of motivation. The most widely used perspective on the regulatory processes in recent years suggests that behavior can be seen as intrinsically and extrinsically motivated (de Charms, 1968; Deci, 1971, 1975; Deci & Ryan, 2000). *Intrinsic motivation* refers to behaviors that an individual engages in for one's own pleasure (Deci, 1971). The individual voluntarily performs an act in the absence of material rewards or constraints. They are satisfied just because they were able to perform the task. Conversely, extrinsically motivated behaviors are those that an individual engages in because the behaviors are a means to an end and not because of the internal satisfaction derived from the tasks (Deci, 1975; Kruglanski, 1978). Originally, it was believed that *extrinsic motivation* referred to behaviors an individual engaged in due to a lack of self-determination and therefore could only be prompted by external events (Vallerand & Bissonette). However, researchers have proposed that different types of extrinsic motivation exist (Deci & Ryan, 1985, 1987, 2000; Ryan & Connell, 1989; Vallerand & Bissonette).

In their *self-determination theory* (SDT), Deci and Ryan (1985) introduced a subtheory, the *organismic integration theory* (OIT), to detail the different forms of extrinsic motivation and the contextual factors that either promote or hinder internalization and integration. The four types of extrinsic motivation are (a) external, (b) introjected, (c) indentified, and (d) integrated regulation (Vallerand & Bissonette, 1992). *External regulation* occurs when the behavior is regulated with outside inducements, typically with rewards or constraints. *Introjected regulation* occurs when behavior is internally regulated and the individual is self-imposing rewards or constraints. For example, a student might volunteer to answer a question but is only doing it because no one else will. *Identified regulation* occurs when a behavior is valued by the individual and is perceived as self-chosen. For example, a student decides to take advance placement courses because it will boost his grade point average. Finally, *integrated regulation* occurs when the behavior is performed because it fits within the individual's self concept. For example, a student turns in all of her homework and studies for every exam instead of participating in leisure activities because she values her education and have integrated the behaviors needed to be successful in school into other facets of her life.

In addition, a third construct, *amotivation*, was suggested by Deci and Ryan (1985) in order to fully understand all facets of human behavior. Amotivation, occurs when an individual perceives a lack of contingency between their behavior and outcomes. The individual perceives no rewards or constraints by participating in the task. In this event, the individual will eventually cease participation. Amotivation occurs because the individual cannot identify a sense of purpose and has no expectation for reward or control over changing the course of events. It is likened to learned helplessness since the individual experiences feelings of incompetence and uncontrollability (Abrahamson, Seligman, & Teasdale, 1978; Vallerand & Bissonette, 1992).

The starting point for SDT assumes that humans are active, growth-oriented organisms who are naturally inclined toward integration of their psychological elements into a unified sense of self and integration of themselves into large social structures (Ryan & Powelson, 1991). Therefore, the adaptive nature of humans incline them to engage in interesting activities, to stretch their capacities, to pursue connectedness in social groups, and to integrate psychological and interpersonal experiences into a relative unity. Simply stated, humans are motivated by an innate desire to satisfy the need for *autonomy*, *competence,* and *relatedness* (Ryan & Powelson). The term *autonomy* refers to "self-rule." It describes an individual's ability to regulate one's behavior through governing the initiation and direction of actions. The term *competence* refers to the sense of accomplishment and effectiveness towards exercising one's capabilities under challenging conditions. Individuals have an innate need to stretch their skills and schemata just beyond one's current level of functioning. Finally, the term *relatedness* refers to the emotional and personal bonds between individuals. It reflects the human need for contact, support, and to commune with others. However, it does not just refer to a connection, it is also refers to the experience of developing well-being and cohesion with all individuals involved (Ryan & Powelson). The more an individual perceives a course of action will satisfy these needs the more self-determined that individual will become leading to more internally regulated and persistent behaviors (Deci & Ryan, 1991; Ryan & Powelson, 1991).

According to the SDT, individuals are inherently motivated to integrate the self-regulation of extrinsically motivated activities that are useful for effective functioning in society but are not inherently interesting (Deci, Eghrari, Patrick & Leone, 1994). This is what has been termed *internalization*. Internalization concerns all regulations which were originally elicited through extrinsic incentives but have been transformed into regulations by self (Ryan, 1993). The degrees of reasons on the self-determination continuum is viewed as a reflection of the internalization process where the individual moves from the less self-determined forms of regulation (i.e., amotivated, external and introjected) to more self-determined forms (i.e., identified and intrinsic) (Pelletier, Fortier, Vallerand, & Bri`ere, 2001). Theorists purport that in order for students to utilize more self-determined regulation, the educational contexts must support an individual's autonomy whereas contexts that are viewed as controlling are hypothesized to undermine self-determined motivation (Pelletier, et al.).

The present public educational system requires that most students be assigned to a specific school based on residence and taught a prescribed curriculum. This format may be perceived by students as controlling and therefore students may display less self-determined forms of regulation. A major consequence of less self-determination would be disengagement from school and academic activities (Ryan & Powelson, 1991). Therefore it is proposed that allowing

students to have more decision-making power in academic decisions may create a sense of autonomy leading to increased engagement and the potential for higher levels of academic success. This study seeks to explore if the ability for students to elect into a comprehensive agricultural program provides the perceived autonomy that yields to increased engagement and subsequently academic achievement.

Conceptual Framework

The conceptual framework for this study borrows from Bandura's (1986) *social cognitive theory* (SCT). Bandura's social cognitive theory postulates that motivational processes influence both learning and performance of cognitive skills, social skills, motor skills, strategies, and behaviors (Pintrich & Schunk, 2002). He used *self-efficacy* as a key variable and integrated the motivational process with *self-regulation* (Bandura, 1986, 1989). Zimmerman (1998) described self-regulation in a social cognitive context as a cyclical process that is comprised of three phases: *the forethought phase*; *the performance (volitional) control phase*; and *the self-reflection phase*. Simply stated, with each learning task, students analyze how the task relates to their *self-image*, decide on a path of action, and reflects on the internal and external factors that influenced the outcome. This within person interaction is noted with the small loop emanating from the personal factors in Figure 1. As students go through this cyclical process of self-regulation due to changes in personal, behavioral, and environmental factors, their strategies, cognitions, affects, and behaviors for learning will change as well (Pintrich & Schunk). However, instead of *self-efficacy* as the key variable for motivating the student, this framework used *self-determination* from an organismic perspective to explain personal factors of motivation.

The adaptation is due to the fact that self-efficacy focused specifically on the extent to which people believed they were capable of engaging in behaviors that would lead to desired outcomes (Deci & Ryan, 2000). This belief of self-capability was formed by past extrinsic rewards or consequences and is driven by the desire to either obtain more rewards or avoid consequences. Unfortunately, this assertion did not take into account the complexity of motivation by addressing *intrinsic motivation* and *amotivation* (Deci & Ryan). Although *self-determination theory* and SCT have some similarities in that both have a self-regulatory component for motivation as well as address the effects of the environment on student behavior, they are two distinct theories with inherent differences and should be treated as such. It is for this reason that the *organismic social cognitive perspective* (OSCP) was developed to respect the inherent differences but address the effects of educational interventions on student motivation and engagement from a more holistic perspective (see Figure 1).

Similar to the triadic reciprocality model for SCT, the OSCP model demonstrates the interaction between personal, environmental, and behavioral factors which influence students' interests, engagement, and *volition* to learn. The term, motivational profile, was used to identify the personal factors associated with self-determination as either influences or outcomes. These factors are related to the satisfaction of the three basic psychological needs (i.e. autonomy, relatedness & competence). Autonomy and relatedness were measured using influences in the decision to attend the agricultural high school. According to Esters and Bowen (2004), parental influence is a factor in the decision for students to enroll in an urban agricultural education program. If this finding holds true for this sample, it is important to explore the impact parental

influence has on perceived autonomy support (i.e. autonomy and relatedness). Competence was measured using academic aptitude (7th grade reading *T*-score). In addition, outcomes of self-determination were measured using personal factors (i.e. types of motivation to attend school, satisfaction with decision to attend the agricultural high school, and perceived effort on academic tasks related to agriculture) and behavioral factors (i.e. academic achievement). Although types of motivation can be used as an influence of behavioral factors, it was only used as a personal outcome for the purpose of this study. Furthermore, environmental factors were beyond the scope of this study and were not addressed.
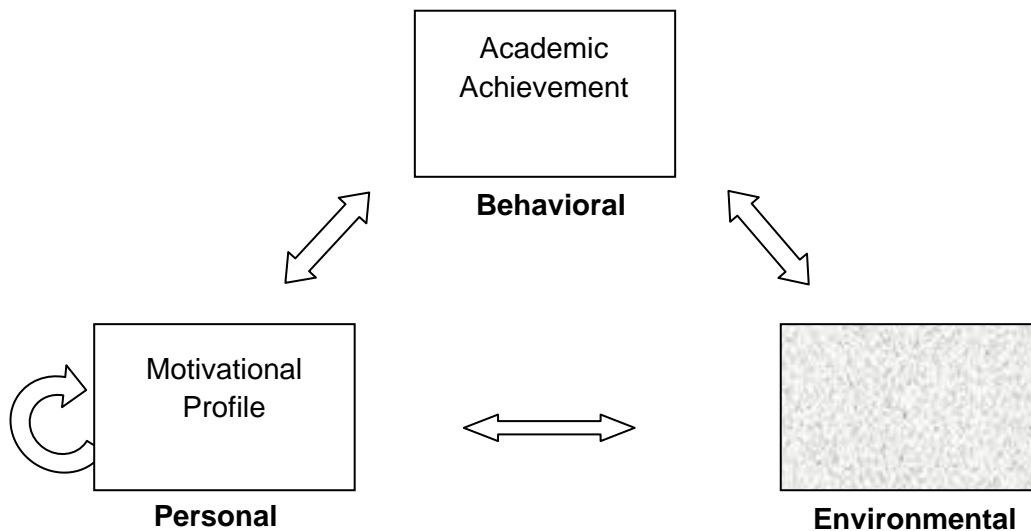
Figure 1. Conceptual Model for the Organismic Social Cognitive Perspective

Motivation is important to look at when discussing student academic achievement because research shows a relationship between motivation and students persistence in school (e.g. Ames, 1990; Rader, 2005; Reeve & Jang, 2006; Wolfe, 1996). A study published by Vallerand and Bissonnette (1992) purported that individuals who persisted in a course had reported being more intrinsically motivated, more identified and integrated, and less amotivated toward academic activities than students who dropped the course. They also revealed that females were more intrinsically motivated, integrated, and identified and less externally regulated and amotivated than males. These results may give claim to the hypothesis that individuals who are more self-determined will be more engaged in school as well as possess the adaptive mechanisms that yield greater academic achievement.

Purpose & Research Objectives

Using the term motivational profile, this study sought to describe the personal factors associated with self-determination. These factors can be described as *events* that occur in the cognitive, affective, and psychomotor domains. In order to understand how they influence an individual to act, motivation must first be defined and described. Thus, the purpose of this study was to examine the personal factors that may affect the self-determination of students who have elected to enroll in a comprehensive agricultural education program. By understanding the outcomes of these personal factors, the motivational profile can be used to help explain the

relationship among personal, environmental and behavior factors in students. Furthermore, interventions can be developed from this understanding that target student engagement and academic achievement. This exploratory study was guided by the following research objectives.

1. Describe students on gender, motivational profile (academic aptitude as measured by the Illinois Standardized Achievement Test (ISAT) in reading, type of motivation to attend school, influences in the decision to attend the agricultural high school, satisfaction with the decision to attend, and perceived effort during academic tasks related to agriculture), and academic achievement (first semester GPA).

2. Determine the relationships between gender and motivational profile (academic aptitude as measured by the ISAT in reading, type of motivation to attend school, influences in the decision to attend the agricultural high school, satisfaction with the decision to attend, and perceived effort during academic tasks related to agriculture).

3. Determine the relationships between factors influencing perceived autonomy (influences in the decision to attend the agricultural high school) and the outcomes of self-determination (type of motivation to attend school, satisfaction with decision to attend the school, perceived effort during academic tasks related to agriculture, and academic achievement).

Methods and Procedures

This study was descriptive-correlational in design. The population was freshmen students from Chicago, IL who were enrolled in the public school system. A computerized lottery was used to select 114 freshmen students from approximately 1500 applicants from various public and private grade schools throughout the city to attend the Chicago High School for Agricultural Sciences (CHSAS). Most agriculture programs are in schools that serve a small community. Due to resource limitations, CHSAS was selected because it served the entire metropolitan area, lending to more diversity in the sample and a better representation of students in Chicago.

Students' motivational profile was measured using an adapted version of the Academic Motivation Scale (AMS) – High School Version (Vallerand, Pelletier, Blais, Brière, Senécal, & Vallières, 1992). The scale measured intrinsic motivation, three forms of extrinisic motivation, amotivation, rate in which specified individuals influenced the student's decision to attend the magnet school, and degree of satisfaction with that decision at the beginning of the school year and three months later (1 = Does not correspond at all, 2-3 = Corresponds a little, 4 = Corresponds moderately, 5-6 = Corresponds a lot, and 7 = Corresponds exactly). Students' gender and 7th grade reading aptitude stanine were reported by the instructor. Stanines were then converted into *T*-scores by the investigator. First semester grade point average (GPA) was obtained from official records provided by the school. Vallerand et al. (1989; 1992; 1993) established validity of the AMS using confirmatory factor analysis to correlate each subscale among themselves and the tenets of Deci & Ryan's (1985) motivational theory. These studies found that instrinsic motivation and amotivation were negatively correlated ($r = -.82$), which is predicted by self-determination theory. In addition, a panel of experts consisting of an educational psychologist, a methodologist, and three content experts reviewed the profile for face and content validity. Using a national sample of high school students, Cronbach's alpha

coefficients for the subscales ranged from .58 to .84 (n = 1,062). Test-retest reliability displayed temporal stability with a mean correlation value of .79 over a one-month period. Test/retest was conducted on a pilot group (n = 28) to confirm reliability of the supplemental questions with a percent agreement of 82% or better.

Parental, participant, and administrative consent was received prior to commencement of the study. All participants were invited to a general meeting room in the school to complete the data collection instrument. Each student was asked to provide their student identification number on the form. The data from the AMS was matched to each student's academic aptitude score, semester GPA and gender by their student identification number. Data were analyzed in SPSS using descriptive statistics for research objective one, point-biserial correlations for research objectives two, and Pearson Product Moment correlations for research objective three. The alpha level was set at a .05 *a priori*. In addition, Davis' convention (1971) was used to describe the magnitude of the correlations.

Findings

Research objective one sought to describe subjects on gender, motivational profile (academic aptitude as measured by the state reading assessment score, type of motivation to attend school, influences in the decision to attend the agricultural high school, satisfaction with that decision, and perceived effort during academic tasks related to agriculture), and academic achievement as measured by the first semester GPA. Of the 114 participants in this study, the majority were female (56%) and were categorized as meeting or above reading standards based on the state-wide standardized assessment scores. The state's indication for meeting the reading standard is a *T*-score ranging from 50-56. The participants of this study *T*-scores ranged from 40 to 70 (M = 53.9, SD = 5.3). In terms of the participant's type of motivation to attend school, the mean scores ranged from 4.6 to 6.2 for the intrinsic and extrinsic subscales and was 2.5 for the amotivation subscale (see Table 1). First semester GPAs ranged from 0.27 to 4.0 on a 4-point scale. The mean GPA for the sample was 2.23 (SD = 1.01).

Table 1
Academic Motivation to Attend School (n = 114)

Type of Motivation	Mean	SD
Intrinsic Motivation	4.6	0.9
Identified Regulation	5.8	1.0
Introjected Regulation	6.2	0.9
External Regulation	5.7	1.2
Amotivation	2.5	1.5

Note. The ratings are as follows: 1 = Does not correspond at all, 2-3 = Corresponds a little, 4 = Corresponds moderately, 5-6 = Corresponds a lot, and 7 = Corresponds exactly.

Table 2 summarizes the influences on students' decision to attend the agricultural high school, satisfaction with that decision, and perceived effort on academic tasks related to agriculture. The participants reported self ($M = 4.9$, $SD = 1.9$) as the strongest influence in the decision to attend the school followed by family decision ($M = 4.2$, $SD = 2.1$). The participants reported mothers as having a slight influence ($M = 3.6$, $SD = 2.2$) and fathers as having little influence ($M = 3.0$, $SD = 2.2$) on the decision to attend. The participants also reported that prior to the first day of class, as well as three months later, that they were moderately satisfied with the decision to go to the comprehensive agricultural high school with a mean score of 4.7. In addition, participants reported putting a high amount of effort ($M = 5.4$, $SD = 1.3$) into academic tasks related to agriculture.

Table 2
Factors Influencing a Student's Motivational Profile ($n = 114$)

Influence	Mean	SD	Median	Mode
Self-Selected to Attend	4.9	1.8	5.0	7
Family Decision to Attend	4.2	2.1	4.0	4
Mother's Decision to Attend	3.6	2.2	4.0	1
Father's Decision to Attend	3.0	2.2	3.0	1
Satisfaction Before School Began	4.8	2.1	5.0	7
Satisfaction Three Months Later	3.3	2.3	3.0	1
Perceived Effort	5.4	1.3	5.5	5.5

Note. The ratings are as follows: 1 = Does not correspond at all, 2-3 = Corresponds a little, 4 = Corresponds moderately, 5-6 = Corresponds a lot, and 7 = Corresponds exactly.

Research objective two sought to determine the relationships between gender and the motivational profile (academic aptitude as measured by the state reading assessment, type of motivation to attend school, influences in the decision to attend the high school, satisfaction with the decision to attend, and perceived effort during academic tasks related to agriculture). There were three significant relationships between gender and the motivational profile (see Table 3). There were low and positive relationships between gender and introjected regulation ($r_{pb} = .24$, $p < .05$) and external regulation ($r_{pb} = .22$, $p < .05$). In addition, there was a low and negative relationship between gender and amotivation ($r_{pb} = -.28$, $p < .05$).

Table 3

Point-Biserial Correlation between Gender and Motivational Profile (*n* = 114)

Motivational Profile	Gender
Academic Aptitude	.09
Intrinsic Motivation	-.11
Identified Regulation	.17
Introjected Regulation	.24*
External Regulation	.22*
Amotivation	-.28*
Self-Selected to Attend	-.04
Family Decision to Attend	-.12
Mother's Decision to Attend	.33
Father's Decision to Attend	-.15
Satisfaction Before School Began	-.06
Satisfaction Three Months Later	.13
Perceived Effort	.10
Academic Achievement	.06

Note: 0 = Male & 1 = Female, *$p < .05$

Research objective three sought to determine the relationships between factors influencing perceived autonomy (influences in the decision to attend the agricultural high school) and the outcomes of self-determination (type of motivation to attend school, satisfaction with decision to attend the school, perceived effort during academic tasks related to agriculture, and academic achievement). There were significant relationships between the factors influencing autonomy support and outcomes of self-determination (see Table 4). Self-selecting to attend the high school and intrinsic motivation (*r* = .39, *p* < .05) had a low and positive relationship and self-selection and introjected regulation (*r* = .26, *p* < .05) had a moderate and positive relationship. Also existing were a moderate and positive relationship between self-selection and satisfaction before school began (*r* = .45, *p* < .05) and a low and positive relationship between self-selection and satisfaction after three months (*r* = .29, *p* < .05).

There was a low and positive relationship between family decision and external regulation ($r = .21$, $p < .05$) and a moderate and positive relationship between family decision and intrinsic motivation ($r = .31$, $p < .05$). Family decision had a moderate and positive relationship ($r = .38$, $p < .05$) and mother's decision had a low and negative relationship ($r = -.22$, $p < .05$) with satisfaction with the decision to attend the high school before school began. Amotivation had moderate and positive relationships with mother's choice ($r = .35$, $p < .05$) as well as father's choice ($r = .42$, $p < .05$) to attend the high school. Finally, there was a low and negative relationship ($r = -.24$, $p < .05$) between father's choice and perceived effort on academic tasks related to agriculture. There was no observable relationship between academic achievement and factors influencing perceived autonomy.

Table 4

Pearson Product-Moment Correlation between Factors Influencing Perceived Autonomy and Outcomes of Self-Determination ($n = 114$)

Outcome	Self	Family	Mother	Father
Intrinsic Motivation	.39*	.31*	-.13	..03
Identified Regulation	.11	.14	-.03	-.08
Introjected Regulation	.26*	.17	.02	.00
External Regulation	.05	.21*	.07	.00
Amotivation	.00	.01	.35*	.42*
Satisfaction Before School Began	.45*	.38*	-.22*	-.08
Satisfaction Three Months Later	.29*	-.04	-.17	-.10
Perceived Effort	.06	.07	-.11	-.24*
Academic Achievement	.00	.07	-.03	.01

*$p < .05$

There were significant relationships among the influences in the motivation to attend school, the satisfaction with the decision to attend the agricultural high school, the perceived effort on academic tasks related to agriculture, and academic achievement (see Table 5). There were low and positive relationships between intrinsic motivation and satisfaction before school began ($r = .20$, $p < .05$), three months later ($r = .23$, $p < .05$), and academic achievement ($r = .20$, $p < .05$). There was a moderate and positive relationship between intrinsic motivation and perceived effort ($r = .33$, $p < .05$). There were also moderate and positive relationships between perceived effort and identified regulation ($r = .38$, $p < .05$), academic achievement and identified regulation ($r = .31$, $p < .05$), and perceived effort and introjected regulation ($r = .42$, $p < .05$). Finally, there was a low and positive relationship between perceived effort and external regulation ($r = .20$, $p < .05$), academic achievement and external regulation ($r = .26$, $p < .05$) as

well as a moderate and negative relationship between amotivation and perceived effort ($r = -.46$, $p < .05$), and a low and negative relationship between amotivation and academic achievement.

Table 5
Pearson Product-Moment Correlation among Outcomes of Self-Determination (n = 114)

Outcome	Satisfaction Before	Satisfaction Later	Perceived Effort	Academic Achievement
Intrinsic Motivation	.20*	.23*	.33*	.20*
Identified Regulation	-.10	.03	.38*	.31*
Introjected Regulation	.00	.15	.42*	.09
External Regulation	-.06	-.02	.20*	.26*
Amotivation	.01	-.14	-.46*	-.26*

*p < .05

Conclusions/Implications

Motivational Profile

The sample, consisting of slightly more females, was high in extrinsic motivation, averaging 6 on a 7-point scale. Females were more likely to attend school because of external factors imposed on them either by self (i.e. introjected regulation) or by an outside influence (i.e. external regulation). This was followed by a moderate range for intrinsic motivation, averaging 5 on a 7-point scale. Finally, the sample was moderately low in amotivation, averaging 3 on a 7-point scale; however, males were more likely to be amotivated. These results support findings by Ratelle et al. (2007) that found that in a study of Canadian high school students, females reported higher levels of introjected regulation, and lower levels of amotivation. Contrary to the findings of the Ratelle et al. study, females in this sample were not higher in intrinsic motivation. Although not statistically different, the males in this sample reported more intrinsic motivation to attend school. Further exploration of the sample is needed to understand this finding. However, if the sample associates motivation to attend school with motivation to attend this comprehensive agricultural high school, then gender bias about agriculture may be a contributing factor in the contradicting findings.

The sample's low rating in amotivation stressed their desire to want to attend school and intent to learn. Although students did report a moderate level of intrinsic motivation, they were strongest in extrinsic motivation. This can be interpreted as the students are most likely motivated to go to school because of external inducements. This includes the desire to receive scholarships to further their education, the perception that the agriculture program will help them develop desired skills, making parents happy, and so forth. The presence of these controlled motives indicate that students are able to adapt to the school setting which would yield academic achievement but this adaptation is contingent on the external inducements of value to the student

being present. The "C" grade point average for the sample confirmed that the sample had not internalized the educational context and therefore was not fully self-determined.

When asked about influences in the decision to enroll in the agricultural high school, the sample reported self-selection followed by family decision as the strongest influences in their decision. This is promising because it indicates a level of perceived autonomy with choosing which high school to attend. Students who perceive autonomy support (autonomy and relatedness) in educational decisions tend to be more engaged and persistent with difficult tasks related to those educational decisions (Reeve & Jang, 2006). That is, students who perceive they have a decision in their education and that decision is support by influential adults tend to display more self-determined behaviors. Fortunately, because the students in this sample perceived they had full autonomy in the decision to attend or was very influential in the family's decision, overall they have a more positive perception of school and show more persistence in academic tasks. This is validated by the sample's indication that they were satisfied with their decision to enroll and persisted in academic tasks related to agriculture.

Motivational Relationships

The relationships identified between factors influencing autonomy and outcomes of self-determination supported the literature on self-determination. Students who self-selected to attend the agricultural school also indicated that intrinsic motivation as well as introjected regulation was the major motivation for attending school. In addition, students who reported that the decision to attend the school was a family decision were also more intrinsically motivated as well as externally regulated. This may indicate that some of these urban students enrolled into the agricultural high school because they had an intrinsic interest in learning about agriculture. The most common responses for those students who had an intrinsic interest in agriculture were because they were interested in a particular career (e.g. veterinarian or landscape designer) or because they wanted to learn about something different. However, those who were identified with introjected regulation self-selected because they perceived it was the right thing to do. Possible reasons include: older siblings already enrolled and financial alternative for residents who would typically attend one of the three parochial schools in the surrounding neighborhood. In both instances the student made the choice, however, the choice was not motivated by an inherent interest. Similarly those who identified with external regulation may have chosen the school because of its reputation as a safe public high school, better educational resources, track record with academic scholarships and student acceptance rate into college, or incentives from the family. These findings confirm factors identified by urban students in Philadelphia who reported that recruitment activities, interest in animals, agricultural career aspirations, and parental influence accounted for more than half of the reason for enrollment in an urban agriculture program (Esters & Bowen, 2004). Conversely, students who reported their mother or father made the decision to go to the school were more likely amotivated. These students were not satisfied with that decision and reported exerting less effort on academic tasks related to agriculture.

Academic Achievement

Finally, in terms of academic achievement, the results were consistent with the literature on SDT. Those participants who were more self-determined, as measured by intrinsic motivation and identified regulation were more likely to have a higher GPA. The findings indicate that the participants who were motivated by identified regulation, although may not have been interested in agriculture, persisted in academic tasks because they understood and valued the opportunity the school affords them in terms of accomplishing their future career aspirations. The significant relationship between academic achievement and external regulation confirms that external inducements such as grades, scholarship, and awards can influence some individuals to persist at academic tasks. In addition, the significant negative relationship between amotivation and academic achievement supported the literature and confirmed the importance of identifying participants who are amotivated early in their academic career in order to intervene before it is too late.

Recommendations

Student engagement is a very hot topic in many educational disciplines (e.g. career and technical education, special education, primary education, post-secondary distance learning, and physical education). Researchers (Anderson, 2007; Anderson, Torres, & Ulmer, 2007; Fredricks et al., 2004; Ryan & Powelson, 1991) proposed that a possible solution for increasing student engagement is to create an educational environment that addresses students' innate motivation to learn. Lessons must be relevant to the intended audience by identifying both current and future utility. Based on this premise, the following recommendations have been offered.

Recommendation 1. School administration, counselors and agriculture instructors at CHSAS should use this information to facilitate a discussion on how to better serve the students. Mainly, what strategies can be incorporated to turn the students' external motivation toward school and studying agriculture into intrinsic motivation (internalization)? The overall goal of this is to improve academic achievement and increase retention of urban students in agriculture and related sciences after graduation from high school. An example of a targeted approach would be to provide a clear message to students of the current importance of agriculture in their lives and the impact they can have on society with the knowledge they are receiving. Often students are instructed with the premise that the information they are receiving will be important in the future, however, research shows that students become both engaged and more persistent with academic tasks when they know the current importance and relevance of that information and place personal value in knowing that information (Blank, 1997; Mitsoni, 2006; Sull, 2006).

Recommendation 2. Agriculture teachers should continue to explore ways of providing autonomy to students in educational settings; particularly focusing on interventions that target amotivated and extrinsically motivated students and move them more towards self-determined behaviors (e.g. student-centered instruction and choice in agricultural courses and concentrations).

Recommendation 3. Further research should be conducted to explore the following topics:

- Can the motivational profile be used to predict student academic achievement based on overall grade point average, grade point average for agriculture courses, and grade point average for core courses (i.e. math, science, and language arts)? The purpose is to gather information in support of increasing elective courses that are content rich (e.g. math, science, and reading) rather than eliminating them to make room for more core requirements;

- Evaluate the academic outcomes of initiatives mentioned in recommendation 2. Students' achievement in a magnet school like CHSAS may be attributed not only to academic aptitude, but perceived influence in the decision to attend the school and curriculum choice. At CHSAS students not only choose to "opt out" of their neighborhood school but choose among five agricultural career pathways to study while attending the school. By accounting for academic aptitude, does the autonomy supportive initiative account for variation in academic achievement?

- Are students in other agricultural education programs intrinsically motivated to learn about agriculture or do they see it as a means to an end (extrinsically motivated)? The purpose is to further validate this line of inquiry so that interventions can be created that elicit positive motivational outcomes on engagement and academic achievement; and

- What are the outcomes of students who perceive support (parents, teachers, counselors, and friends) in this decision to enroll in an agricultural education program versus students who do not perceive support? Mainly, do these students stay in the program throughout their high school career and do they major in agriculture in college or take a related job? The purpose is to gather information on the impact of autonomy support (i.e. autonomy and relatedness) on the viability of secondary agricultural education programs.

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WEST VIRGINIA AGRICULTURAL EDUCATION TEACHERS PERCEPTIONS ON INVOLVING STUDENTS WITH EXCEPTIONALITIES IN AGRICULTURAL CLASSROOMS AND LABORATORIES

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The purpose of this study was to examine West Virginia Agricultural Education Teachers perceptions on involving students with exceptionalities in agricultural classrooms and laboratories. This study examined whether teachers felt confident, well-prepared, and if other students interact well with students with exceptionalities. This study also sought to determine if agricultural teachers felt they had adequate training to work with students with exceptionalities or if additional training was needed. The majority of teachers agreed that including students with exceptionalities in the classroom fosters understanding for diverse populations. A majority of teachers have seen an increase in students with exceptionalities in their classrooms. Agricultural teachers feel confident and well-prepared to work with students with exceptionalities; however, they did not feel confident or well-prepared to work with students with exceptionalities when they first started teaching agriculture. A majority of teachers feel classes/trainings should be required to prepare teachers to work with students with exceptionalities.

Introduction

At the turn of the 21st century, Rufus Stimson became concerned over how agricultural education was taught (Moore, 1988). Stimson worked diligently at installing the project concept, which is a program where students would learn agriculture at school and apply those concepts on their home farms (Moore, 1988). The agricultural science education program progressed further in 1917 when congress passed the Smith-Hughes Act which established vocational agricultural classrooms (Patterson, n.d.).

The Vocational Education Act of 1984 often referred to as the Perkins Act, authorizes federal funds to support agricultural education programs (National Information Center for Children and Youth with Disabilities, 1996). This law is vital to agricultural educators because it requires that agricultural education be provided for students with exceptionalities. The Perkins Act states that individuals who have exceptionalities must be provided with equal access to every aspect agricultural education offers (National Information Center for Children and Youth with Disabilities, 1996).

In 1990, Congress passed the Individuals with Disabilities Education Act (IDEA) which is also known as P.L. 101-476. The IDEA makes it possible for individual states to receive federal funding for students with exceptionalities (National Information Center for Children and Youth with Disabilities, 1996).

In 2001, President George W. Bush signed the No Child Left Behind Act (NCLBA) which proposes schools be accountable for all students, including those with exceptionalities, to meet high standards of learning (The White House, n.d.). NCLBA requires yearly standard testing, and the consequences for failing to make progress for students with exceptionalities includes: receiving assistance, then, if needed, undergoing corrective action. If no improvement is made in three years, students with exceptionalities may transfer to higher-performing schools, or have the option of receiving educational services from whomever they choose (The White House, n.d.).

For the academic year of 2007-2008, there are currently 281,735 students enrolled in West Virginia Public Schools. Of that number, 51,669 are students with exceptionalities. (West Virginia District Special Education Data Report: 2007-2008, n.d.). There are currently 5,000 plus students enrolled in Agricultural Education in the state of West Virginia and 4,600 plus FFA members in 43 counties (National FFA, n.d.). Seventeen percent of all students enrolled in West Virginia Public Schools are students with exceptionalities (West Virginia District Special Education Data Report: 2007-2008, n.d.).

The mission of Agricultural Education is to prepare and support individuals for careers, build awareness, and develop leadership for the food, fiber, and natural resource systems. The FFA mission states that FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth, and career success through agricultural education (National FFA, n.d.). Legislation requires FFA advisors to provide equal access to services and programs for all people, regardless of their disability (Bridging Horizons, 1996). Agricultural Educators have the responsibility of dealing with emotional impairments, hearing impairments, developmental disabilities, learning disabilities, mental disabilities, visual impairments, and physical disabilities (Bridging Horizons, 1996).

In 1962, Kirk defined students with exceptionalities as:

the child who deviates from the average or normal child (1) in mental characteristics, (2) in sensory abilities, (3) in neuromuscular or physical characteristics, (4) in social or emotional behavior, (5) in communication abilities, or (6) in multiple handicaps to such an extent that he requires a modification of school practices, or special educational services, in order to develop to his maximum capacity. (p. 4)

Kessel (2006) found that agricultural education programs are becoming a popular course for the inclusion of students with disabling conditions, but little research has been conducted to assess teacher confidence and knowledge regarding special education and teaching diverse populations in agricultural education classrooms and laboratories. With inclusion comes the consideration of how to assess students with exceptionalities in the classroom. Students with learning disabilities cannot be denied participation in the agricultural classroom.

Helt (1975) stated that future agricultural teachers must assume the responsibility of being prepared to accommodate students with exceptionalities in their classes. He believed that agricultural educators should provide the best possible pre-service preparation for new teachers

that are aimed at meeting state and federal guidelines (Helt, 1975). During the 1977-1978 academic years at North Dakota State University, a course entitled "Teaching Vocational Students with Special Needs" was offered in the agricultural education program. The goal was to teach future teachers to become more empathetic toward all students, including the gifted, disadvantaged, and handicapped. It was also geared to help teach agricultural teachers to develop Individualized Education Plan (IEP) for all included students with exceptionalities (Helt, 1975).

Curtis (1975) addressed that the vocational amendments of 1968 (which emphasizes the need for new programs and facilities to serve the handicapped and disadvantaged) put students with exceptionalities in the back of the classroom when it came to the development of the human resource potential for the student. A concern acknowledged by Curtis (1975) is that teaching students with exceptionalities degrades the quality of instruction provided to other students. Curtis (1975) also stated that a possible solution to this concern is the quality of the teacher. All students respond best when teachers relate instruction to real life, something agricultural education aims to do (Curtis, 1975). Curtis (1975) suggested that emphasis on teaching students with exceptionalities can result in an improved program for everyone.

Barrett (1975) stated that serving students with exceptionalities is not new for agricultural educators; agricultural teachers have always taught students with exceptionalities without realizing it. The main reason for this statement is the lack of identification of students with exceptionalities. Any student that is not succeeding or cannot succeed in an agricultural class without special help or any student's disability that is a contributing factor to his/her lack of success in that particular class is defined as a student with exceptionalities (Barrett, 1975). Agricultural teachers have already been implementing students with exceptionalities in their classrooms; any students that needs any special help or the teacher changes any curriculum to fit that student's need is considered a student with exceptionalities (Barrett, 1975).

Woehler (1975) suggests that one of the most important things an agricultural teacher can do is be a motivated teacher, they should be enthusiastic and imaginative. A disruptive student is seeking attention and will continue to do so until his/her emotional needs are met (Woehler, 1975). Walls (1975) also stated that teachers should possess certain characteristics for working with students with exceptionalities. Some of these qualities include: competence in the subject matter, ability to create a positive learning environment, ability to properly diagnose specific exceptionalities, ability to manage a classroom with students with exceptionalities, and ability to modify classroom activities for students with exceptionalities. Hanson (1975) believes the challenge of teaching students with exceptionalities can be deeply frustrating and highly satisfying. In order to be successful, the agriculture teacher must learn to accept the student for what he/she is. Social, economic, and ethnic upbringings have molded this student. According to Hanson, (1975) exposing students with exceptionalities to new standards and philosophies can introduce these students to a whole new way of life. To teach students with exceptionalities, teachers must be concerned with more than the subject matter. To reach students with exceptionalities, instruction should be made applicable. The most important factor in teaching students with exceptionalities is to learn to empathize with them.

Bobbitt (1975) articulated that the philosophy of individual development is the core purpose of the agricultural sciences program. If this philosophy is assumed, then working with

students with exceptionalities is not something extra to do, but something that is essential to the program. Bobbitt (1975) also argued that there is no greater reason for existence of vocational programs then to assist those who need it most. The reason for implementing more agricultural programs is to assist the less qualified in competing in the labor market (Bobbitt, 1975).

Fisher (1999) found that including students with exceptionalities adds value to the education experience for students without exceptionalities because the experience has enticed them to think about their values, beliefs, and own behaviors. In contrast to Fisher; Carter, Hughes, Guth, & Copeland, (2005) found that students with exceptionalities typically did not interact with their general peers.

The inclusion competencies most in need of strengthening among the teachers were: understanding special education regulations, understanding different levels of special education services, understanding different levels of disabilities, and understanding the social needs of special education students (Andreasen, Seevers, Dormody, & Vanleeuwen, 2003).

The research in secondary agricultural education related to teaching students with exceptionalities indicates that agricultural education teachers perceive low ability, but high importance of competencies in teaching students with exceptionalities. Agricultural education teachers can expect students with exceptionalities to represent a sizable proportion of the total population of students in their program (Andreasen, et al., 2003). According to Andreasen, et, al. (2003) top special education in-service topics identified by the teachers were: 1) making modifications to reach Individualized Educational Plans (IEPs), 2) evaluating learning, and 3) making classroom modifications.

Daniels and Walker (1975) indicated that there are cases when children with exceptionalities should be prevented from taking certain agriculture classes because of safety for themselves and the safety of others. However, the fact remains that if an administrator, counselor, or teacher discourages children with exceptionalities away from certain courses, they are breaking the law. The law states that all people have the basic right to an education, treatment, and job opportunities, all people have the right to due process of law as provided under the fourteenth amendment of the Unites States Constitution, and each state must spend 25% of its 1968 Vocational Education Act Amendment funds for the handicapped and disadvantaged.

Cicchetti (1975) declared that one of the most important challenges to public education, not just agricultural education, is occupational education for students with exceptionalities. A prepared individual with exceptionalities is an asset to society, rather than a liability (Cicchetti, 1975). Walls (1975) stated that teaching students with exceptionalities has been a challenge to teachers for many years. Congress discovered that not enough emphasis was given to students with exceptionalities; therefore the 1963 Vocational Education Act mandated that each state would not use less than 15 percent of its funds for the disadvantaged. Agricultural education has always been geared to helping disadvantaged individuals; the programs were truly never designed to meet specific needs of students with exceptionalities (Walls, 1975). Walls (1975) suggested reducing class size, using conference periods, using specific equipment, materials,

visuals, and demonstrations, working with students with exceptionalities on weekends and after school, and field trips to help students with exceptionalities succeed in the classroom.

Kossar, Mitchem, & Ludlow (2005) stated that the No Child Left Behind Act (NCLBA) and the Individuals with Disabilities Education Improvement Act (IDEIA), public schools must bring all students to the level required on state content tests. A study conducted by Kossar et al. (2005) indicated that a majority of the participants believed that NCLBA would have a negative impact on rural schools. Stating that rural schools would have difficulty meeting the requirements of NCLBA in the area of special education., Kossar et al. (2005) stated that rural schools foresee shortcomings in meeting the NCLBA requirements because rural schools have difficulty retaining qualified educators. Hammond and Ingalls (2003) stated that rural schools could have a high number of teachers on emergency certification to work with students with exceptionalities. They (2003) also stated that rural teachers may not have access to classes/trainings on working with students with exceptionalities. A concern for rural schools with regards to NCLBA and special education is how rural schools will access trainings to ensure teachers are fully qualified to work with students with exceptionalities (Kossar et al, 2005). Hammond and Ingall's (2003) study showed that a high percentage of rural teachers had negative attitudes towards programs implementing inclusion.

Cicchetti (1975) observed that some students with exceptionalities are lacking in "survival skills", which include social responsibility, reliability, skills needed for productivity, and good work habits. Cicchetti's (1975) argument is that any students with exceptionalities that can acquire these survival skills are then partially prepared for agricultural endeavors.

Bobbitt (1975) also brought up the issue that agricultural education has been considered a dumping ground by some for students that perhaps could not excel in other classes. A true dumping ground is where students are placed into agricultural classes that have no interest in agriculture, not because the student may have exceptionalities (Bobbitt, 1975). Gauper (1975) declared that schools started to trap students into a structured classroom with no regard to their interests, skills, and limitations. Because of this, the learning process was slowed for the higher achiever and frustrating for the non-academic.

Problem Statement

Given the laws and the push for inclusion of students with exceptionalities into the classroom, one can assume that some of these students will be involved with agricultural sciences education and the FFA. Since agricultural science education and the FFA are an integrated part of the public school system, access cannot be denied to any individual with exceptionalities who would like to participate. P.L. 94-142, The Education for all Handicapped Children Act of 1975 states that a "free appropriate education" is offered to students with exceptionalities (National Information Center for Children and Youth with Disabilities, 1996). Since this act, P.L. 98-524, and the Vocational Education Act of 1984 are in effect, it is important that agricultural educators understand the needs of students with exceptionalities and are prepared to include these students into their classrooms and laboratories.

Purpose /Objectives

The purpose of this study was to determine the perceptions of West Virginia agricultural educators on involving students with exceptionalities in agricultural classrooms and laboratories. The objectives of the study are reflected in the following research questions:
1. What is the nature and extent of students with exceptionalities in West Virginia agricultural education classrooms and laboratories?
2. Do agricultural education teachers feel prepared to work with students with exceptionalities in their classrooms and laboratories?
3. Have agricultural educators adapted/changed curriculum and/or facilities to accommodate students with exceptionalities?
4. Would additional training improve the way agricultural educators work with students with exceptionalities?
5. How do agricultural educators feel students with exceptionalities are viewed by other students?

Definitions of Terms

For the purpose of this study, the following definitions of terms were used:
Exceptionalities

Socially Maladjusted (Behavior): Students who are socially maladjusted typically display a persistent pattern of willful refusal to meet even minimum standards of conduct. Their behavior and values are often in conflict with society's standards. They exhibit a consistent pattern of antisocial behavior without genuine signs of guilt, remorse, or concern for the feelings of others.

Physical: Students with physical exceptionalities display limited mobility (ex. Missing limbs, limited to a wheelchair), special health problems (ex. Heart problems).

Mental: Students with academic exceptionalities display a persistent pattern of reading and writing difficulties, comprehension difficulties, and exhibit slowed cognitive processes.

Methods/Procedures

Research Design

A descriptive research design was selected to collect data from agricultural educators. Ary, Jacobs, Razavieh, and Sorenson (2006) defined descriptive educational research as: "acquiring dependable and useful information, to discover principles or interpretations of behavior that can be used to explain, predict, and control events in educational situations."

The target population consisted of 91 West Virginia Agricultural Educators, employed during the spring of 2008. A census was conducted of all Agricultural Educators listed in the 2007-2008 West Virginia Secondary Agriculture Teachers and Schools Directory. Frame error was avoided by using an official list of agricultural education teachers maintained by West Virginia University's Agricultural and Extension Education Department. The use of a census eliminated the possibility of selection and sampling errors.

Instrumentation

The instrument used for this study was a mailed questionnaire. Measurement error was reduced by establishing the validity and reliability of the data collection instrument. The

instrument was presented to a panel of experts to establish its content and face validity. The panel consisted of faculty members in Agricultural and Extension Education and Special Education at a land grant University. Members of the panel had experience in teaching, extension, research and special education. They concluded that the instrument had content and face validity.

The final data set was used to determine the instrument's reliability. The 26 Likert items were tested for reliability by using the Spearman-Brown split-half coefficient. Reliability was found to be exemplary with a Spearman-Brown coefficient of .83. The instrument was found to be reliable.

Data Collection Procedure
Dillman's Total Design (2005) was used to collect data. The questionnaire and cover letter were mailed to each individual in the target population along with a stamped self-addressed return envelope. A second questionnaire was sent to all non respondents two weeks later.

Returned questionnaires were examined and entered into an excel spreadsheet. The data was transferred to the personal computer version of the Statistical Package for the Social Sciences (SPSS). Levels of significance were set a priori at <.05 for all statistical tests. Descriptive analyses were performed on the data, and the appropriate methods of reporting frequencies, standard deviation, and means for each type of data were used. Frequency tables were used for Likert items.

Non-response error was addressed by comparing early respondents to late respondents. A chi-square of independence was performed to determine if there was a significant relationship between early and late respondents. The following variables were used: years teaching agriculture, age, gender, and highest level of education. The chi-square values were not significant ($\alpha \leq .05$). There was no significant difference; therefore, because they were similar, generalization could be made. However, due to the low response rate of 53%, generalization will be limited to those who responded to the survey.

Findings

The accessible population included 91 West Virginia Agricultural Education Teachers employed during the 2008 spring semester. Of the 91 questionnaires, 48 surveys (52.7%) were returned.

Demographic Characteristics of Respondents
Thirty-five (77.8 %) of the respondents were male and 10 (22.2%) were female. Of the respondents, 16 individuals (34.8%) held a Bachelors degree; 29 (63.0%) individuals held a Masters degree; and one individual (2.2%) held a Doctorial degree.

The median age category of the respondents was 41-50 years of age. Eleven respondents (24.4%) were between the ages 21-30. Nine respondents (20.0%) were between the ages 31-40. Thirteen respondents (28.9%) were between the ages 41-50. Nine respondents (20.0%) were between the ages 51-60 and three respondents (6.7%) were between the ages 61-70.

Twenty-eight individuals (60.9%) had taken no credit classes on exceptionalities. Eight individuals (17.4%) had completed 1-3 classes on exceptionalities while six individuals (13.0%) had 4-8 classes on exceptionalities. One individual (2.2%) had completed 9-12 classes on exceptionalities and three individuals (6.5%) had taken greater than 12 classes on exceptionalities.

When asked if classes or training on working with students with exceptionalities should be required of teachers, 32 (68.1%) agree they should be required to attend classes on working with students with mental exceptionalities. Thirty of the respondents (63.8%) agreed they should be required to attend training in working with students with physical exceptionalities, while 28 (59.6%) agree they should be required to attend classes on working with students who have socially maladjusted exceptionalities.

Four respondents (8.7%) had less than one year of teaching agriculture experience. Six respondents (13.0%) had 1-5 years of teaching agriculture experience. Six respondents (13.0%) had 6-10 years of teaching agriculture experience while five respondents (10.9%) had 11-15 years of teaching experience. Two respondents (4.3%) had 16-20 years teaching agriculture experience and seven respondents (15.2%) had 21-25 years teaching agriculture experience. Eight respondents (17.4%) had 25-30 years teaching agriculture experience while eight respondents (17.4%) had over 30 years teaching agriculture experience.

Number of Students with Exceptionalities in West Virginia Agricultural Educator's Classroom
When asked to indicate the number of students the teacher had with exceptionalities, the number ranged from zero to five students in a class with a mean of .68 (*SD*= 1.07) students with physical exceptionalities (see Table 1). The number of students with mental exceptionalities ranged from zero to 51 students with a mean of 7.69 (*SD*= 9.74) (see Table 1). The number of students with socially maladjusted (behavior) exceptionalities in a class ranged from zero to 24 student with a mean of 4.44 (*SD*= 5.09) (see Table 1). The number of students who required an aide in a class ranged from zero to sixteen students with a mean of .96 (*SD*= 2.54) (see Table 1).

Table 1
Number of Students with Exceptionalities in West Virginia Agricultural Educator's Classroom

	M	SD	Min	Max
Physical	.68	1.07	0.0	5
Mental	7.69	9.74	0.0	51
Socially Maladjusted	4.44	5.09	0.0	24
Require an Aide	.96	2.54	0.0	16

Preparedness in Working with Students with Exceptionalities
Agreement was determined by adding the number of agree and strongly agree responses and percentages from the Likert-type questions. Twenty (42.6%) of the teachers agree they feel well prepared to teach students with physical exceptionalities, while 18 (38.3%) agree they feel well prepared to teach students with mental exceptionalities. Eleven (23.4%) of the respondents agree they feel well prepared to teach students who were socially maladjusted (behavioral) (see Table 2). Only 10 (21.3%) teachers agree they felt well prepared to teach students with physical

exceptionalities when they started their teaching career. Five teachers (10.6%) agree they felt well prepared to teach students with mental exceptionalities when they first started teaching, while four (8.5%) agreed they felt prepared to work with socially maladjusted students when they first began teaching (see Table 2).

Twenty-eight (59.6%) of the respondents agree they feel confident to teach students with physical exceptionalities. While 24 respondents (51.6%) agree they feel confident to teach students with mental exceptionalities. Only 18 respondents (38.3%) agree they feel confident to teach students with socially maladjusted exceptionalities (see Table 2).

When asked if they felt confident to teach students with exceptionalities when they started their teaching careers, nine (19.2%) felt confident teaching students with physical exceptionalities, five (10.6%) felt confident teaching students with mental exceptionalities, while four (8.5%) felt confident teaching students who were socially maladjusted (see Table 2).

Table 2

Respondents Who Agreed with Statements on Preparedness in Working with Students with Exceptionalities

	Socially Maladjusted		Physical		Mental	
	N	%	N	%	N	%
I feel confident to teach students with the following exceptionalities.	18	38.30	28	59.57	24	51.06
I am well-prepared to teach students with the following exceptionalities.	11	23.40	20	42.55	18	38.30
I felt well-prepared to teach students with the following exceptionalities when I started my teaching career.	4	8.51	10	21.28	5	10.64
I felt confident to teach students with the following exceptionalities when I started my teaching career.	4	8.51	9	19.15	5	10.64

Adaptations in Agricultural Education Classrooms

When asked if any adaptations were made in agricultural education classrooms and if so, what were those adaptations, 35 teachers (77.8%) answered yes, there were adaptations made to their classrooms for students with exceptionalities. Ten teachers (22.2%) responded no adaptations had been made.

Adaptations that had been made included: following IEPs; developing individualized instruction like modifying assignments and allowing extra time for tests and assignments, simpler projects, reading exams to students; moved classroom and students around to accommodate those with exceptionalities; learned sign language; working with special education teachers; and created special groups for extra help.

Adaptations Made in Agricultural Education Laboratories

Twenty-eight teachers (60.9%) indicated adaptations had been made in laboratories to accommodate students with exceptionalities. Eighteen teachers (39.1%) responded adaptations had not been made. The teachers, who answered yes to whether or not adaptations had been made in their laboratories to accommodate students with exceptionalities, listed the following accommodations: use of service learning for more one on one interaction, special groupings for students with exceptionalities, special projects, simpler projects, handicap accessibility, and extra time for projects.

When respondents were asked whether they were seeing more students with exceptionalities in their classrooms then previously, 30 respondents (63.8%) stated they were seeing more students with exceptionalities in their classrooms then previously, while thirteen teachers (27.7%) said no. Four teachers (8.5%) responded don't know.

How agricultural educators feel students with exceptionalities are viewed by other students
A majority of the respondents agree that students with physical (40, 85.1%) and mental (30, 63.8%) exceptionalities could become productive members of society. While 22 respondents (47.8%) agree students who had socially maladjusted exceptionalities could become productive members of society (see Table 3).

When asked whether or not they agree that other students would be uncomfortable having students with exceptionalities on a competitive team (ie. CDE's –parli pro), 22 respondents (46.8%) agreed students would be uncomfortable with socially maladjusted students were on a competitive team. While only one respondent (2.13%) agreed they would be uncomfortable with a student with physical exceptionalities and 14 (29.8%) agreed students would be uncomfortable with students with mental exceptionalities on a competitive team (see Table 3).

Table 3
Respondents Who Agee with Statements on How Other Students View Students with Exceptionalities

	Socially Maladjusted		Physical		Mental	
	N	%	N	%	N	%
Students with the following exceptionalities can become productive members of society.	22	47.83	40	85.11	30	63.83
Students would be uncomfortable having students with the following exceptionalities on a competitive team. (i.e. CDEs - parli pro)	22	46.81	1	2.13	14	29.79
Students would be uncomfortable working with students with the following exceptionalities in small groups. (i.e. classroom projects)	19	40.43	1	2.13	5	10.64
Students would be uncomfortable having students with the following exceptionalities on an officer team.	18	38.30	0	0.00	3	6.38
Including students with the following exceptionalities in the classroom fosters understanding for diverse populations of students.	13	27.66	34	72.34	25	53.19

Students offer help to students with the following exceptionalities.	12	25.53	41	87.23	29	61.70
The challenge of being in a regular classroom will promote learning for students with the following exceptionalities.	10	21.28	29	61.70	20	42.55
Students with the following exceptionalities are readily accepted by fellow students in the classroom.	9	19.15	32	68.09	19	40.43
Students with the following exceptionalities are ignored by the other students in the classroom.	7	14.89	7	14.89	3	6.38

Eighteen respondents (38.3%) agree that students would be uncomfortable having students who are socially maladjusted on an officer team. Three respondents (6.4%) agree that students would be uncomfortable having students with mental exceptionalities on an officer team, no respondents felt students would be uncomfortable having students with physical exceptionalities on an officer team (see Table 3).

When asked whether they agree with the statement the challenge of being in a regular classroom will promote learning for students with each of the following exceptionalities. Ten respondents (21.3%) agree that the challenge of being in a regular classroom will promote learning for students who are socially maladjusted, 29 (61.7%) agree it will promote learning for students with physical exceptionalities and 20 (42.6%) agree it will promote learning for those with mental exceptionalities. (see Table 3).

Summaries, Conclusions, and Recommendations

Summary

The accessible population for the study included 91 teachers who had taught during the spring semester of 2008 in West Virginia Agricultural Education classrooms and laboratories. Most of the teachers included males between the ages of 41-50 who were currently teaching agriculture.

Currently, there are 51,669 students with exceptionalities out of a total of 281,735 students in West Virginia Public Schools. There are a total of 448 students with exceptionalities enrolled in agricultural science classes. Of that number, 132 students have socially maladjusted (behavior) exceptionalities, 23 students have physical exceptionalities, 248 have mental exceptionalities, and 45 students require an aide.

Agricultural teachers feel prepared and confident to work with students with exceptionalities; however, agricultural teachers did not feel prepared or confident to work with students with exceptionalities when they first started teaching.

Agricultural teachers have made adaptations in both their classroom and laboratories to accommodate students with exceptionalities. These accommodations include: Following IEPs and developing individualized instruction, like modifying assignments and allowing extra time

for tests and assignments, creating simpler projects, reading exams to students, moving classroom and students around to accommodate students with exceptionalities, learned sign language, working with special education teachers, created special groups for extra help, and extended time for assignments.

Agricultural teachers agreed that classes/training has been offered working with students with exceptionalities. Half of these teachers have participated in these classes/trainings, and half have not. Agricultural teachers believed that classes/training working with students with exceptionalities should be required of them.

Conclusions

The following conclusions are based on the interpretations of the data collected in this study. A majority of West Virginia Agricultural Education teachers have students with exceptionalities in their classrooms and laboratories. More than three-fourths (77.8%) have made adaptations in their classrooms to accommodate students with exceptionalities while more than half (60.9%) have also made adaptations in the laboratories to accommodate students with exceptionalities. A majority of teachers (63.8%) have seen an increase in students with exceptionalities in their classrooms.

Agricultural teachers feel confident and well-prepared to work with students with exceptionalities; however, they did not feel confident or well-prepared to work with students with exceptionalities when they first started teaching agriculture.

Teachers were split on whether or not they have attended classes/training offered in working with students with exceptionalities. The majority of teachers (31.9%) feel classes/trainings should be required of teachers who work with students with exceptionalities.

Teachers believed their classrooms and laboratories were safe for students with socially maladjusted (behavior) exceptionalities, physical exceptionalities, and mental exceptionalities. However, teachers do not believe their classrooms or laboratories are well-equipped for socially maladjusted (behavior) students. They do feel their classrooms and laboratories are well-equipped for students with physical and mental exceptionalities.

Recommendations

The following recommendations are based on the results of this study of West Virginia Agricultural Education Teachers perceptions on involving students with exceptionalities in agricultural classrooms and laboratories.

1. It is recommended that additional research should be conducted to determine the nature of the exceptionalities of students in agricultural science programs.
2. It is recommended that schools offer training and support teachers with regards to working with students with different exceptionalities.
3. It is recommended that further study be conducted after any classes/training for students with exceptionalities to determine if teachers have received adequate training skills to work with students with given exceptionalities.
4. It is recommended that schools further explore the needs of teachers with regards to working with students with exceptionalities in their classrooms and laboratories.

5. It is recommended that schools provide additional training for teachers on how to better deal with socially maladjusted (behavior) students in agricultural classrooms.
6. It is recommended that the study be replicated on a regional or national basis.

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FACTORS INFLUENCING PARTICIPANT MOTIVATION AND ENGAGEMENT IN THE MICHIGAN YOUTH FARM STAND PROJECT

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Abstract

The purpose of the exploratory study was to understand what motivated and engaged youth in the Michigan Youth Farm Stand Project (YFSP) offered by the C.S Mott Group for Sustainable Food Systems at Michigan State University. The qualitative study included interviews and observations to explore the motivations and sustaining factors influencing youth participants. An opportunity to earn money and have something to do during the summer interested most students. Those with prior gardening experience were motivated by the opportunity to garden while having fun. Similarities and differences emerged during the study; however, the opportunity to garden and spend time with friends emerged as sustaining factors. Participation barriers included transportation, family commitments and discontinuation from the host program. Recognizing participation barriers and involving youth in decision making enhances involvement and provides youth opportunities to reap benefits offered by participation in YFSP. Programs that strive to provide positive impacts on youth in low-income communities can gain insight from the findings in this study to strengthen and enhance youth knowledge and skill in local food systems initiatives.

Introduction

In today's society, youth play an integral role in their own development and use of time outside school hours. The matter of how youth choose to spend their time is a concern to parents, teachers, and human services professionals and to youth themselves. Most people probably agree participation in quality youth programs is a good opportunity for youth development and skill building. With a growing interest in issues pertaining to how young people choose to participate or not participate in youth programs, the study examined what motivated and engaged youth involvement in an innovative community-based program—the Michigan Youth Farm Stand Project (YFSP).

The project was community-based and offered through a variety of after-school programs, agricultural and natural resources education, 4-H groups and community programs. Practices and relationships formed in such programs provide an avenue for skill development, personal gratification, and integration within community. It is dissatisfying to know that not enough youth are taking advantage of these opportunities and engaging in these growth-enhancing activities (Saito, 2006).

With the apparent benefits of participating in activities, it is important to increase access to participation and remove barriers. It is equally important to design programs of interest (Borden, Perkins, Villarruel, & Stone, 2005). It recently has been reported youth often attend programs either irregularly or for only a short time before they quit (Lauver & Little, 2005). Further, becoming engaged increases benefits obtained and the likelihood of continued

participation (Ferrari & Turner, 2006; Bartko, 2005). Youth must become interested and motivated in activities to engage and benefit from learning objectives and other valuable experiences.

The YFSP was a one-year USDA (United Stated Department of Agriculture) funded program targeted at low-income urban communities. Amongst the target audience were those food stamp eligible individuals. The program was a collaborative effort between the C.S. Mott Group, USDA Family Nutrition Program, community partners, and Michigan youth. Youth farm stands are an excellent channel to facilitate community-based food systems and economic development. Youth created operational business plans, grew and/or procured produce, prepared cooking demonstrations, and directly marketed their produce locally. Youth acquired entrepreneurial skills and were exposed first hand to the dimensions of growing and marketing their own produce within their local communities. In 2006-07 there were six YFSP participating in all areas of Michigan. The students ranged from ages 11-19 with multiple levels of agriculture experience. The program attracted 70 youth participants and reached 2000 community members through increased access to fresh fruits and vegetables and nutrition information throughout Michigan. The Michigan sites ranged from working with agri-science students who independently gardened at home to working with adjudicated youth who gardened at their program vocational center.

This paper reports the findings of what motivated and engaged participants in the YFSP. Qualitative research methods—interviews and observations have been analyzed to provide feedback to the C.S. Mott Group and local communities wanting to start their own YFSP or local food systems initiative.

Background Literature/Conceptual Framework

Positive youth development is a desired outcome of organized activities. The extent to which organized activities influence development can vary across individual youth, programs and community settings (Mahoney, Larson, Eccles, & Lord, 2005). In order to experience the greatest development in organized activities, participants must join and continue participation (Mahoney et al., 2005; Bartko, 2005). Youth who are active and engaged in an activity are more likely to continue participation and benefit from the positive aspects offered (Pearce & Larson, 2006).

To become engaged, one must be interested and motivated by program activities (Larson, 2000; Vandell, et al., 2005). The study defined engagement as, "meaningful participation and sustained involvement in an activity with a focus outside of him or herself" (Center of Excellence for Youth Engagement, 2004). Further, the study defined engagement as participating and expressing interest while in attendance. Even if external barriers force discontinued participation, youth may be perceived as engaged during their time with the program. Motivation is concerned with energy, direction and persistence – all aspects of activation and intention. The study adapted Ryan & Deci's (2000) motivation definition. Developing and implementing meaningful and engaging programs which enhance individual skills is a priority of many community programs. Research lacks in youth motivation and engagement. Thomas (2007)

found most research focuses on youths' motivation and engagement in academic learning environments.

Human beings can be proactive and engaged or, alternatively, passive. These traits are determined largely on the social conditions in which they develop and function (Ryan & Deci, 2000). Research guided by self-determination theory (SDT) has focused on the social conditions that facilitate versus inhibit the natural processes of self-motivation and physiological development (Ryan & Deci, 2000). Fundamentally, self-determination is an issue of choice and is a theory built on concepts such as choice, intentionality, or will (Deci & Ryan, 1985). Self-determination looks at factors enhancing versus undermining intrinsic motivation, self-regulation, and well-being (Ryan & Deci, 2000; Ryan & Deci, 2002; Deci, 1980). The continuum from amotivation to intrinsic motivation involves several extrinsic motivation steps involving different integration and internalization degrees of which are illustrated in Figure 1. Pearce and Larson (2006) suggest this motivation continuum may explain the process of motivation to engagement; as one is more motivated their regulation increases and ultimately one's behavior that was nonself-determined moves towards self-determined.

Type of Motivation	Amotivation	Extrinsic Motivation				Intrinsic
	Non-Regulation	External Regulation	Interjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Type of Regulation	Nonself-Determined					Self-Determined
	Engagement					
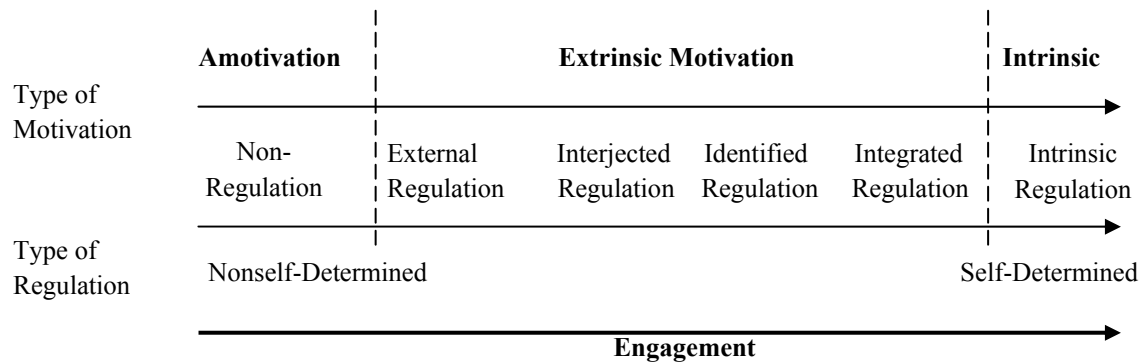
Figure.1. The self-determination continuum.

Extrinsic motivation has different degrees and is represented by the continuum. Amotivation is defined as not acting at all or acting without intent (Ryan, 1995), or not feeling competent to do it (Bandura, 1986). Many researchers have viewed extrinsic motivation as a unitary concept. Ryan & Deci (2002) attempt to explain the five categories of extrinsic motivation. The extrinsic categories lie between amotivation and intrinsic motivation along the continuum, showing the variation that their regulation is autonomous.

Purpose

The purpose of the study was twofold. Using the above research and theory to help conceptualize the issues of motivation and program attractiveness, the first purpose was to derive preliminary theoretical ideas and a conceptual framework about the motivations of youth who participated in the YFSP. The preliminary ideas were taken from the youth as they were ideal providers of information relevant to their motivation. The second purpose of this study was to

find out what maintained youth interest leading to sustained engagement. The study examined the levels of motivation and engagement by YFSP participants. To reap success and realize benefits, youth must join and remain engaged in programs (Pearce & Larson, 2006). The following research questions guided the study.

1. What initially motivated youth to join the farm stand project?
2. What factors influenced sustained engagement in the project?
3. What barriers did youth face preventing continued participation in the project?

Motivational factors and engagement process of youth attributed to achievement gained by YFSP communities. With a youth-driven program, active participation influences success while ensuring project sustainability.

Methods & Procedures

The qualitative study was exploratory, relying on interviews and observations. Because of the nature of the study, qualitative research was used to better understand the experiences and nature of the persons participating in the YFSP. According to Strauss & Corbin (1990) qualitative research allows participant experiences to emerge by interacting with the researcher. Additionally, qualitative research has an inherent openness and flexibility allowing modification to the design and focus during the research to understand new relationships and discoveries (Maxwell, 2005). As will be illustrated, the study adapted to the circumstances that arose and the methodology evolved over the course of the research.

Data Collection & Study Design

Qualitative interviews are detailed allowing the interviewer to understand experiences and reconstruct events in which they did not participate (Rubin & Rubin, 2005). By asking participants open-ended questions and giving them opportunity to reconstruct events and experiences, interviews provided *rich* data and informed the overall research questions. Qualitative research design allows data collection without following predetermined data analysis categories (Patton, 2002); data emerged and subsequent data collections were crafted meeting research study needs.

The study consisted of interviews and observations. Each data collection evolved from subsequent findings allowing themes to emerge. The youth interviewed were important to study design. They provided first-hand data (Rubin & Rubin, 2005) about why they joined YFSP and what ultimately motivated and engaged them. During observations, all students present at each of the sites were observed and included in the study data. All youth were first-time participants. The study consisted of 33 formal data collections - 28 interviews and five observations.

Sampling

The study sample included youth and coordinators participating in YFSP at five sites in Michigan. The sample was limited to YFSP participants because of the nature of the questions and the study's intended focus on the farm stand project. The youth included middle school, high

school, and alternative high school aged students. The youth were selected based on their initial involvement with the farm stand program – more precisely the youth who showed an interest in the program, as noted by their respective coordinators. Initial involvement was defined by participating in YFSP since starting in the community. Included in the sample were site coordinators because of their involvement with youth. Coordinator perceptions were accounted for at project end.

Each coordinator selected three youth participants for the first interviews, totaling a sample size of 15 students. The researcher asked each coordinator to select youth actively involved in YFSP from the program's start. Purposeful sampling was used to identify and select informants for the interviews; this type of sampling is advocated when information-rich sources are sought (Patton, 2002). Since research focused on what motivated and engaged youth participants, youth participating in YFSP were selected. For the second interview, it was not possible to interview the same 15 students, as some were no longer in contact with coordinators or no longer part of YFSP at the respective sites. The researcher made effort to contact youth no longer affiliated with YFSP by making telephone calls and sending emails with contact information provided by the youth through first interviews. Contact with these seven youth was not successful. Eight students were interviewed a second time at the end of their participation. Coordinators were interviewed to account to gain perspective as to why youth discontinued participation in YFSP.

Procedures

Interview guides were developed and used to facilitate discussions; however, the interviewer allowed data to emerge and subsequently followed-up on relevant topics (Rubin & Rubin, 2005). Completing interviews and scripting observations allowed the researcher to first explore why youth joined the project and follow up on emerging themes. Held individually by the same interviewer, interviews were in-depth and lasted approximately 15 to 30 minutes. Conducted in person, they were audio recorded and transcribed by the researcher.

Conducting script observations provided opportunities to understand project culture, interactions amongst participants, and overall project objectives. Observations lasted on average one-hour in length. Observations were participatory as the researcher participated in YFSP activities, meetings, or marketing events. Data was collected at various sites– either at schools or community locations.

Data Analysis

Data analysis included transcribing, coding, and documenting emergent themes from interviews and observations. Interviews were transcribed as verbatim and extensive notes were taken during observations. Analyzing the data consisted of three methods. To aid in analysis, qualitative data analysis software, NVivo 7 was used. Upon completion of first interviews a coding scheme was developed as a starting point in determining emerging themes. Codes were modified, deleted and added as research progressed. Following first round interviews, observations were conducted and coded. However, after coding the data the scheme was revised to clarify some codes and make them more related to motivation and engagement. After

completing second round interviews with students, data was recoded identifying examples to distinguish when codes were applicable and not applicable. Interviews with coordinators were coded using already established student interview and observation codes.

As a second step of analysis, major themes and sub-themes corresponding with each research question were created. Once themes were created the researcher found narrative supporting each sub-theme. For each emergent theme a memo was created encompassing themes and their sub-themes as a way to categorize and start interpreting data. For each theme a summary statement was written about information gathered.

After completing memos, clustered matrices were created to make connections and summarize data collections. Each clustered matrix summarized an emergent theme. For example, 'something to do' was noted through data collections. A summary statement derived from analyzing the theme, 'something to do' for each round of data collection (three interviews and one observation) was charted in a matrix and used to report results. Each round of data collection were interpreted by first student interviews (15), second student interviews (8), coordinator interviews (5) and observations (5). Once matrices were completed, the researcher analyzed them ensuring interpretation accuracy.

Results/Discussion

Results are presented reflecting motivation and engagement research questions. Data was coded, analyzed and grouped providing interpretive results. Codes pertaining or connecting to each question make up results presented in this section. Not every motivating or engaging factor is listed; however, results reported reflect comments of most interviewed individuals. When referring to most students, more than 50% of respondents made an indication of the point in question. Pseudonyms protect participant identities.

Motivation for Joining Farm Stand Project

The first question examined why youth initially joined the farm stand project. The description of the project, as they understood from leaders influenced their decision to join. Because of the projects' uniqueness, each leader emphasized different parts when coordinating and recruiting youth. After completing the first interviews with students the researcher outlined the four themes that emerged from the data collections and is the basis of the results from question one, see Figure 2.

Social: Something to Do

For many youth, interest in joining the farm stand project stemmed from its uniqueness and offered something to do. Many youth expressed they were not involved in any other activities and did not have after school commitments. Youth simply said it was something to do; Jordan mentioned, "I don't really do anything else so I just figured I do something with my time." This trend continued across five sites, and mentioned by at least one participant at each site.

[Taylor:] Yeah it was mainly just being outside, working, having something to do. I mean because I don't do any sports, at least at Coldwater cause I can't run cross country or swim so. I didn't find softball or basketball attractive so I wanted something to do and I like flowers and planting and organic stuff to eat

For some youth it was a project after school and that meant they did not have to go home, Sam said: "it's just something to do cause I don't really like going home and I like keeping myself busy."

[Charlie:] After Sam and Corey told me about it, like the details, it kinda got interesting so I just decided to go, it was kind of on a whim, I was just like ok I don't want to go home, so I just went, it was something to do

Although youth mentioned YFSP as something to do, results highlight other reasons for participation.
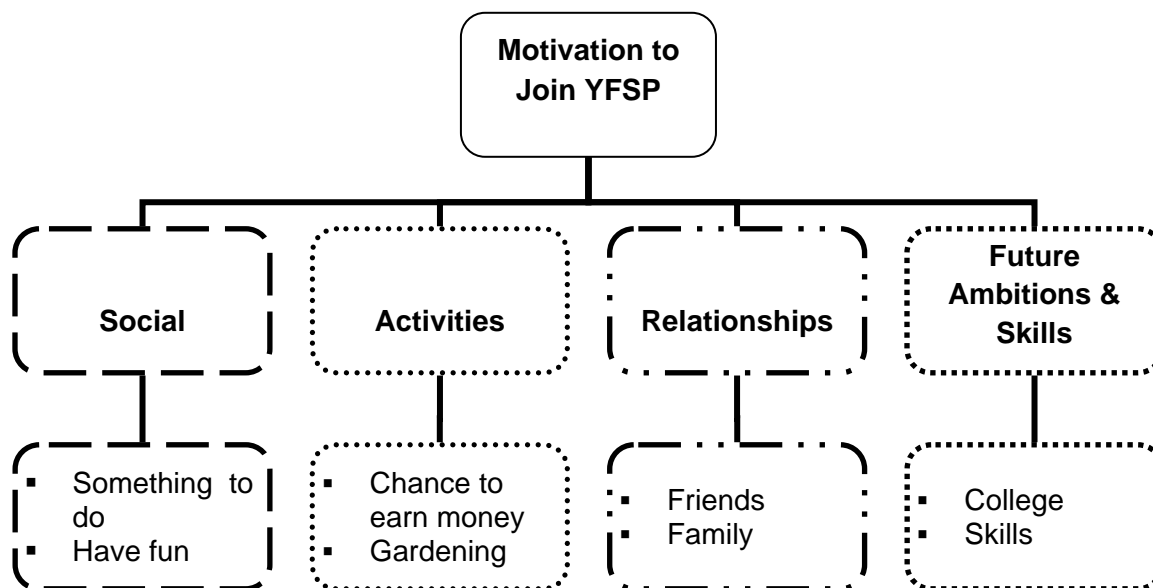
Figure 2. Conceptual framework of why youth joined the farm stand project.

Social: Having Fun

A couple students stated they joined the farm stand project because they perceived it as something fun. Cameron expressed, "I thought it would be fun and exciting so I just joined." Being outdoors and having fun was cited by a number of youth participants as an appealing aspect of the project. Chris mentioned, "it just sounded like fun learning how to do a business plan and learning how to budget and grow stuff and all that, it just sounded kinda fun." Almost every youth respondent indicated some project aspect to be perceived as interesting or fun.

Applegate site incorporated youth farm stand programming into regular class hours, giving participating students a different learning opportunity and one appealing to the students.

[Jamie:] The opportunity to work with like help out my fellow students to take the produce to other farmers markets and the chance to build the actual farm stand in this class, my first hour class, ag mech tech, just sounded like a lot of fun really

Even though not all youth fully understood what the farm stand project was about when they joined, they perceived the project to be fun.

Activities: Chance to earn money

The farm stand project offers incentive to earn money. After the project was described and the researcher saw trends in motives for participation, it was concluded YFSP offered students a summer job experience and enhanced youth motivation to participate. Potential to make a profit while participating in YFSP was a motive for some students; however, throughout interviews it became apparent there were additional reasons to join and they did not solely join because of earning potential. Making money was promoted by a couple sites as a way to recruit students into the project and coordinators thought it was a main selling feature and thought of motive to encourage participation.

[Morgan:] Well the first thing that really caught my mind was that we get paid to do it like personally, the money's not going towards the school or anything but part if it is going towards charity so I thought that was good that some of it's going to charity and we got the rest. About 80% of the profit went to us and I believe 20% went to charity of our profits

Although many youth understood the opportunity to make money, they expressed other interests in the project. Many students thought money was an added project benefit not so much a perceived interest to join.

[Kelly]: So I decided like I should give it a shot because there seems like there's going to a money making opportunity as well as a business opportunity for me to gain too in this program

When asked about why they joined, some students related their answer to what coordinators communicated about the project and thus why they joined. Students from every site understood the project in part as a way to make money during the summer.

[Kelly:] They said it would be a project about business, marketing and give us a chance to make some money and stuff like that, so I was alright because I'm interested in business anyways. Yeah well they started telling us how much money we could make and the money that we were getting was a grant so it wasn't like we could go in the hole, it was only like we could make money

Although money was mentioned by at least one student from each site, some youth did not mention the chance to earn money, and Taylor even said, "she mentioned money, that there could be some money, but I didn't really care too much about the money because I have enough." This was atypical of discussions surrounding money with interviewed youth.

Activities: Gardening

Many youth involved in the project had prior gardening experience. Cameron said, "I joined because I wanted to help out with the garden since I already know how to do gardening and I want to encourage and help them try to start there own garden when they grow up." This was an appealing point of the project as participants felt they already had established gardens and experience making this project ideal and one worth pursuing. For some students learning how to garden was appealing and for other students already having established gardens was attractive.

[Jamie:] Well, I lived with my grandparents for eight years, about six of those eight years we moved from farm to farm and we always had gardens and animals to take care of and I was already really good when it came to plants and animals so I figured it be something I already know how to do so it wouldn't be a difficult project

Gardening together with other students interested one student who had a garden at home. Corey said, "yeah cause normally like at my house I'm the only one who does it so to do it with lots of other people who like the same stuff interests me more."

Interested students in gardening usually mentioned an influential person with gardening experience or who had exposed them. Shannon stated "and my dad is a green thumb so I'm pretty good at growing plants and various herbs and flowers and what not." Bailey made mention about interest in gardening, "sorta, I've helped my mom with her garden sometimes throughout the years." Other students expressed interest in gardening because of parents experiences.

[Sam:] Just being able to plant stuff because my mom was a migrant worker and stuff so she got to plant stuff and pick stuff all the time so she wants me to get interested and we plant stuff at home all the time and just the idea of having a garden here or having a chance of dealing with produce and stuff got us excited I guess

For students with gardening experience or an interest in learning how to grow food, the gardening component was a motivating factor to join. Upon joining, over half of involved students were interested in the gardening aspect of farm stand project. For many youth reasons to join the project were because it was something to do and it was fun. Overall, interviewed youth joined the farm stand project based on their perceptions of what the project was about. What leaders emphasized to students during recruitment as opportunities to join were usually reiterated by youth as project benefits. Students with gardening experience saw opportunity to do something they were already involved with while helping fellow classmates garden. The influence of others, including friends, family and leaders was perceived my most students as a secondary motivator to participation; however, some youth joined on the whim their friends said it would be fun. Lastly, most youth saw the farm stand project as a way to benefit future ambitions or to develop skills. However, overall, most youth did not make the connection that farm stand could possibly benefit them in future work situations and ambitions.

Sustained Engagement

YFSP was designed as a year long initiative to involve youth in planning, growing or procuring, and running farm stands. From project onset, some sites had continuous participant turn-over. Engagement in certain aspects of the project may have happened. Overall project engagement did not result. Barriers to sustained participation was addressed from the coordinators standpoint and illustrated in the final research question. For the purpose of this section, factors encouraging engagement of eight students, interviewed twice, is reported. Two of eight students sporadically participated through summer months and availability for a second interview was not problematic. This was not the case for seven students who did not complete.

As a way to report youth engagement results, engaging activities are reported. Coordinators' views on youth engagement are reported amongst the findings. Because sites focused on different project aspects, comments vary, yet similarities resulted and are the basis of this portion of results.

Engaging Activities

Along with initial motivation to join YFSP, students expressed activities or interests enhancing involvement. As defined, youth had to engage in meaningful activities and sustain participation beyond the good of himself or herself. During second round interviews, students revealed activities surrounding YFSP proved engaging. Much like motivational factors, dominant engaging factors included: (1) having fun while spending time with friends, (2) gardening, (3) working at farm stands and (4) having something to do. Secondary activities included: (1) cooking, (2) gaining business skills, and (3) interacting with customers. Although individual students expressed these activities as engaging, they were only noted by one or two students. Therefore they are not seen as most engaging as compared to the four reported activities.

Spending time with friends at the farm stands and while gardening was noted by a number of students as enjoyable. When Charlie was asked about the best part of the project, it was mentioned, "my friends, cause we only see each other during the school day so being after school and them being there too, I don't kinda do anything that they're in." Although students did not necessarily know each other at the start, by interacting and working together to accomplish project goals, new friendships emerged.

> [Coordinator A:] I think that you take student who probably weren't hanging out with the popular girls and then put them down here at the farm stand and they have to sit and help customers for a few hours twice a week and I think created some really good friendships

Besides new friendships forming, having fun together was noted by several students and coordinators as the most enjoyable part of the project. Coordinator B said, "I think it ended up just being fun working together, doing something different in the program." When asked about engaging activities.

Participating in fun activities was mentioned, including activities as gardening, cooking, and farm stand marketing. Morgan said, "I like how everyone was so nice about it and everything and how it was interesting to learn how to like I said just do something that you enjoy doing and then make a profit off of it so I thought it was fun." Interviews and observations concluded that having fun while participating in activities was reason for sustained engagement. Youth interested in making money at the beginning continued to participate when the activities proved exciting and fun.

Although some youth articulated experience YFSP gave them, others continued to express the project as something to do and did not provide specific experiences that were gained. Initially youth joined because it was something to do and remained engaged for the same reason. However, youth communicated engaging aspects of the project.

> [Jamie:] I've always enjoyed growing vegetables and produce, I lived on a farm with my grandparents for a few years and we grew everything from corn to beans and all that and it just sound like something fun to do

Results showed opportunity to earn money was not an engaging factor and since many sites did not make money, it was not a reason for continued participation. Knowing that work was attributed to the greater good of the community was noted by some students as a beneficial aspect to participation. Gardening and working at the farm stand were seen by several participants as reasons for continued involvement and engagement. Participants remained engaged in YFSP for the experience offered and the notion that it was an avenue to spend time with friends while having something to do.

Participation Barriers

YFSP was a year long initiative, yet seven of 15 initial students who started the project and interviewed did not complete for various reasons. Rather than speculate why they did not complete, interviews were conducted with coordinators to gain a better understanding of why youth did not complete or continue participation. Main participation barriers faced by youth included transportation, family commitments and program completion. Table 1 illustrates barriers faced by youth and are categorized by sites.

Table 1.

Barriers impacting youth participation in farm stand project.

Study site	Participation barriers (beyond project parameters)	Students' decision to discontinue or disengage from project
Applegate	▪ Decision made by family to discontinue participation	▪ Conflict with coordinator
Bell	▪ No longer affiliated with host program	▪ N/A

Coldwater	▪ Transportation to project site	▪	Student was not earning money
	▪ Family moved during project		
	▪ Enlisted in Marines		
Duffy	▪ Family moved during project	▪	Commitment pressures of coordinator towards youth
Elgin	▪ Family illness	▪	N/A
	▪ Summer school		
	▪ Transportation to project site		

Programming constraints, family commitments and transportation barriers were faced by youth who could not continue participating in the summer. When school was in session and programming was integrated into class work or after-school, participation was likely. Sporadic participation occurred throughout the summer months and students who could get to the project site participated. Main reasons for discontinued participation resulted by barriers beyond student control.

YFSP offered 'something to do' initially and throughout the summer. YFSP attracted some students as opportunity to make money; however, during final interviews some of those same youth did not mention making money but continued participating because it was fun. The gardening component attracted and sustained youth participation. By growing and interacting in the garden, many students expressed the perceived fun they were having. Overall, youth were initially extrinsically motivated to participate for reasons such as making money and school or court credit. As time passed, it became apparent, youth continued participating and were motivated by intrinsic factors, including, spending time with friends and having fun. Most students experienced movement from motivation to engagement, even when external barriers prevented continued participation.

Conclusions/Implications/Recommendations

This section synthesizes and discusses study results. It highlights insights into the findings while connecting the study with past research done by Pearce and Larson (2006) among other motivational and engagement studies. Further, discussion surrounds theoretical implications and suggestions for future practice. By evaluating YFSP through the lens of motivation and engagement, the study was designed to gather participant perspectives with coordinators contributing supplemental information in order to best answer the research questions. The small nature of the study indicates results cannot be generalized across a large population; however, study outcomes contribute to YFSP research knowledge.

Results concluded farm stand project programming continually changed throughout. From initial meetings, youth faced barriers resulting in discontinued or sporadic participation causing necessary adjustments. Although some programs incorporated programming during school day activities, student involvement was voluntary. Voluntary participation attributed to some irregular involvement; however, eight of 15 initially interviewed youth engaged in some aspect of YFSP from beginning to end.

As Pearce and Larson (2006) explained, participants join projects for inherently different reasons by which they engaged. Their research on youth action was designed based on Ryan and Deci's (2002) self-determination theory. Pearce and Larson (2006) suggested motivation to engagement as represented by a continuum of amotivation to intrinsically motivate. Moving along the continuum highlights the processes of youth motivation to engagement in organized activities. Although participants in the Pearce and Larson study made a continual movement from motivation to engagement, YFSP participants did not make such strides in comparison.

YFSP students joined for several different reasons, including opportunities to earn money. As an extrinsic motivator, and classified as a reward, the opportunity to make money is externally regulated and completed to satisfy an external demand. Very few students joined solely as an earning opportunity, yet almost each student mentioned the possibility participation could result in profit earning. As the season went on, participants did not realize earning potential, yet youth continued for the fun the project was providing. Earning potential was not realized for participants, yet youth continued involvement for the fun the project was providing. Harackiewicz and Sansone (2000) determined extrinsic motivators (ex. rewards) can simultaneously initiate processes that result in greater intrinsic or extrinsic motivation, depending on the activity or the individual. Although students were not earning monetary rewards, other intrinsically motivating factors such as fun and enjoyment occurred.

In addition, one of the dominant themes communicated by youth and coordinators was YFSP emerged as something to do. This was a different finding from Pearce & Larson (2006) and perhaps this explains why youth may not have moved noticeably along the motivational continuum. Further, because the program was not mandatory and barriers prevented continued participation for over half of the initial students, engagement at different levels was not noted. More precisely, most students were extrinsically motivated at the beginning, but at the end they were intrinsically engaged by the social interactions and fun that was happening.

Pearce & Larson (2006) found the self-determination theory adequate in defining youth motivation to engagement. Even though YFSP did not exhibit the same degree of movement, self-determination theory has potential to influence other studies as a lens to capture youth moving towards sustained engagement. Particular challenges face low-income communities and some of these barriers were noted during the study, including, transportation, family commitments, and program change. Similar to findings by Lauver, Little & Weiss (2005), program flexibility allows for increased youth participation. By promoting this finding to other such programs, program developers can enhance probability of continued participation leading to sustained engagement.

Understanding project objectives and articulating them during youth recruitment is important to ensure youth understand the positive impacts their involvement has for personal growth and community enhancement. Developing goals and expectations, students have opportunity to gauge interest and continue involvement realizing their stated outcomes. Although not always feasible, involving youth in the action planning process, contributes to early exposure of objectives and funding expectations may embrace students' interest and increase engagement.

Although one aspect of farm stand project is the opportunity to participate in an entrepreneurial experience, coordinators should avoid promoting monetary gain through participation. Rather than recruiting youth with intent to earn money, highlighting skills and connections youth may gain is more appropriate and better aligns with program objectives. Such examples include teamwork, leadership, community involvement and transferable job skills. Such job skills can provide resume additions. By not guaranteeing earning potential, youth do not have preconceived ideas about making money and therefore enroll in the project for other possible benefits.

Through the study and yielded results, several implications for practice emerge with application for use in future farm stand projects and work with youth and community food systems. By examining trends materializing from results and implementing change, the C.S. Mott Group can improve the farm stand project and continue developing youth-driven collaborations surrounding community food systems. Many findings indicate YFSP positively impacts youth, adults, and low-income communities across Michigan. Results show potential to foster further development and influence more youth and engage more communities in food systems work. Implementing improvements may enhance the project and impact youth motivation and engagement.

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NEBRASKA ELEMENTARY TEACHERS' UNDERSTANDINGS OF AGRICULTURE CONCEPTS: A CASE STUDY IN EDUCATIONAL SERVICE UNIT #2

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Abstract

Agriculture plays a defining role in the economy of Nebraska and the Nation, though less than 2% of the United States population are engaged in production agriculture (Borlaug, n.d.). Most Americans have not acquired basic agriculture literacy (Meischen, 2002, p. 8).

The Nebraska State Board of Education published the Nebraska Agricultural Education Curriculum Framework and Content Standards in 1999. This study looks at the impact, on the elementary instructor, of these standards, as well as documenting teachers' wiliness and perceived ability to provide instruction within agricultural concept, and identifying integration of agricultural concepts into the curriculum. Teacher comfort level, in teaching agricultural based curricula, were examined, as well as the availability of accurate and appropriate curriculum resources with which to convey agricultural information and perceived outside factors affecting the integration.

Findings indicate agricultural material does not hold a firm place in the curriculum, with integration into only the social studies and science curricula areas. Teachers had difficulty recognizing how agricultural concepts could be taught through other academic areas. Findings indicate the teacher participants understand the importance of integrating agriculture concepts, while also indicating difficulties in this, due to time constraints and curriculum uncertainties related to standards and level of teacher autonomy.

Introduction

Twenty-two percent of the Nebraska work force are employed in some phase of the production, distribution, and processing of agricultural products. This percentage is the highest for any state in the country (United States Department of Agriculture, National Ag Statistics Service, n.d.). At the same time, less than 4% of the population in the industrialized countries, and only 2% in the United States, are directly engaged in production agriculture (Borlaug, n.d.). Yet, the agricultural industry plays too large a role in every consumer's life to be ignored.

Meischen (2002) noted that most Americans have not grown up within this culture of agriculture and, as a result, have not acquired basic agriculture literacy (p. 8). Similarly, Frick (1990) states that leaders of our society, today's and tomorrow's, know far less about the real impact of agriculture upon our society. That lack of agricultural knowledge translates into a general population which is ill equipped to make informed decisions about agriculture in their personal lives (National Research Council, 1988). Numerous groups have long emphasized the need for agricultural education. This position was given increased credibility, with the National Research Council's report (1988), which stated that, "at least some instruction about agriculture

should be offered to all students, regardless of their career goals or whether they are urban, suburban, or rural" (p. 8).

In an effort to combat the lack of agricultural literacy among students, and following the recommendation of the National Research Council, Nebraska was among a number of states which developed agricultural literacy concepts. The Nebraska State Board of Education published the *Nebraska Agricultural Education Curriculum Framework and Content Standards* (1999), with one chapter tasked to, "Identify a brief topical scope and sequences of agricultural literacy concepts that could be used to integrate agriculture into elementary classrooms" (Nebraska State Board of Education, 1999, p. 1).

The agricultural literacy concepts listed in the *Nebraska Agricultural Education Curriculum Framework and Content Standards* were developed through a synthesis of concepts outlined in the *Food and Fiber System Literacy Framework* (Leising & Igo, 1998). In the adaptation of these benchmarks for use in *Nebraska Agricultural Education Curriculum Framework and Content Standards* (Nebraska Department of Education, Vocational Division, 1999), there was no additional testing of the benchmarks in Nebraska elementary schools.

Elementary instructors had minimal in involvement in the creation of the *Nebraska Agricultural Education Curriculum Framework and Content Standards*. Further, the agricultural benchmarks have not been widely distributed among elementary teachers (L. Bell, personal communication, August 18, 2003). However, the benchmarks were published by the Nebraska Department of Education, Vocational Division (1999) as the only Nebraska agricultural literacy content concepts available for instructional use.

Purpose/Objectives

Frick, Birkenholz, and Machtmes (1995) noted, "The first step in improving the agricultural literacy level of a population is to determine the current literacy level… a bench mark that verifies the level of agricultural knowledge and perception should be determined" (p. 44). This research arose from a need to understand the current literacy level of the teachers, along with their perceptions of agricultural issues, in an effort to provide effective agricultural literacy curriculum. Two objectives were specified for this study, as follows:

1) Explore teachers' backgrounds and experiences, relative to agricultural literacy knowledge.
2) Determine level of integration of agricultural concepts into the academic curriculum.

Methodology

A case study method, as selected for this study, is an intensive description and analysis of a phenomenon or social unit (Patton, 2002). The goal of the study is not to formally measure variables. Rather, the researcher attempted to paint a picture with words to describe the variables in a specific situation. In-depth interviews, open-response questions, and documents were used to obtain data of participants' meanings (McMillan & Schumacher, 2001).

The findings of this study are not intended to be transferable to different populations of teachers, but will give insight into the current understanding of teachers interviewed and used as a comparison to previous studies. The findings provide a basis for interpretation of a specific point in time and in the particular context (Merriam, 2002).

The first research objective explored teachers' backgrounds, experiences, and sources of agricultural literacy knowledge. It is important to understand a teacher's background and experience, as they play a significant role in educating students about agriculture (Knobloch & Martin, 2000). Harris and Birkenholz (1996) stated, "educators who lack a background in agriculture may be reluctant to incorporate instruction about agriculture into their curricula" (p. 64). Understanding the teachers' background is critical, as ones personal experiences with agricultural issues will influence their ability or willingness to take in new information.

The second objective sought to determine the extent of integration of agricultural concepts, as outlined by the *Nebraska Agricultural Education Curriculum Framework and Content Standards* (Nebraska State Board of Education, 1999), into the academic curriculum. This objective was not intended to measure a comprehensive review of the classroom's curriculum.

In this study, six teachers were interviewed, chosen from school districts within the Educational Service Unit (ESU) #2, in eastern Nebraska. The ESU #2 area was purposely chosen, as it serves rural elementary schools within eastern Nebraska. The individual teachers were purposefully selected, based on the school principal's recommendation of teachers who represent a range of experiences. Pseudonyms were assigned to each teacher and school. All of the teacher respondents were female. State-wide in Nebraska, 86.52% of the elementary teachers are female (Nebraska Department of Education, 2003).

Findings

Teachers' Demographic Background

The schools involved in this study are located in rural areas and, at the time of the study, each of the teachers lived in the rural area. Lisa and Jackie both lived on working farms. Kate lived on an acreage, while Dana, Christina, and Ann all lived inside city limits. Lisa and Jackie were heavily involved in the daily operations of their farms, though their participation dwindled when returning to teaching full-time. Three of the teachers, Kate, Christina, and Lisa, spent their childhoods on farms. Jackie, Dana, and Ann each spent their childhoods in rural towns. Dana and Ann stated that their mothers had large gardens. All of the teacher respondents had ten or more years of teaching experience at the time of the interview, with Kate, Lisa, and Dana having twenty years or more of teaching experience (See Table 1).

In terms of professional development related to agriculture, two of the teachers had previously participated in an Ag in the Classroom workshop, while four had utilized Activities Integrating Mathematics and Science (AIMS) materials in the classroom. One teacher attended a Project WET and Project WILD workshop. Two teachers stated they utilized materials and guest speakers from commodity groups, with two having utilized materials and speakers from the

county extension service. Additionally, two teachers have utilized guest speaker to discuss topics related to agriculture.

Table 1. Teachers' demographic information

Name	School	Gender	Home Location – as a child	Home Location – as an adult	Years Teaching	Agriculture Groups and Materials used, at least once, as Resources
Kate	A	Female	Working Farm	Acreage	28	AIMS Materials; Guest Speaker
Christina	B	Female	Working Farm	Rural Town	11	County Extension; Guest Speaker
Jackie	C	Female	Rural Town	Working Farm	16	None identified
Lisa	D	Female	Working Farm	Working Farm	34	Ag in the Classroom Workshop; AIMS Materials; Commodity Group; County Extension; Guest Speaker
Dana	E	Female	Rural Town	Rural Town	20	AIMS Materials
Ann	F	Female	Rural Town	Rural Town	10	Ag in the Classroom Workshop; AIMS Materials; Project WET and WILD Workshop; Commodity Group

Nebraska Agriculture Concept

The *Nebraska Agricultural Education Curriculum Framework and Content Standards* lists "Nebraska Agriculture Concept" as one of the agricultural topic areas that "could be used to integrate agriculture into the subjects of science, math, social science and language arts for Kindergarten through sixth grade" (Nebraska State Board of Education, 1999, p.2). Within this concept, two specific examples are given for third through fourth grade (p. 3).

    1. Explain basic process from producer to consumer.
    2. Fun facts that encompass each of the agriculture sectors.

Four of the six teachers stated that they explained the basic process from producer to consumer. For example, Kate discusses food processing within her Health and Science unit: "We discuss where some of these foods come from, how they are processed. We also discuss that some [foods] have more salt and additives in them than others."

For Christina, textiles provide a way to present this information: "[In science] we talk a lot about combines and fields and then they get into cotton field. So, I actually have to bring cotton in and talk about how the combines… then what is made out of cotton, for the shirts."

Jackie does not cover the process in the classroom and was unsure if her students would have that knowledge:

> The process of meat getting to the dinner table - depends upon the child. As a whole, I think by fifth grade they would know. But sometimes, you know, if there is a child who has grown up strictly in the city or that type of environment, it might be a questionable thing... If they know it, they have learned it at home.

With the exception of Lisa, the teachers were unsure of what would be considered "fun facts that encompass each of the agriculture sectors", as listed in the *Nebraska Agricultural Education Curriculum Framework and Content Standard* (Nebraska State Board of Education, 1999, p.3). The notions of "fun facts" as well as "agriculture sector" were unclear to the majority of the teachers, as evidenced by Kate and Jackie's comments below:

- "Fun facts that encompass the agriculture sectors. What do you mean by that?"
- "I don't know what you mean by the agriculture sectors."

Three of the teachers discussed the "basic processes from producer to consumer" in their curriculum, through either crop or livestock production. Two of the teachers believed that their students would have a difficult time explaining the progression from producer to consumer.

Lisa is the only teacher respondent that noted including "fun facts" in her curriculum. She noted her involvement with a local pork producer's commodity group as increasing her awareness of educational activities, showing interesting facts about the pork industry, along with being aware of agricultural statistics and rankings. Lisa was using outdated materials and had not secured current educational materials produced by the commodity groups. She had procured current agricultural statistics and rankings, though.

Agribusiness/Economics Concept

The second concept area is "Agribusiness/Economic Concept" (Nebraska State Board of Education, 1999, p.3). Within this concept, two specific examples are given for third through fourth grade level.

1. Identify agricultural businesses.
2. Field trip to an agriculture business.

In her classes, Lisa looks at businesses that have an impact on the State's economy, to discuss the agricultural industries and manufacturing in Nebraska: "We talked a great deal about business, with ConAgra as one of our biggest companies in Nebraska that deals with agriculture. Through [the] internet, I can pull it up and get the top ten businesses." Kate discussed, in class, the agricultural industries and manufacturing in Nebraska:

I have the kids tell me how many of their parents …live on a farm or have a job that is tied into agriculture. But then we talk about what they are and then as we go on, we find out…"my dad works at the tire shop". Well, that is tied into agriculture because they need tires for their truck or tractor. When you live in a community like where we are today, most of the jobs will tie back to agriculture.

Ann was unsure if her students could identify agricultural business, as it was not discussed in her class. "Um, they might know some of the agricultural businesses from home." Similarly, Jackie and Christina stated they did not identify agricultural businesses in class since they believed their students are learning the information outside of school. As Jackie stated, "I think because of the small town, the locale, they would know what agricultural businesses are."

Dana did not think that her students could identify agricultural businesses, though she felt it is important for the students to know: "They are living here; they need to know their place." She also noted that the large and small cities alike in Nebraska are agriculturally based communities, making it important for all students to understand the agricultural businesses: "I don't think it matters if it is an urban or rural community thing."

None of the teachers reported taking field trips to agricultural businesses, primarily due to concerns with safety or the cost of the trips. Lisa expressed an interest in taking her students through a nearby meat packing facility: "I don't know if they take tours anymore because of [safety]… I think that would be important.

The cost of field trips, primarily busing costs, greatly limited the number of trips teachers could take. According to Ann, "If busing wasn't a concern, there probably would be room for [field trips to agricultural businesses], but [not] with our current budget."

Jackie doubted that the majority of classes have the opportunity to take a field trip to an agriculture business: "My guess is that it is not one that is done on …a yearly basis."

Crop Production Concept

"Crop Production" is the third concept looked at (Nebraska State Board of Education, 1999, p.4). Within this concept, three specific examples are given.

   1. Identify local crops grown in Nebraska.
   2. The importance of water and its origination.
   3. The effect of climate on crops, both positive and negative.

Lisa stated that her students, in class, identify crops grown locally. Kate works to introduce students to crops grown throughout Nebraska, within the social studies curriculum:

I try to tell also that there is diversity in Nebraska. Not only here in the northeast part of the state. Many of the kids think that everybody in the state grows soybeans and everybody grows corn. And we talk about sugar beets and pinto beans and that type of thing…grown in the western part of the state.

Christina compares crops grown locally, such as corn and oats, with crops grown outside the state, such as cotton and peanuts. Christina noted, though, that most of her students "didn't even know what a corn leaf looked like. I brought that in when we were studying plants, or leaves, to run the vein up. They had no idea."

Dana stated unless her students lived on a farm, they would generally be unable to identify local crops grown. She felt strongly, though, that "100% of the class" should have the ability to identify local crops, regardless of where they reside.

Students in Lisa's class identify the importance of water, and its origin: "We have done water; sometimes I even have a speaker come and talk about…the analysis of water and our water table in Nebraska. We talked about…how other countries compare with Nebraska." Kate also indicated that her students could identify the importance of water and its origin. Her students also become familiarized with the Nebraska aquifer.

Ann's students learn about the importance of water within both the science and social studies curriculum, while Jackie's students cover the topic in their science lessons. Lisa discusses the effect of climate on crops during the social studies lessons, as they discuss what crops grow best in a particular region. Ann's students also study climate on a regional basis: "We talk about how the climate and different type of weather in each region would affect crops." Kate indicated her students could identify the effects of climate on crops, both positive and negative, though it is not discussed in her class.

Food Science and Technology Concept

The fourth concept looked at is the "Food Science/Technology Concept" (Nebraska State Board of Education, 1999, p.5). Within this concept, three specific examples are given.

    1. How does grain become food?
    2. Is our food safe to eat?
    3. The food chain.

Lisa stated that her students use an activity to understand the process of how one grain becomes food. "We did a little booklet on corn and how it becomes cornflakes." Kate also uses the 'corn to cornflakes' example when teaching students how grains become a food product:

> We have been talking about processing plants and what some of these different products are used for. Like the corn, we talk about corn flakes, what you eat for breakfast, and that type of thing. We are talking about, like for example corn, we have been listing products…that come from corn.

Christina discusses grain production primarily by examining the cotton plant. A former student provided a dried cotton plant, which she uses as a visual:

I actually…bring cotton in and talk about how the combines are different when they pick cotton compared to our combines that pick corn and soybeans. They get into more of that and then what is made out of cotton, [such as] for the shirts.

Jackie does not cover the process of how grain becomes food, but believed most of the students would understand the concept. Lisa discusses food safety, from the standpoint of the need to wash fresh vegetables and fruits to reduce chemical exposure. Kate and Jackie stated they did not teach food safety issues and were unsure if their students would have that knowledge. "Is our food safe to eat? Now that is one that I would question whether that has been taught up until this point." Dana looks at food safety in class from a position of concerns with the global food supply and terrorism:

I think the food safety issue might be something that…is turning into a bigger topic. I mean, even after 9/11 when we started, you know, looking at water sources or feed supplies. And there again how that food supply…crossing boarders and what a difference that makes in food safety.

Ann was the only teacher that stated she teaches the food chain in class, though all of the teacher respondents felt their students came into the fourth grade with sufficient knowledge on the food chain, as Kate stated: "By the third or fourth grade, they understand the food chain."

Livestock Production Concept

The fifth concept looked at is "Livestock Production Concept" (Nebraska State Board of Education, 1999, p.5). Within this concept, three specific examples are given.

1. Understand the process of meat getting to the dinner table.
2. Identify groups of livestock and their names (e.g. litter, herd, flock).
3. Nebraska history and rank.

Students from the local FFA Chapter gave a presentation to Ann's students to discuss the process of meat getting to the dinner table. This was the only lesson they had on the process. Kate and Lisa both discuss the process of how meat gets from the farm to the dinner table, primarily using beef as an example commodity. Lisa provides an example:

They write a story, on a paper of a big steer, and [about] how did that steer get to [the table]. The rancher fed his calves, and the process that it gets to a feedlot, and then we have to go to the [beef processing facility].

Ann introduces the names of animal groups within the students' spelling lessons. Kate does not specifically identify, in class, groups of livestock and their names, but felt the students were competent in this area. "We have a lot of working farms in this area, so I think that is just a process of living." Her students discuss the state rankings of various commodities.

Lisa stated that her students look at production rank of various commodities by viewing the state rankings on cards. Lisa was unsure of which organization provided the cards, though stated

she was sent a postcard each year to remind her to request updated materials. Ann and Jackie stated they did not discuss the ranking of commodities, though do cover some areas of Nebraska agricultural history within the Nebraska history unit. Jackie reported that her students would have a good grasp on this material to some extent: "I think most of them students would know some of [the history of agriculture in Nebraska]…it depends on how in depth you want them to have this information."

Table 2. Agricultural concepts integrated into the fourth-grade curriculum, noted by teachers

Nebraska Agricultural Concepts, as stated in the *Nebraska Agricultural Education Curriculum Framework and Content Standards* (Nebraska State Board of Education, 1999)	Lisa	Christina	Kate	Jackie	Dana	Ann
Explain basic process from producer to consumer.	X	X	X			
Fun facts that encompass each of the agriculture sectors.	X					
Identify agricultural businesses.	X		X			
Field trip to an agriculture business.						
Identify local crops grown in Nebraska.	X	X	X			X
The importance of water and its origination.	X			X		X
The effect of climate on crops, both positive and negative.	X			X	X	X
How does grain become food?	X	X	X			
Is our food safe to eat?	X		X		X	
The food chain.						X
Understand the process of meat getting to the dinner table.	X		X			X
Identify groups of livestock and their names, e.g. litter, herd, flock.	X					X
Nebraska history and rank.	X		X			
Total number of concepts integrated	11	3	7	2	2	6
Percentage of concepts integrated	85	23	54	13	13	38

Discussion

This study did not seek to determine the agricultural knowledge of the elementary teachers, but instead to explore whether or to what extent they were teaching the agricultural topics as set forth by the *Nebraska Agricultural Education Curriculum Framework and Content Standards*.

This study looked at 13 of the agriculture concepts outline by the *Nebraska Agricultural Education Curriculum Framework and Content Standards* (Nebraska State Board of Education, 1999). The six teachers involved in the study integrated an average of 5.17, or 40%, of the 13 concepts into their curriculum. This includes materials that teachers acknowledged they "touch on" or "include if time permits." These responses indicate that the material does not have a firm place in the curriculum.

The Nebraska State Board of Education (1999) provides that "instruction about agriculture should be integrated into daily instructional programs of math, science, social studies, art, writing, reading, etc." (p. 2). However, findings indicate that teachers noted the integration of agriculture into only the social studies and science curricula areas, not the other academic areas, such as math, art, writing, and reading. Additionally, teachers had a difficult time recognizing how agricultural concepts could be taught through other academic areas.

Teachers in this study questioned whether they have accurate and appropriate curriculum resources with which to convey this information. Detailed information about the concepts may not be readily available to teachers. For example, though the *Nebraska Agricultural Education Curriculum Framework and Content Standards* offer specific examples of the concepts, no accepted answers are provided.

Each of the teachers identified perceived outside factors that affected their ability to integrate agricultural materials. Lisa reported the most flexibility within her curriculum and she clearly utilized more outside resources (six) than the other teachers in the study. Lisa has also spent the majority of her life on a working farm. Each of these factors likely contributed to the increased number of concepts (eleven) covered in her curriculum. By comparison, Jackie, who also has a strong agricultural background, reported a lack of flexibility in the curriculum, along with intense pressure related to the Nebraska State Standards. She had also recently changed grade levels. These factors likely contributed to the lower number of concepts (two) integrated. While each of the teachers noted the importance of students understanding concepts associated with agriculture, they expressed hesitation in the integration of agricultural materials, due to time constraints and curriculum uncertainties related to standards and level of teacher autonomy.

Four of the six teachers indicated a high comfort level with teaching agricultural based curricula. Each of the four stated that the agricultural knowledge they possess comes predominantly from their childhood upbringing, versus classroom or workshop learning. This fact likely explains the teacher respondents' assumption that students are also learning agricultural knowledge outside of the classroom.

Implications

As fewer individuals, including students and current teachers, have direct involvement in the agricultural industry, the task of educating the public about agriculture and agricultural knowledge becomes more daunting. Agriculture plays a strong economic role within each of the communities in which the teachers reside. This fact, alone, leads to a false sense of security with respect to assumptions about students' agricultural knowledge. Each of the six teachers, at some

point in the interviews, referred to the fact that their students learn agricultural knowledge simply because they live in an agricultural area.

Teachers assumed students were gaining their agricultural knowledge from outside of the classroom, primarily due to the fact that they live in communities with an economy based on agriculture. Similarly, it cannot be assumed that teachers will have the background knowledge to present agricultural materials effectively to students. To feel comfortable in presenting agricultural material, teachers must have sufficient background knowledge or risk providing students with misinformation. Teachers should be deliberately equipped to address the challenge set by the National Research Council which states that "beginning in kindergarten and continuing through twelfth grade, all students should receive some systematic instruction about agriculture" (1988, p. 2).

The need for a population that is agriculturally literate is well documented (Frick, Kahler & Miller, 1991; Jansen, 2002; Meunier, Talbert, & Latour, 2002; National Research Council, 1988; Nebraska State Board of Education, 1999; Williams & White, 1991). Because students are the future consumers, legislators, and voters, agricultural educators must continue the effort to increase the agricultural literacy of elementary students. This effort begins with those educators who work directly with these students on a daily basis, and this study illustrates that there is room for improvement.

This study indicated that the selected agriculture concepts do not occupy a predominant place within the curriculum. The positioning of agricultural knowledge at the margins of the elementary curriculum is unlikely to result in strong knowledge gains.

Teachers involved in the study were unaware of the existence of the *Nebraska Agricultural Education Curriculum Framework and Content Standards*. Teachers must, first, be made aware of the *Nebraska Agricultural Education Curriculum Framework and Content Standards*. However, given time constraints and increased pressure on academic standards, teachers are unlikely to introduce agricultural material without, strong motivation.

Increased energy must also be placed on agricultural literacy efforts, such as Ag in the Classroom and Project WET and Project WILD. Three of the teachers had participated in these formal workshops. These teachers experienced no follow-up, however, and the instruction was not sustained in their classrooms. Each of the teachers indicated that when materials were provided through impersonal means the materials were usually not utilized in their classrooms. Organizations such as Ag in the Classroom who are involved in agricultural literacy efforts are to be applauded for their work. Making follow-up a part of their focus may strengthen their efforts.

Teacher respondents were generally unable to recognize means in which agricultural concepts could be taught through academic areas, other than social studies or science units. Instruction, for both current and future teachers, should focus on providing examples of fully integrating agriculture into all areas of the curricula. Materials should be relevant to the entire curriculum. Providing examples of activities in context to academic subject areas will make the agricultural teaching materials more likely to be utilized in the classroom.

In addition to making agricultural literacy resources available to current teachers in ways that maximize their potential use, it is essential to also focus these efforts on the future teacher educators. Efforts should be increased to provide future elementary teachers with the appropriate resources and education on integrating agriculture into their classroom. Reaching future elementary teachers early in their careers will allow them to more easily integrate agricultural material while their curricula are still being formulated. This effort will need to involve collegiate faculty and the Departments of Education, to bridge the connections.

Additionally, efforts should include educational administrators and others involved in developing curricula, to instill in them of the importance of integrating agricultural materials into the curricula. Although this study found that teacher respondents agreed with the importance of including agricultural material, they generally reported a lack of flexibility in curriculum decisions. Therefore, the effort to increase agricultural materials in the curricula must include more than just the teachers alone.

The state academic standards, approved by the Nebraska State Board of Education, provided a great deal of anxiety for teachers. Teachers were clearly uncertain about how these standards would affect their curriculum and were relying heavily on textbooks until they were more confident of what was expected of them. Future curriculum materials developed should be linked to state standards, to maximize their effectiveness. Reflecting the teacher respondents more tentative approach to integration and resources, in response to the increased pressure from state standards, the primary recommendation by the teacher respondents in this study was to work with textbook companies to incorporate agricultural information. Terry, Herring, and Larke (1992) made the same recommendation, stating, "agricultural educators should work to improve and expand such textbook units to increase the teaching of agriculture to elementary school children as opposed to developing separate materials for this purpose" (p. 58). Textbooks for academic subjects are increasingly aligned to state academic standards. Agricultural information must be included in this same manner.

Recommendations for Further Study

The findings of this study are not intended to be transferable to different populations of teachers or students. Additional studies of this nature will give further insight into the current agricultural understanding of students and could be used as a comparison to this and previous studies. These studies help to not only assess the current status of teacher and student agricultural knowledge, but also to evaluate the changing landscape of rural communities.

This study indicated that the selected agriculture concepts do not occupy a predominant place within the curriculum. The positioning of agricultural knowledge at the margins of the elementary curriculum is unlikely to result in strong knowledge gains. While it is not too late to increase the presence of agriculture in the classroom, an important opportunity has passed. Agricultural educators missed the opportunity to take a strong position in the development of academic content standards. As academic standards are re-evaluated, revised, and updated, agricultural educators should consider making a presence in this process.

Further development should go into linking the *Nebraska Agricultural Education Curriculum Framework and Content Standards* and state academic standards, as well as working to re-evaluate and improve the current *Nebraska Agricultural Education Curriculum Framework and Content Standards*. Without incentive, it is unlikely that the *Standards* will be utilized.

Teachers involved in the study all indicated a desire to know more about the *Nebraska Agricultural Education Curriculum Framework and Content Standards* (Nebraska State Board of Education, 1999). The *Content Standards* serve a useful position within the elementary classroom, but in order to be fully utilized, they must be re-evaluated. Teachers involved in the study were unaware of the *Nebraska Agricultural Education Curriculum Framework and Content Standards*. The *Content Standards* were distributed to high school agricultural education instructors, who were then asked to share the standards with teachers in their school district. It is recommended that educators look at the most effective distribution method.

Finally, further studies should review current textbooks to determine the amount of agricultural information included, along with the accuracy of that information. Teachers, in this study, indicated a desire to see agricultural information within the textbooks. This is not an easy task as textbooks are rarely produced on a regional basis due to economic factors of developing and publishing. However, agricultural commodities and practices vary dramatically between different geographic regions and cultures of the United States, as well as the world. Studies should look closer at how textbooks are being utilized in the classroom, what role agricultural educators and commodity groups can plan in the development of textbooks, and what resources can supplement textbooks. Studies should also determine the effect that increased integration of agriculture within the textbooks has on student proficiency in agricultural knowledge.

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LEADERSHIP COURSES REQUIRED IN AGRICULTURAL TEACHER EDUCATION PROGRAMS

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Abstract

Leadership development has been an important component of secondary agricultural education programs since the FFA was first organized in 1928. Student leadership development continues to occur through FFA opportunities, but education in the area of leadership is not limited to just FFA opportunities. Rather, leadership has become a part of the entire three-component agricultural education program. However, the preparation of agricultural education teachers has focused primarily on the acquisition of technical agriculture content and the development of pedagogical skills. This study was conducted to describe leadership courses required in agricultural teacher education programs throughout the United States. Most agricultural teacher education programs do not require courses in leadership. Furthermore, for the programs that did require leadership coursework the content topics, grading components, and required textbooks included in those courses varied widely. Leadership courses that were required were typically taught in the same department that administered the agricultural teacher preparation program. Based on the findings of this study, agricultural teacher educators should identify core leadership content topics that should be taught in secondary agricultural education programs and ensure that agricultural teacher education candidates are adequately prepared to teach leadership. Programs that do not require leadership courses should examine the curriculum to determine if their agricultural education teacher candidates are adequately prepared to teach leadership content in a secondary agricultural education program.

Introduction/Theoretical Foundation

Leadership is defined a number of ways. "Leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives" (Yukl, 2006, p. 8). Leadership is defined as "the ability to preside, guide, or conduct others, activities, or events with responsibility for the final outcome" (Ricketts, 2003, p. 550). Essential components to leadership include that leadership is a process, involves influence, occurs within a group context, and involves goal attainment (Northouse, 2004). Leadership is "…*the capacity to influence others by unleashing their power and potential to impact the greater good* [italics in original text]" (Blanchard, 2007, p. xix). "To an extent, leadership is like beauty: it's hard to define, but you know it when you see it" (Bennis, 1989, p. 1). Author John C. Maxwell (1993) concludes that leadership is influence.

Leadership has been an important component in secondary agricultural education programs for many years. Agricultural subjects were taught at the high school level as early as the mid-1800's to enable young students to learn about the science of agriculture and to prepare them for useful employment in agriculture. The curriculum was based in production agriculture. Boy's and girl's clubs were organized in the early 1900's to develop the leadership skills of youth.

These included local agricultural student clubs with a specific focus on commodities such as corn clubs, soybean clubs, tomato clubs, and poultry clubs (Hillison, 1993). Clubs were designed to give youth the chance to meet others with similar interests, learn about agriculture, and compete in judging competitions (Hillison & Bryant, 2001). These clubs gave geographically isolated farm boys the chance to improve communication, decision making, speaking, and social skills. Young men were educated in self-expression, parliamentary procedure, and teamwork. The Future Famers of America (now known as The National FFA Organization) was officially chartered in 1928 and was modeled after many of those clubs to enhance leadership development in rural youth.

Participation in the FFA at the local, state, and national levels has been a main source for secondary students to develop leadership knowledge and skills. However, some students have not taken full advantage of the FFA component, thus they were not exposed to potential leadership skill development (Morgan & Rudd, 2006). Leadership knowledge and skills are desired by employers, and today's students need more opportunities than ever before in leadership and personal development for future success (Ricketts & Rudd, 2002). Secondary agricultural education programs have implemented concepts of leadership within course content, and some programs have offered separate leadership courses in an attempt to educate all students in the area of leadership.

The goal for secondary agricultural education programs is to prepare students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems (National Council for Agricultural Education, 2008). This is done through a complete agricultural education program made up of three basic components which include formal instruction, FFA, and supervised agricultural experience programs. Preparing teachers to effectively implement the integrated, three-component model and guide secondary students toward the aforementioned goal has been the primary focus of agricultural teacher education programs for many years.

The status of agricultural teacher preparation was examined about ten years ago. Demand for such research was created as a result of reports that were highly critical of public education and produced a call for reformation of teacher education (Boone, 2002; Connors & Mundt, 2001; McLean & Camp 2000; Swortzel, 1999). Before that time, relatively little research had been reported on vocational teacher education, including agricultural education. The purpose of the early studies was to provide baseline data and a starting point in order to define the status of teacher preparation programs in agricultural education (Swortzel, 1999). One such study reviewed the coursework required among 10 agricultural education teacher preparation programs that were considered by the profession to be of quality (McLean & Camp, 2000). The study focused on the required teacher professional development courses and did not consider general education or technical agriculture courses. Analysis of course syllabi produced a list of 18 identifiable courses. Methodology, program planning, and student teaching were the most frequently cited courses. Taught in at least half the teacher education programs were student organizations, community relations, problem solving, and professionalism. McLean and Camp (2000) recommended dialog among professionals as to what content should be provided in pre-service programs.

The American Association for Agricultural Education (AAAE) adopted National Standards for Teacher Education in Agriculture that provided qualitative benchmarks for agricultural teacher education programs. One of the standards specified, "The design of the agricultural education teacher preparation program ensures that students complete a balanced program of general education, technical content, and pedagogical and professional studies" (AAAE, 2001, p. 2). Therefore, quality agricultural teacher education programs were expected to develop the knowledge and skills necessary for teachers to be competent in all of the areas that they were expected to teach, and for agricultural education teachers that includes the content area of leadership.

Content knowledge and skill in leadership is necessary for teachers to be highly qualified and effective in teaching leadership. Figure 1 presents a conceptual model which illustrates how content knowledge and skills may be acquired by pre-service teachers. This model depicts factors that contribute to a teacher's ability to teach in a particular content area which should potentially lead to student development in the content area.
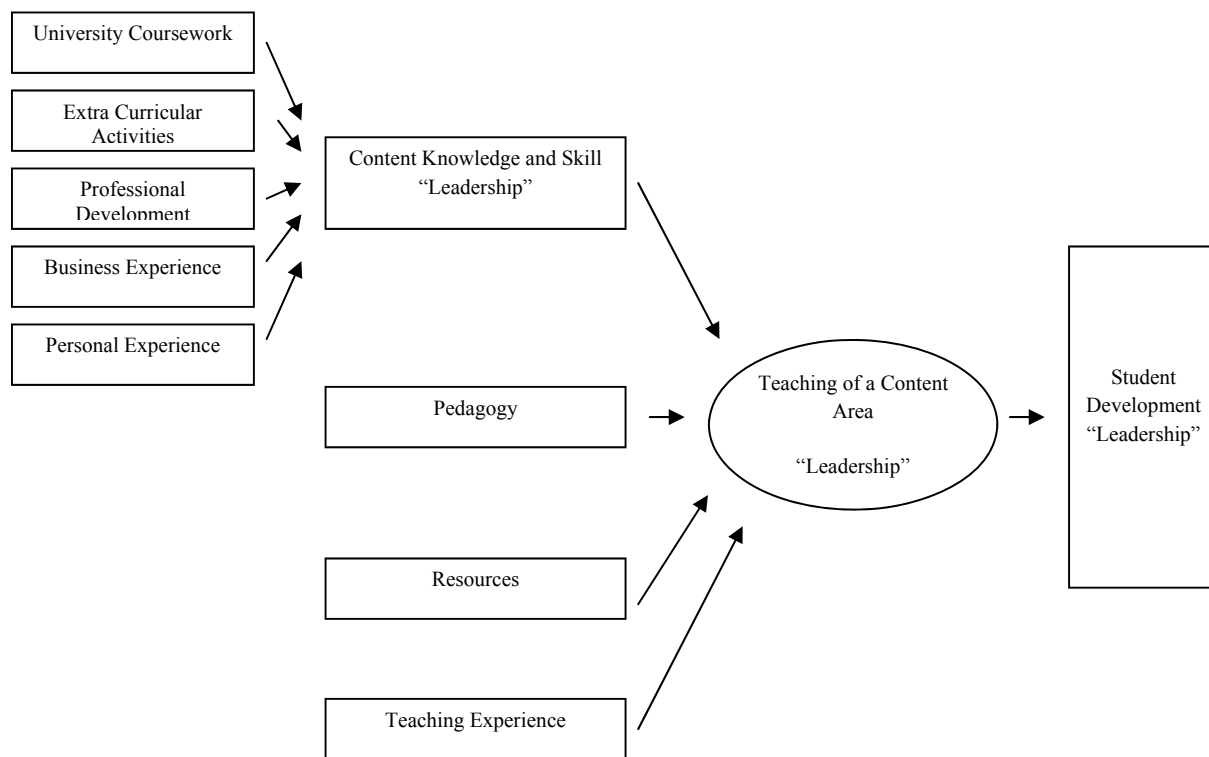
Figure 1. Conceptual Model of Agricultural Education Teacher Candidate Content Knowledge

Post-secondary institutions across the United States provide the education and training for teachers of agriculture. Many Agricultural Education Departments have broadened the definition of teachers of agriculture to include more than just secondary school teachers. Educators in extension, international areas, post-high school, adult, and business may be included in the definition. The original purpose and cornerstone of these departments is in the development and training of secondary agricultural education instructors. "To pretend that the original purpose

should be changed or has been changed would be detrimental to the advancement of the department" (Barrick, 1993, p.12). This study specifically examined the required leadership coursework used to prepare students interested in becoming licensed secondary agriculture education instructors.

Leadership courses at the post-secondary level have been a part of teacher preparation to varying degrees over the years. Many agricultural leadership courses were originally developed to prepare agricultural education teacher candidates to teach about FFA. These courses included topics such as parliamentary procedure, public speaking, and officer development. Therefore, agricultural leadership courses originated from a very practical motive to address what would be taught in high school agricultural education programs. Connections to early course offerings were traced through university catalogs to the early 1960's with the word "leadership" in the title. Similar courses were offered before that time but usually did not contain the word "leadership" in the title. Extension educators also recognized the value of leadership course offerings. Subsequently, courses were often tailored to address 4-H youth leader development and non-formal settings and leadership applications.

Over time, leadership courses in agricultural education continued to evolve and the theoretical foundation of the courses was being questioned. The challenge to strengthen academic rigor in leadership courses initiated the movement to anchor courses in leadership theory in addition to skill development. During this process, the door was opened to additional students throughout the university campus, beyond agricultural education. Leadership courses have grown by attracting students from other majors throughout the university.

Many Agricultural Education programs throughout the United States offer leadership courses. Fritz et al. (2003) examined leadership courses offered by Agricultural Education departments. The research was presented as a follow-up of two previous studies over the previous ten years. There were 92 departments contacted which resulted in a 45% response rate. The authors reported on leadership courses offered, the course titles that were used, the level at which leadership courses were offered, the number of students enrolled in the courses, and the background of the faculty who taught the leadership courses.

Fritz et al. (2003) reported that 68% of the respondents acknowledged offering leadership and human resource management/development courses. Courses had been offered for an average of 17 years with the upper limit of the range being 50 years. Titles for these courses and programs differed widely between institutions. The word "leadership" appeared in 61% of leadership course titles offered in Agricultural Education departments. "Agriculture" was found in 29% and "development" in 22% of the course titles. More than half of the departments offering leadership coursework required the courses for their departmental majors.

Through a review of course syllabi the characteristics of leadership course offering were described by Fritz and Brown (1998). Eighty course syllabi were reviewed in the study and 25 syllabi contained a course objective related to leadership styles and/or characteristics. Preparation of youth leadership development professionals were stated in the course objectives on 14 of the syllabi. Some courses required a text and others did not. *The Leadership Challenge* by Kouzes and Posner (1990) was used in seven courses and *Why Leaders Can't Lead* by Bennis

(1989) was used in four courses. An experiential component was included in five percent of the courses and 16 courses required students to utilize leadership knowledge in a real world situation (Fritz & Brown, 1998).

Highly qualified teachers in agricultural education are being prepared through agricultural teacher education programs at the post-secondary level. Teacher education curriculum and field experiences are designed to prepare teacher candidates to be effective in the content areas they are expected to teach. Curriculum structure and course requirements for teacher preparation programs are established by each institution to produce knowledgeable, effective, and highly qualified candidates for licensure and career success within the teaching profession. Based on the No Child Left Behind legislation (United States Department of Education, 2006), "highly qualified" teachers must meet three essential criteria: (1) attaining a bachelor's degree or better in the subject taught; (2) obtain full state teacher certification; and (3) demonstrate knowledge in the subjects taught. University faculty and administrators are responsible for assessing course offerings and monitoring program requirements in order to produce highly qualified and effective agriculture teachers. Therefore, agricultural teacher education programs must be designed to ensure that graduates possess the knowledge and skills in the subjects that they teach, and for agricultural education teachers that includes the content area of leadership.

Purpose

Effective teachers must be competent in the subjects that they teach. Teaching leadership implies that secondary agricultural education teachers need to be proficient in leadership knowledge and skills to enable them to promote high levels of student achievement in leadership. The purpose of this study was to describe the leadership courses that were required in the preparation of agricultural education teachers. Agricultural teacher education program faculty were asked if they required leadership courses in their teacher preparation program. Faculty from programs requiring leadership courses were then asked to provide course syllabi for their required leadership courses. Each course syllabus was reviewed to identify leadership content topics, components used to determine student grades earned in the course, and required textbooks.

This study was conducted to describe required leadership courses in agricultural education teacher preparation programs in the United States. The following research objectives were used to guide the study:

1. Describe the proportion of agricultural teacher education programs that require leadership courses in their teacher preparation program.

2. Identify the department that offers leadership courses required in agricultural teacher education programs.

3. Describe the content topics included in required leadership courses for agricultural teacher education programs.

4. Describe the components included in determining the grades students earn in required leadership courses for agricultural teacher education programs.

Methods/Procedures

Descriptive studies are conducted to become more familiar with the current status of a phenomena and to accurately describe the norm. The purpose of this descriptive study was to explore and describe what exists; however, this study did not investigate relationships of characteristics or attempt to produce generalizations about any relationships. Descriptive studies using content review have been widely used in education to examine textbooks, student writing, and prevailing practices such as entrance requirements and course offerings (Ary, Jacobs, Razavieh, & Sorensen, 2006). Using descriptive study methodology, this research involved reviews of course syllabi from leadership courses required in agricultural education teacher preparation programs.

Descriptive studies examine what is being done during a specific time and the findings are a reflection of only one point in time for a specified population frame. These findings cannot be generalized to a different point in time or a different population. The population for this study was all agricultural teacher education programs in the United States. The population frame was defined using the American Association for Agricultural Education Directory (AAAE, 2007) to obtain a listing of the institutions that offered teacher preparation in agricultural education. Primary contact persons within each institution were designated in the directory. The primary contact persons were used as the initial list of potential respondents to solicit information from for this study. Secondary respondents were selected from institutions if the primary respondent was not known to be directly involved in the agricultural teacher education program at the respective institution. The final respondent list included university faculty who were knowledgeable of course and content requirements for students preparing to become licensed teachers of agriculture in their respective state.

Respondents selected from each agricultural teacher education program were initially contacted via email to explain the purpose of the study (N=82). Each respondent was asked to answer four questions pertaining to their institution's offering and utilization of leadership coursework in preparing teachers of agriculture. A second email, with the same questions, was sent out three weeks later to the respondents who had not replied on behalf of their institution.

A third attempt was made one month later to collect information. Before the third email was sent, the final respondent list was re-examined, and some of the contact persons were changed in an attempt to obtain a larger representation of institutions. The third email message was sent to the respondents with a one week reply deadline in order to have their institutions' information included in the study. An email reminder was sent half-way through this period to remind the respondents of the deadline. At the conclusion of the data collection process 89% (N = 73) of the institutions had provided responses. Therefore, these findings represent 89% of the target population and should not be generalized beyond the institutions that responded.

Respondents were initially asked if their department offered leadership coursework. Data were coded with 0 = does not offer leadership coursework and 1 = offers leadership course(s).

The second question asked the respondents to indicate if their respective institution required a leadership course in the agricultural teacher preparation program. Data pertaining to this question were coded 0 = does not require leadership coursework and 1 = requires leadership coursework.

Leadership courses required in agricultural teacher preparation programs were identified by the respondent from each respective institution who provided the syllabus for each of the required leadership course(s). Based on information provided on the course syllabus, the department offering the course was determined and the data were coded with 1 = home department and 2 = other department.

Research objective three was addressed by reviewing the content topics identified on the respective course syllabi. A comprehensive list of all leadership content topics was compiled and similar topics were combined to produce a comprehensive list of leadership content topics. For each institution, leadership content topics were coded 0 = leadership course(s) do not contain the topic area or 1 = leadership course(s) contain the topic area.

Research objective four involved a similar procedure in which the components used in determining student grades were examined and combined to produce a comprehensive list. Data were coded 0 = syllabus does not contain the component in grading or 1 = syllabus contains the component in grading. Component weights were determined by calculating a percentage of each component as part of the final course grade.

Results/Findings

Agricultural education teachers require content knowledge and skills in the areas that they are asked to teach in order to be highly qualified. Secondary agricultural education has had a long history in providing leadership opportunities for students. Therefore, agriculture teachers are faced with teaching leadership knowledge and skills to their students. This study examined leadership courses required in agricultural teacher preparation programs that prepare highly qualified teachers of agriculture.

Institutional representatives from 82 universities were initially contacted and 73 provided responses for an overall 89% response rate. Fifty-three (73%) of the respondents reported that their department offered leadership coursework. Thirty-two (44%) of the respondents reported that leadership coursework was required in their agricultural teacher preparation program. Twenty-five institutions required one course in leadership, six institutions required two courses in leadership, and one institution required three leadership courses. Semester credit hours required in leadership coursework (for those institutions requiring leadership courses) ranged from one to nine with a mode of three semester credit hours (19 institutions reporting).

Research objective two was used to identify the department that offered the required leadership course(s) in agricultural teacher preparation programs. Thirty-nine (97.5%) of the required leadership courses were offered within the same department as the agricultural teacher preparation program. One (2.5%) required leadership course was provided outside the host department of agricultural teacher preparation by a Department of Educational Leadership. Review of course syllabi revealed 38 different titles for the required leadership courses. *Personal*

Leadership Development along with *Team and Organizational Leadership* were the only duplicate course titles with each occurring twice. Thirty-four (85%) of the course titles contained the word "leadership," 15 (38%) contained the word "agriculture" or "agricultural," and 14 (35%) contained the word "development" or "developing."

Research objective three was to describe the content topics included in required leadership courses for agricultural teacher education programs. Findings for question three are reported on an institutional basis. Institutions requiring more than one course in leadership were reported as a combination to produce a single list of topics that pre-service teachers would encounter in their teacher preparation program at that institution. Reviewing the required course syllabi yielded a comprehensive list of 78 leadership content topics reflected in 29 agricultural teacher preparation programs. The most frequent content topics included leadership styles / categories, communication skills, leadership traits / characteristics, defining leadership, teamwork / group dynamics, leadership theory, parliamentary procedure, diversity, philosophy / mission / goals, and power / influence. The 18 most frequently-listed leadership content topics are presented in Table 1.

Table 1
Frequency of Content Topics in Required Leadership Courses (N=29)

Content Topic	f
Leadership styles / categories	18
Communication skills	17
Leadership traits / characteristics	17
Defining leadership	15
Teamwork / group dynamics	15
Leadership theory	14
Parliamentary procedure	14
Diversity	13
Philosophy / mission / goals	13
Power / influence	13
Conflict resolution	12
Ethics	11
Presentations / speaking	11
Values	11
Effective meetings	10
Evaluation / critique	10
Principles / role of the FFA organization	10
Transformational leadership	10

Objective four involved describing the components included in determining the grades students earned in required leadership courses for agricultural teacher education programs. The most frequently mentioned assignments on the syllabi were quizzes / tests / exams, theme papers,

participation, individual presentations, and group presentations. Overall, there were 33 grading components identified which were used in computing student course grades in required leadership courses. However, approximately half of the grading components were unique to one or two of the required leadership courses. The most frequently listed 15 components are reported in Table 2.

Table 2
Frequency of Course Components Used for Grading (N=33)

Course Component for Grading	*f*
Quiz / test / exam	29
Theme papers	23
Participation	21
Individual presentation	16
Group presentation	12
In class exercises	5
Journal	5
Philosophy	5
Portfolio	5
Service learning	5
Shadow / observation	5
Classroom resources	3
Personal assessments	3
FFA program of activities	3
School visit	3

Syllabi were reviewed to describe the relative weight (calculated as a percentage of the overall grade) of each component included in the determination of the students grade in the leadership course.   However, the researcher was unable to determine the weights for every component for each course. Table 3 presents the ten most common grading components and reports the frequency that the component was used in determining students' course grades.

Textbooks were required in 26 of the 33 leadership courses. Fifty-three required textbooks were listed in the syllabi resulting in a list of 36 different titles. *Leadership: Theory and Practice* (Northouse, P. G., 2001, 2004, 2006) was the most frequently (f=5) required textbook. Traditional college textbooks, written materials from the National FFA, and general audience literature were listed as required textbooks on required leadership course syllabi. The nine most frequently required textbooks are identified in Table 4.

Table 3
Relative Weighting of Leadership Course Components in Grading (N=33)

Grading Component	f	Mean weight (%)	Range (%)
Quizzes / test / exam	27	33.9	5.2 - 80.0
Theme papers	21	21.1	5.0 - 60.0
Participation	20	12.8	5.0 - 26.5
Individual presentation	13	20.9	5.9 - 45.0
Group presentation	12	15.5	7.8 - 45.0
In-class exercises	5	22.7	8.4 - 45.0
Service learning	5	21.0	15.0 - 30.0
Journal	5	20.9	5.6 - 50.0
Shadow / observation	5	13.7	5.0 - 30.0
Philosophy	4	6.3	2.0 - 10.0

Table 4
Textbooks in Required Leadership Courses (N=33)

Required Textbooks	f
Leadership: Theory and practice. (Northouse, P. G., 2001, 2004, 2006)	5
Effective oral communication. (Cheek, J. G., Arrington, L. R., Rudd, R. D., & McGhee, M. B., 1999)	3
Agriculture Teacher's Manual. (National FFA Organization, 1998)	3
FFA Student Handbook. (National FFA Organization, 2006)	3
Local program resource guide: A complete guide to enhancing the local agricultural education program. (National FFA Organization, 2007)	3
Official FFA student manual. (National FFA Organization, 2007)	3
Seven habits of highly effective people. (Covey, S. R., 1989)	2
The Scott, Foresman Robert's rules of order newly revised. (Robert, H. M., 2000)	2
Leadership: Personal development and career success. (Ricketts, C., 1997)	2

Conclusions/Recommendations

This study revealed that most agricultural teacher education programs in the United States do not require coursework in leadership as part of the teacher licensure program. Among those programs that require leadership coursework, there is wide variability in the courses based on a review of course syllabi regarding the leadership content topics, the components that factor into the course grade, and the leadership textbooks used in the courses. There also appears to be a wide discrepancy regarding interpretation of the term leadership. Some required courses were clearly based on a theoretical foundation of leadership constructs and the underlying course content topics, grading components, and textbooks were directly aligned with and in support of

leadership theory. However, there were a number of required leadership courses that focus primarily on the FFA and include a range of topics associated with the student organization as a component of secondary agricultural education and extending to Supervised Agricultural Experience (SAE) programs, Career Development Events (CDE), public speaking, parliamentary procedure, and record books. Although these may be important program topics that highly-effective agricultural education teachers need to know, it does raise questions about the theoretical basis for teacher preparation in the content area of leadership.

The range of leadership content encompassed in required courses yielded an extensive list of topics. Although there was some overlap between the topics, it was noted that among the 78 topics listed, the most popular topic (i.e. leadership styles / categories) was only included at 18 institutions. All other leadership content topics were listed in fewer than 18 institutions' syllabi, indicating a general lack of consensus among agricultural teacher educators with regard to leadership content topics that should be included in a course on leadership for future secondary agriculture teachers. Although some variability is expected, it would seem logical that there might be a core set of leadership content topics that should be encompassed within leadership coursework required for secondary agricultural education teacher candidates.

Variability in the leadership content topics addressed in required leadership coursework also raises questions about the leadership content topics that are being taught in secondary agricultural education programs. Although curriculum content is generally under the purview of the local school, agricultural educators typically decide the topics that are included in the program and in which courses the topics are organized. Even so, there is no clear evidence of leadership content topics that serve as a core for secondary agricultural education programs. Therefore, it is recommended that further research be conducted to develop a core list of leadership content topics that should be included in secondary agricultural education programs. Using a list of recommended leadership content topics, secondary agriculture teachers would be better able to ensure that important and appropriate leadership content topics are being addressed in their program, rather than relying on their individual judgment which appears to be the current practice with regard to leadership content in secondary agricultural education.

Specification of core leadership content topics for secondary agricultural education programs would also be helpful in guiding curriculum development efforts within agricultural teacher education programs. Teacher educators should review the leadership content topics that are currently addressed in their required leadership courses and modify those courses as necessary to ensure that they are in alignment with the core leadership content topics identified for the secondary agricultural education programs.

Highly effective teachers are expected to possess content knowledge in the subject areas that they are expected to teach. Therefore, future secondary agriculture teachers should be expected to complete coursework that encompasses the leadership content topics that are deemed important and appropriate for secondary agricultural education programs.

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INTERNATIONALIZING LEADERSHIP DEVELOPMENT: IMPORTANT COMPONENTS WITHIN EDUCATIONAL INTERNATIONAL LEADERSHIP EXPERIENCES

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The purpose of this study was to identify the most salient components to be included in an international leadership experience. A three round Delphi procedure was used to solicit expert opinions concerning the aspects needed to provide an effective international leadership experience. Results revealed a variety of important components that broke down into two categories: knowledge gained and concrete experiences. Specifically, the five highest rated knowledge components were: respect for other cultures; effective global interaction; critical thinking about leadership models students embrace; recognition of the interconnection between different contexts and an acquaintance with local indigenous people. The top five concrete experiences were: multicultural experiences focusing on local values; interaction with local students; frequent debriefing, personal logging and self-reflection through the process; incorporation of three learning stages – prework, experience, postwork – within the overall experience and a gamut of specific encounters with what is working in the local society and what's not. Educators may consider these expert suggestions when developing curriculum or coursework for international experiences focused in leadership, whether for traditional students, non-traditional students or extension agents. Ideally, incorporation of these factors into leadership programs will encourage the development of more globally minded leaders.

Introduction & Conceptual Framework

Today's world is a global society. Through ever-advancing communications and technology, the Internet, and other modern conveniences, individuals can connect with each other across states, countries and even continents. These advances have permanently changed how society interacts; as a result, it is imperative that today's students and future employees have useful global perspectives and competencies. Graduates should not only be able to work with diverse cultures and people, but should also have a good grasp on worldwide issues and events, in order to compete in an increasingly global society (Irani, Place, & Friedel, 2006; Navarro, 2004).

As such, the ability to develop competent, principle-based leadership is a major challenge facing businesses in today's culturally diverse, global society (Marsh & Johnson, 2005). Many of today's students do not have the knowledge or skills to effectively lead within a global setting – which is of particular importance to present employers of colleges of agriculture graduates, who expect their future hires to have the diverse knowledge, skills and understanding that equip them to work in today's global workplace (Irani, Place & Friedel, 2006). In addition, the need for internationally aware students is demonstrated through our security, trade and cultural relations with other countries. These forces need globally savvy leaders, given that "…one in six U.S. jobs is directly tied to international trade" (Bruening & Shao, 2005, p. 48).

For all of these reasons, the responsibility to internationalize educational curricula has been a frequent topic of interest over the last 30 years. Of late, agricultural education has integrated a wide variety of international components into its educational programs (Wingenbach, Chmielewski, Smith, Pina, Jr., & Hamilton, 2006). In 2002, the Association of Governing Boards of Universities and Colleges in Washington, DC asserted that teaching and research with a global perspective was more important than ever (Jenkins, 2002). Furthermore, a priority from this report included supporting faculty to develop international curricula within their field of expertise. Even earlier, science instructors were being encouraged to make their classrooms more globally and culturally aware – such as through discussions about endemic (localized) versus pandemic (world-wide) diseases and global control of these diseases (Elashkar, 1994).

As Petrucci (1999) outlines, leadership curriculum development can take on many forms, depending upon the audience of interest. There are three levels of understanding, depending upon the institutional context under which it was implemented.

➢ First, leadership development may be conceptualized as the preparation of individuals who will literally lead in the world marketplace. Many business schools across the U.S. and Europe have developed programs that specifically target individuals who see themselves as "global leaders" due to the fact that they operate at an international level.

➢ Second, leadership development can be focused in the national arena. Generally we find two types of nationally focused programs – those focused on corporate America and those focused in the public sector. Programs for corporate America have dramatically increased in the last 20 years, due to the global revolution in business leadership. Those programs focused in the public sector are primarily interested in ways political leaders can affect the quality of national leadership.

➢ Finally, leadership development can be targeted at individuals who see themselves as the upcoming leaders in local communities. Smaller colleges and universities have been particularly effective in linking community service to leadership development because of the assumption that local leaders play a critical role in keeping communities thriving.

Within each of these levels of understanding, there are important characteristics and needs that the leadership educator needs to work toward when designing appropriate curriculum. However, as Petrucci (1999) continues to note, as the world continues to become more global, the labor force more mobile and less loyal, and more culturally savvy, these distinctions become more and more blurred.

Nonetheless, instilling leadership skills within students assists in providing another value-added characteristic that will allow for better global competition with their peers. "Co-curricular" activities (those activities outside of the classroom that have educational value) are becoming more deliberate and range from leadership development certificates to leadership internships to service-learning projects such as improving the water supply in Honduras (Clough, 2008). Increasingly educational opportunities are looked upon to provide contextual knowledge, as well as knowledge of the world around them. It is imperative that today's leadership students are exposed to leadership training and development that integrates more contemporary international

perspectives and issues. One of the most effective ways for students to acquire these perspectives is by traveling abroad – or more relevant to this document, participating in an embedded international experience (Brooks, Frick, & Bruening, 2006).

An "embedded international experience" can be defined as a type of international field trip designed to take place during a course, with the primary intent to provide an experiential learning experience outside classroom walls (PSU International Programs, 2008). This type of brief experience is planned to be an integral part of the course, one for which the substantive content is provided within the United States. As exciting and potentially necessary as these international experiences are, as leadership educators, how do we know what an embedded international leadership experience should entail? It was precisely this question that led to the study at hand – what are the specific components, which should be included within the actual (embedded) international leadership experience?

Purpose & Objectives

The purpose of this study was to develop a consensus document that would identify the most salient components or aspects that should be included in an embedded international leadership experience. The objective of the study was to identify and clarify the most important elements that comprise an effective international leadership experience, as identified by leadership and international experts within the field.

Methods

This national study used the Delphi technique to identify important components to be included in an international leadership experience. Operationally, the Delphi procedure is designed to systematically solicit expert opinion. A structured process is used to collect and refine data from a collection of experts by means of a progression of questionnaires interspersed with controlled opinion feedback (Adler & Ziglio, 1996). By using a Likert-style questionnaire to garner feedback in the final two iterations, this methodology is able to bring experts to a consensus and facilitates the formation of group judgment.

Other researchers have noted that the Delphi technique is particularly effectual in reaching consensus from a purposively selected group of experts (Stufflebeam, McCormick, Binkerhoff, & Nelson, 1985). When selecting the expert participants, one overall expert in each of five leadership areas (agricultural, business, community, collegiate (student activities), international) was asked to nominate individuals they would consider leadership or international experts in their leadership field of interest. Twenty-eight names were provided by the original five experts; after a formal introduction and request to participate in the study, three individuals declined, for an overall participant pool of 25 leadership experts.

The Delphi technique used for this study included three rounds. The first round was used as a modified brain-storming session; participants were emailed the open-ended question: *What are the most important components of an embedded international leadership experience, as it plays a part within a college course?* Eleven individuals (11/25 = 44% response rate) responded to the first round. The responses from the first round were used to make up the second round

questionnaire. Components determined important by participants were modified into Likert-style statements; these statements were incorporated into a questionnaire and were uploaded to a secured website on the University of Georgia server. Participants were emailed the link to click on to enter the questionnaire, which (when completed) was automatically emailed back to the researchers. While this allowed for confidentiality of responses, participants were assigned a unique participant number in order to track responses (and avoid sending out duplicate emails).

Within round 2, participants were asked to rate each item on a Likert scale (1-5) as to how strongly they agreed that the component should be included within the international leadership experience. Fourteen individuals responded, for a response rate of 56% (14/25 = .56).

After analyzing the responses from round 2, it was decided to eliminate all of the responses that didn't average at the "Agree" level. Therefore, 28 components with a mean value of 4.00 or higher were selected to create round 3, the final round of this survey. In round 3, participants were asked to confirm their responses from round 2. Twelve participants responded to the final round, for a 48% response rate (12/25 = .48).

A five point Likert scale (5 = Strongly Agree, 4 = Agree, 3 = Uncertain, 2 = Disagree, and 1 = Strongly Disagree) was used in the questionnaires for rounds 2 and 3. Throughout each round, participants were asked for any comments that might further explain their opinions, or develop the components within the study.

Operationally, each of the three rounds of the Delphi were designed with similar timelines. The first email sent out summarized the study and respectfully requested participation. Once those who asked to be removed were taken off of the study list, the first round commenced. By design, each round was given around a two-week timeline. During each round, the first email was sent at the beginning of the week, with specific directions on how to participate in that round, as well as a deadline (generally seven days after the initial email). Once the deadline had passed, a reminder email was sent to non-respondents with the same directions and a new deadline (another seven days after the reminder email – ultimately equaling two weeks). After all of the responses were received, the data were analyzed and applied to the next round.

Data were analyzed using descriptive statistics. Data collected using the Likert-type scales were considered interval data and as such, were reported as means and standard deviations. All data were analyzed using SPSS software.

Results

The Delphi began with an open-ended question survey for the first round. The original question posed was:

Original Delphi Question:

What are the most important components of an embedded international leadership experience, as it plays a part within a college course? (These components should be something the students can't experience on campus, unique to the program.)

Participants were not given a limit to the components they could list – nor we they given a direction as to the type of items to include (it was determined that operational (concrete experiences) as well as knowledge both played an important role in the international leadership experience). This resulted in a diversity of answers received.

Round 1 generated 59 components important within international leadership experiences. These 59 components included both knowledge and concrete experiences that were considered important, and ran the contextual gamut – from political to social, local food and culture to local ethics and values, from historical to current social problems. All of these illustrated a depth and breadth to the knowledge ideally garnered through international experiences.

The 59 components were distilled down into 42 Likert-style statements which formed round 2 of the survey. After analyzing the responses from round 2, 14 components averaged below the "Agree" level. Therefore, 28 components with a mean value of 4.00 or higher were selected to be carried on to create round 3, the final round of this survey. In round 3, participants were asked to confirm their responses from round 2 (See Table 1).

Table 1

Delphi Study Round 3: Likert Statements for Recommended Components of an International Leadership Experience (n=12)

Component Statement	M	SD	Rank
An international leadership embedded experience should:			
Encourage students to understand and respect other people and cultures vastly different from their own	4.67	.492	4
Provide opportunities for students to experience cultural differences that challenge personal values, beliefs and practices.	4.67	.492	4
Prepare students for interacting within a global society.	4.67	.651	4
Interact with students/peers of another culture	4.67	.492	4
Encourage students to think critically about the conditions and assumptions of the leadership models they embrace – democracies, monarchies, dictatorships, etc. – and take note at how this influences leadership in the study country	4.58	.515	7
Include frequent debriefing, to encourage personal logging, as well as self-reflection during the experience	4.58	.669	7
Include a "pre-work" experience where students are provided with in-depth information to gain a knowledge of mental models, world, view and openness to different perspectives regarding the study country	4.58	.515	7

Component Statement	M	SD	Rank
Encourage students to recognize the interconnectedness of historical, political, social, economic and cultural contexts	4.55	.522	8
Include three learning stages: pre-work (background), the experience, post-work (reflection)	4.50	.674	10
Include a breadth of experiences – what's working within society and what's not (poverty, housing, environmental degradation)	4.50	.674	10
Include a "post-work" experience including extensive self-reflection (particularly on personal logs)	4.45	.688	13
Be exposed to and develop a knowledge related to local indigenous people to the area	4.45	.688	13
Engage the student in the local social system, to reinforce communication styles within the local culture	4.45	.688	13
Encourage students to gain an understanding of the connection between culture and leadership, along with ethics in another culture	4.33	.651	17
Assist in developing student knowledge of the differences and nuances of international work environments, and how to work within these situations	4.33	.778	17
Engage the student in personal internal reflection, as if to answer the question "Who am I as a leader and what am I becoming?"	4.33	.492	17
Have clear learning goals from the experience	4.33	.492	17
Allow for attendance at a cultural event – as an illustration of the larger social system	4.27	.786	19
Support students in learning how to share appropriate information in international settings	4.27	.647	19
Encourage students to take responsibility, both throughout the experience, but also in using the experience as a learning opportunity	4.25	1.138	20

Component Statement	*M*	*SD*	*Rank*
Allow for students to network with different individuals in educational institutions, industries, and organizations within the county to share ideas, perspectives and explore leadership issues impacting the country	4.17	.577	25
Provide possibilities for students to develop effective global communication skills	4.17	.718	25
Encourage individual student development of a world vision of information, including the nature and scope of global problems	4.17	.577	25
Allow the student enough time in the country to build relationships and be immersed in the culture	4.17	.718	25
Encourage self-reflection and thought about impact through journaling throughout the experience.	4.17	1.030	25
Provide opportunities for students to apply leadership theories and practice within an international setting	4.00	.953	26
Provide opportunities to talk with leaders in other cultures about their leadership experiences (as followers and leaders)	4.00	1.044	27
Provide opportunities for the student to observe leaders in action in other cultures (i.e. shadowing leaders, observing local leaders communicating with their public/organizations, etc.) to encourage knowledge of actual business/working environment	3.92	1.165	28

Note: Scale: Strongly Agree = 5, Agree = 4, Uncertain = 3, Disagree = 2, Strongly Disagree = 1; Blue font indicates the statement didn't average at least an "Agree" consensus; therefore it was dropped out of the final list (Table 2).

Within the final round, the top four statements formed a pretty tight race. Participants agreed that the top four components within an international leadership experience should be to encourage students to understand and respect different cultures, provide opportunities for students to experience cultural difference that challenge personal values and beliefs, prepare students for interacting with a global society, and to encourage interaction with students or peers from another culture. The top three statements were a confirmation from round 2, and stayed in the same order of priority. All of these statements had a mean value of 4.67. Following closely were the statements in a three-way tie for 7th place, each of these with M = 4.58. These statements included encouraging critical thinking about the leadership models they (students) embrace, and two more concrete experiences – including frequent debriefing, logging and self-reflection during the experience, and providing extensive "pre-work" prior to the experience. As you can see through these statements, participants placed a lot of value upon learning about culture and interaction through an international leadership experience.

There was only one statement that didn't average at least an "Agree" (M = 4.00) consensus within round 3. This statement involved providing opportunities for students to observe leaders in action in other cultures, and only had a mean value of 3.92. Due to the lack of consensus on the importance of this statement, it was decided to remove this component from the final list.

For a more useful final product, the Likert statements were simplified and redesigned into specific components that seemed to fall into two categories – concrete experiences and knowledge. While each category is slightly different operationally, there is a significant amount of overlap between categories and components – which you can observe in Table 2.

Table 2

Final Components Salient within an International Leadership Experience

Knowledge	Concrete Experiences
▪ Respect for other cultures	▪ Provide multicultural experiences that focus on local values and beliefs
▪ How to effectively interact within a global society	▪ Encourage interaction with local students/peers
▪ Think critically about leadership models they embrace	▪ Encourage frequent debriefing, personal logging and self-reflection throughout the experience
▪ Recognize how historical, political, social, economic, cultural contexts are interconnected	▪ Do extensive "pre-work" on study country and leadership
▪ Local indigenous people to the area	▪ Include three learning stages within the experience: pre-work (background), the experience, post-work (reflection)
▪ Effective communication styles within the local culture through immersion in the local social system	▪ Include a breadth of experiences illustrating what's working within society (i.e. public health) and what's not (i.e. poverty, environmental degradation)
▪ The connection between culture, leadership and ethics within the county of interest	▪ Build in extensive self-reflection using personal logs as part of a "post-work" experience

Knowledge	Concrete Experiences
▪ The differences and nuances of international work environments, and how to effectively work in these situations	▪ Encourage students to ask themselves "Who am I as a leader and what am I becoming?"
▪ How to share appropriate information in international settings	▪ Plan clear learning goals
▪ A world vision of information, including the nature/scope of global problems	▪ Attend a cultural event – to encourage knowledge development of the large social system
	▪ Encourage students to use the experience as a learning opportunity
	▪ Assist students in developing networks with local individuals at educational institutions, industries and organizations
	▪ Provide experiences to assist in developing global communication skills
	▪ Longevity - Plan for the experience to be long enough for cultural immersion
	▪ Promote journaling throughout the experience – for self-reflection and thoughts about impact
	▪ Provide opportunities for students to apply leadership theories and practice within the country
	▪ Plan for opportunities for students to meet local leaders and talk about their leadership experiences

Discussion & Conclusions

It has been said that participation in a leadership-focused international experience is a highly effective way to learn about leadership (Earnest, 2003). As society becomes more competitive in a global sense, it is our responsibility as educators to provide work-ready

graduates; to do this, it is essential to include both contextual knowledge and leadership development, but there also needs to be a measure of global awareness worked into the curriculum. Without this final piece, we are putting our students at a disadvantage in a highly competitive, globally charged world.

The panel used as the foundation for this Delphi study included experts from a wide variety of sources – academic, international programs, industry, non-profit organizations – in order to get at the gamut of knowledge and experiences that should be included within an international leadership experience. There were many standard answers, along with many new, innovative ways to think about leadership education. Perhaps one of the most intriguing components that ended up being considered a high priority by the panel was to encourage students to think critically about the assumptions of the leadership models they embrace; unwittingly incorporating critical thinking into the actual art of leadership development. One of the most powerful aspects of the international experience may be battling with the paradigm shifts that students will inevitably face as they immerse themselves in another culture. At the same time, without being subjected to experiences such as this, students may find themselves at a disadvantage, with some even believing that how things operate in the United States is typical for cultures across the world.

The final components recommended to be part of an international leadership experience were broken into two different categories – knowledge to be learned through the experience, and concrete experiences that should be introduced as part of the structure of the overall international experience. Beginning with the overall knowledge that should be gained through the overall experience, several themes emerged. Culture was found to be important in several knowledge aspects – from developing a respect for other cultures (including local indigenous people), to recognizing how cultural contexts interconnect with many other (political, historical, economic, etc.) areas, to establishing how culture, leadership and ethics work with each other within the county of interest. It really shouldn't be surprising an important aspect of an international leadership experience involves the need for some strong cultural knowledge. Part of the reason for going and immersing oneself in another country is to experience things one can't receive in a classroom – and while much of this knowledge can be started with an introduction in the classroom, it certainly is taken to another level with travel and tangible experiences within the county of interest.

A second theme running through the knowledge components was the need to develop a fundamental knowledge of how communication and information works within another culture. The panel agreed that it is important for students to learn about effective communication styles by immersing themselves in the local social system, as well as learning how to share appropriate information in international settings, and perhaps most importantly develop a world vision of information, including the scope of global problems. Students of today will be the leaders of tomorrow. It is especially important for tomorrow's leaders to grasp the scope and interconnectedness of many of today's global problems – for these will continue to become more interconnected and complex as time goes on. Ultimately, it will be today's leaders-in-training, that will provide the solutions for tomorrow.

A final component that was found important by the panel was a working knowledge of the international work environments, and how to effectively work in these situations. As society becomes more and more globally based, today's job interface more and more with individuals from different countries. Still, many of these countries maintain their own values and preferences, their own traditions and cultures. This makes interacting with business men and women of other cultures more complicated; the best solution to this issue to a working knowledge that other cultures operate differently than our own, and to be aware of potential differences. Even though being immersed in one international culture won't necessarily help with the knowledge of another international work environment, at least students can develop an awareness of potential differences and keep this in mind for future interactions with other cultures.

The other category components fit into was that of concrete experiences. An international leadership experience should be structured in such a way that students can garner the knowledge that the instructor deems important; within the confines of this study, it would be the knowledge aspects we just discussed. However, without appropriate structures in place, an international leadership experience turns merely into a glorified sight-seeing tour. So it is particularly important that students are empowered to learn through different concrete experiences that are already built into the international experience.

As with the knowledge category, there were several themes running throughout the concrete experiences category. Fortunately, many of these themes ran parallel to the themes in the knowledge category. This is appropriate, for it is the concrete experiences that put meaning behind the knowledge developed throughout the overall experience. Culture again was an important theme throughout the concrete experience category; aspects such as providing multicultural experiences that focus on values and beliefs, attending a cultural event to learn more about the social system, and having a breadth of experiences on what is working in local society and what isn't are all aspects that were deemed important within the concrete experiences category.

Some of the concrete experiences were much more operational in nature. These focused specifically on how the international leadership experience should be structured. Encourage interaction with local students, include frequent debriefing, personal logging and self-reflection, and incorporating three learning stages into the experience (including pre-work and post-work stages) were all considered very important for a successful learning experience. All of these concrete experiences should be associated with clear learning goals. With clear goals and objectives, it will be much more straightforward to grade and determine the amount of knowledge acquired through the overall experience. As a final point, longevity within the culture was determined to be important for a successful international leadership experience. While there wasn't a specific amount of time suggested, obviously the more time that can be allocated for an experience such as this, the better. Because travel within embedded international experiences is generally done during or at the end of the semester, timelines are often limited to between 7 and 21 days.

The final theme that makes this study particularly useful for leadership educators is the focus within the context of leadership. The panel felt that what makes an international leadership

experiences different from a general international experience is the focus on various aspects of leadership. One important component was for students to be encouraged to reflect upon the experience and ask themselves "Who am I as a leader and what am I becoming?" that would impress upon students to use the overall experience as a learning opportunity. Other important leadership experiences included opportunities to network with local individuals, occasions to apply leadership theories and practice within the county, and chances for students to meet with and talk to local leaders. Each of these concrete experiences allows for students to experience leadership within the context of another culture or country; this encourages leadership skill and knowledge development, as well as allowing students to apply these skills within a more global framework.

Recommendations & Implications

In general, this study carries implications for educators both in the fields of agriculture education and extension. While contextual knowledge may differ across these fields, there are leadership development opportunities, students and educators to be found within both agriculture education and extension. Even more broadly, all of us are affected by those in leadership positions; because the students of today will be tomorrow's leaders, we have a direct interest in their leadership development.

The implications begin for students in a much more general sense. Developing a more global knowledge of leadership and world issues through well-planned and effective international leadership experiences is important for traditional students, non-traditional students or extension agents. These experiences can be done in a variety of ways; however, it must be noted that the primary reason for the study was to provide an outline of salient components of an international leadership experience – therefore, as many of these components should be included as possible when planning the overall experience.

An implication more explicit to this specific study is the integration of the factors into a leadership course, to be offered at the University of Kentucky, focusing on leadership perspectives around the world. This course would include an embedded international leadership experience, and the aforementioned components would be directly incorporated into planning for this experience. Beyond UK, the intent behind this Delphi is to provide an outline for those educators wanting to plan an international experience that includes both leadership and global knowledge. What's more, many of the components are good, fundamental factors that can be applied to any class or international experience with similar objectives.

Looking at the broader picture, other implications include the potential to broaden current student leadership development to include international aspects, the ability to support and assist students in developing international networks that they can take into their professional careers, and ideally, to encourage the development of more global thinking by many of tomorrow leaders.

It should be noted that while valuable (particularly for those looking for help designing international curricula or experiences), the scope of this study is pretty limited. Nonetheless, there is still enormous potential for future research on the topics of international curricula and leadership development. Studying participants of international leadership experiences, taking this

Delphi one step further and asking international study coordinators for their consensus, and looking at specific leadership skills enhanced through global interactions are just a few of the ideas that come from this study. As an extension specialist, I see many of these aspects being easily incorporated into trainings and in-services developing leadership and global knowledge in extension agents and their constituents. With useful and accurate research supporting the need for global leadership knowledge, we are provided with the foundation needed to for funding from a wide variety of sources – from grant possibilities to state and national governments.

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EXAMINING UNDERGRADUATE STUDENT INVOLVEMENT IN COLLEGIATE STUDEENT ORGANIZATIONS IN COLLEGES OF AGRICULTURE

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The purpose of this study was to describe the characteristics of collegiate student organizations that are related to higher levels of leadership and personal development as experienced by positional leaders of the student organizations. The population consisted of positional leaders of student organizations in colleges of agriculture within institutions across the nation created by the 1862 Land-grant Act. A stratified random sample was taken from the population. Participants completed an online questionnaire with questions seeking to describe the characteristics of the organization and to define the amount of time spent by positional leaders on organizational activities and responsibilities, as measured in hours per week. The independent variables in the study were the characteristics of the undergraduate student organizations. The dependent variable was the organizational leaders' levels of involvement. Results showed that positional leaders in more highly structured organizations and in organizations that plan more programs tend to spend more hours per week involved in the organization. Neither the engagement level of the advisor nor the engagement level of the organization in its external environment were found to be related to the involvement level of the organization's positional leaders.

Introduction/Theoretical Framework

American colleges of agriculture are producing tomorrow's agricultural leaders for the nation. Through coursework, academic and extracurricular programs, and a variety of opportunities for participation and campus engagement, these colleges provide venues for student development – academically, personally, and professionally. Evidence shows that American colleges of agriculture contribute to the achievements of college of agriculture alumni (Andelt, Barrett, and Bosshamer 1997; Birkenholz and Schumacher 1994; Graham 2001; Love and Yoder 1989; Radhakrishna and Bruening 1994; Suvedi and Heyboer 2004).

While students in colleges of agriculture learn the technical and professional skills desired by employers (Andelt, Barrett, and Bosshamer 1997; Graham 2001; Radhakrishna and Bruening 1994) through a variety of required experiences, many elect to broaden their college involvement by voluntarily participating in departmental, college, and university-wide programs and activities including student organizations. Graduates have cited such experiences as a crucial component to their personal and professional growth while in college (Birkenholz and Schumacher 1994; Suvedi and Heyboer 2004).

Research has shown that involvement in student organizations does increase the leadership capacity of participating students (Cress, Astin, Zimmerman-Oster, and Burkhardt 2001; Floerchinger 1998; Hernandez, Hogan, Hathaway, and Lovell 1999; McKinley, Birkenholz, and Stewart 1993; Sommers 1991). Floerchinger (1998) noted six key benefits of student involvement in collegiate activities as the result of a review of the literature: 1) increased retention: 2) enhanced interpersonal skills; 3) positive influence on leadership, communication,

teamwork, organization, decision making and planning skills; 4) greater satisfaction with their college experience; 5) useful job procurement skills and experience; and 6) lasting views on volunteering and community service.

Members as compared to non-members of student organizations were found to have increased interpersonal skills (Abrahamowicz, 1988), as well as an increased capacity for developing more mature interpersonal relationships (Abrahamowicz 1988; Hood, 1984). Gains in critical thinking (Gellin, 2003) have also been deemed a positive outcome of participation in student organizations. In colleges of agriculture specifically, communication skills were enhanced as a result of organizational participation (McKinley, Birkenholz, & Stewart, 1993).

Students who were members of student organizations showed significant developmental gains during their college career as compared to their nonmember peers (Cooper, Healy, and Simpson 1994). In another study, student organization members experienced more growth than nonmembers over a three-year time span in their ability to establish and clarify a purpose or life goals (Foubert and Grainger 2006). In addition, students in leadership roles in an organization were found to have higher levels of development than those who merely participated in meetings (Foubert and Grainger 2006). Finally, in a study of recent college of agriculture graduates, individuals who were involved in collegiate student organizations, clubs, or teams were more favorable toward the courses they had taken in the college (Suvedi and Heyboer 2004).

The conceptual framework for the study (Figure 1) was adapted from Astin's theory of student involvement (1984) as well as Floerchinger's meta-analysis (1998) of the outcomes of involvement in student organizations.

As suggested by the conceptual framework, student organizations are shaped by the following: structure (including the types of officers they have, committees, the nature of the constitution, mission of the organization, and types of meetings they conduct); role of the advisor (including the advisor fit with and involvement in the organization); programming (including the type of activities they conduct, how activities are funded, and the nature of planning for activities); and the organizational context and resources (including the ways in which the organization is situated within or connected to the department, college, and university as well as its connection to a national organization, community, or the industry it supports). Based upon organizational factors, students are involved within an organization physically and psychologically (Astin, 1984). As a result of such involvement, students experience outcomes including increased retention, interpersonal skills, a number of personal and professional development skills, greater satisfaction with college, a greater ability to obtain employment after college, and a more lasting impression of and involvement in community service activities.

While research suggests the benefits to involvement in student organizations at the collegiate level, the specific elements and factors of collegiate student organizations that contribute to leadership and personal development are unknown. Minimal research has been conducted on how student organizations can best serve students in their leadership and personal development. While it has been documented that involvement is significantly related to leadership potential (Astin 1984; Birkenholz and Schumacher 1994; Cooper, Healy, and Simpson 1994; Foubert and Grainger 2006; Suvedi and Heyboer 2004), exactly how

Organizational Behaviors & Program Opportunities

Structure
- Officers
- Committees
- Missions
- Constitution
- Meetings

Advisor
- Involvement of advisor

Programming
- Type of activities
- Funding for activities
- Planning for activities

Context and Resources
- Department
- College
- University
- National organization
- Community
- Industry

Student Involvement
Astin's Theory of Student Involvement
- Physical energy
- Psychological energy

Developmental Outcomes Associated with Involvement

Increased retention

Enhanced interpersonal skills

Positive influence on skills:
- Leadership
- Communication
- Teamwork
- Organization
- Decision making
- Planning

Greater satisfaction with college

Useful job procurement skills and experience

Lasting views on volunteering and community service

Floerchinger, 1998

Figure 1

Conceptual framework

organizations directly affect development and what organizational characteristics most impact students are yet to be discovered.

Purpose & Objectives

The purpose of this study was to describe the characteristics of collegiate student organizations that are related to higher levels of leadership and personal development as experienced by positional leaders of the student organizations. The following research objectives were used:

(1) Describe the specific organizational characteristics of undergraduate student organizations in 1862 land-grant colleges of agriculture;

(2) determine the level of physical involvement of positional leaders of undergraduate student organizations in 1862 land-grant colleges of agriculture as measured by time; and

(3) describe the relationship between organizational characteristics and level of involvement by positional leaders of undergraduate student organizations in 1862 land-grant colleges of agriculture.

This study examined the role that student organizations play in student learning and personal development by measuring the time positional leaders invest in their student organization and describing what relationship may or may not exist between the specific characteristics of the organization and the time invested by the positional leaders. While all students can find numerous opportunities within collegiate student organizations in which to invest energy, students serving in a leadership role in the organization are more likely to be more highly involved than a student who is not serving in a leadership capacity (Astin 1993). Focusing on the positional leaders of the student organizations allowed an objective approach to selecting highly involved students within the organization.

Methods & Procedures

This study used descriptive survey research with a proportional random sample of the target population. The survey instrument was developed by the researcher and distributed using Dillman's Tailored Design Method (Dillman, 2007). An online survey tool was used as it was deemed the most appropriate method of survey distribution for the population of college students.

The population for this study consisted of all undergraduate student organizations in colleges of agriculture across the nation at universities established by the Land-Grant Act of 1862. Institutions in the territories of the United States that have resulted from the Land-Grant Act of 1862 (Northern Marianas College, University of Guam, and the University of Puerto Rico, University of the Virgin Islands, College of Micronesia) were not included in this study due to the unique nature of their university systems. In this study, a student organization was defined as a formally organized, registered student organization serving primarily undergraduate college students. The organizations as defined by this study were organizations that did not have a selective admissions process (such as election to a council, bid acceptance in the Greek community, selection as an ambassador, or application to an honorary) nor a competitive central focus (such as a judging or competition team). In this study, student organizations were housed within 1862 land-grant colleges of agriculture. Finally, an organization had to have been established for at least two years to have been selected for this study.

The results of this compilation yielded a list of 979 organizations. A proportional stratified random sample was taken from the population to appropriately represent all four regions of the United States as defined by the National Association of State Universities and Land-Grant Colleges (NASULGC). These regions consist of Western, Southern, (North) Central, and (North) Eastern. Using a confidence level of 95% and a confidence interval of $+$ or -5, a sample size of 275 organizations was calculated. The sample was determined using a random drawing, pulling 51 organizations from the Northeastern region, 87 organizations from the North Central region, 86 organizations from the Southern region, and 51 organizations from the Western region for the stratified random sample.

Once the sample of student organizations was identified, the researcher identified the advisor of each of the 275 organizations in the sample. This was accomplished mostly through researching the student organization online and, in some cases, contacting the department to request the contact information for the organization's current advisor. Each of the 275 advisors were sent an email explaining the study and requesting the name and email address of each of their organization's four most top ranking officers. The top four officers were used to eliminate subjectivity on part of the advisors in selecting specific students to participate in the study. In many cases, these four officers were the president, vice president, secretary, and treasurer. In cases where four officers did not exist within the organization, the advisor provided contact information for a committee or activity chair. Reminder emails, follow-up phone calls, and personal contacts were used to solicit the contact information. In all, contact information for 460 students was found to constitute the sample for this study, resulting in 460 students to be delivered the survey instrument, as the accessible sample.

This study utilized a 49-question questionnaire to examine the research objectives. The questionnaire consisted of six sections focused on each of the four components of the independent variable (organization structure, advisor, programs, and context), the dependent variable of time invested by the leader in the organization, and finally a few basic demographic items. Many of the questions in the first four sections of the questionnaire were based upon a questionnaire used by Hoover and Dunigan in a Pennsylvania State University study of collegiate student organizations (Hoover and Dunigan 2004).

An expert panel consisting of academic faculty familiar with the study and graduate students similar to the study's population was utilized to establish face and content validity of the questionnaire. Prior to the collection of the primary data, a pilot study was conducted. The qualifying student organizations within a large land grant institution that was not included in the study constituted the pilot study population and were therefore not considered in the primary survey population. Thirty-seven students completed the survey, and reliability of the survey instrument was evaluated through establishing Cronbach's alpha efficient for the response items. Cronbach's alpha measured .827. An email was then drafted and sent to the student positional leaders that contained the link to the questionnaire, conducted through the online survey program Survey Monkey™. Data collection began in late March 2008 and followed Dillman's tailored design method (Dillman, 2007).

Following the data collection procedures outlined above, 460 students were emailed a request to participate in an online survey. Of those 460 students, 265 responded to the survey request, with 232 usable responses. This accounted for a 50.4% response rate. The response rate was deemed more than sufficient, as compared to response rates as low as 9.05% of other studies that were considered sufficient (Sha & Toth, 2005). Additionally, a study describing the use of email surveys in research studies reported an average response rate of 36.83% (Sheehan, 2001), which this study exceeds. To address nonresponse error, early respondents were compared to late respondents on the basis of the key variables of interest, including organization structure score, organization programs score, organization advisor score, organization context score, and time involvement score (Miller & Smith, 1983). This method of analysis for non-response error was selected because of the highly selective nature of the population. Only officers in selected types of student organizations served as the population frame, thus there was no reason to assume that

nonrespondents differed dramatically from respondents, but rather were more typical of late respondents. With respect to the main variables measured in this study, there were no significant differences between early and late respondents as demonstrated by an independent samples t-test for each variable.

The data collected was analyzed using descriptive statistical analysis, employing the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies, were calculated for the appropriate questionnaire items. In addition, a Spearman rho correlation analysis was used to examine the relationship between the independent and dependent variables, with the significance level set at 0.05 a priori. Correlations were categorized according to Cohen's (Ary et al., 2006) approach of the following minimum levels to describe the relationship: r = Less than .10 – insubstantial; r = .10- small; r = .30- medium or moderate; and r = .50- large.

The researcher coded the appropriate responses in each of the four sections of the questionnaire that described the four independent variables in order to calculate a score for each respondent in each of those four areas. The four scores were used as the measurement of the independent variables for the purposes of the correlation analyses.

Results

According to the conceptual model described, organizational characteristics in this study were measured in four distinct areas – structure, advisor, programs, and context. The data regarding the first research objective were examined according to these four areas. Organization structure refers to how the organization conducts business and the systems in place to do so. The questionnaire included seventeen questions regarding organization structure. After coding participants' responses in the structure component of the questionnaire, overall structure scores were calculated for each participant. Table 1 reports the frequencies of each of the three levels of structure. Half (51.3%, n=119) of participants reported that their organization was a highly structured organization. Under half (44.4%, n=103) reported a moderately structured organization, with the remaining 4.3% (n=10) reporting that they were involved in what they deemed was a loosely structured organization.

Table 1
Level of structure in student organizations (n=232)

Combined structure score	*n*	*%*
Loosely structured	10	4.3
Moderately structured	103	44.4
Highly structured	119	51.3

In the next part of the questionnaire, participants were asked about the role of the advisor in their organization. The final question of this section asked participants to choose which of four

descriptions best fit the level of involvement "Advisor 1" had in the organization. This question was used to score the advisor variable. About half (47.3%, n=107) selected the following description, the second lowest level of involvement: "He/she provides insight and steers us in the proper direction, but does not assume a role in planning. He/she usually attends organization events." Fifty respondents (22.1%) selected the lowest level of involvement as the best description for "Advisor 1": "He/she provides only advice, information, and a signature when we request it. He/she sometimes attends organization events." A few (3.1%, n=7) selected the highest level of involvement description: "He/she directs the organization by informing us of activities and planning events. He/she always attends events because he/she planned it." The remaining respondents (27.4%, n=62) selected the description for the second highest level of involvement: "He/she provides support in planning by assuming minimal specific responsibilities. He/she almost always attends organization events." Table 2 illustrates the level of involvement by the organization's lead advisor.

Table 2
Advisor's involvement in student organization (n=226)

Level of involvement of lead advisor	*n*	%
He/she provides only advice, information, and a signature when we request it. He/she sometimes attends organization events.	50	22.1
He/she provides insight and steers us in the proper direction, but does not assume a role in planning. He/she usually attends organization events.	107	47.3
He/she provides support in planning by assuming minimal specific responsibilities. He/she almost always attends organization events.	62	27.4
He/she directs the organization by informing us of activities and planning events. He/she always attends events because he/she planned it.	7	3.15

In the third section of the questionnaire, questions surrounded the concept of organizational programming. Twelve questions sought to describe the type of programs hosted and/or planned by student organizations, as well as how those programs were planned and funded. Potential programs were sorted into six categories – fundraisers, socials, educational events for members, events for the public, community service, and member recognition. Upon coding the individual responses for organizational programs, the following overall program scores were calculated for participants: few programs (0-6 program points), some programs (7-13 program points), and many programs (14-19 program points). As shown in Table 3, half (50.7%, n=115) of participants reported organizations that had some programs. One-third (33.0%, n=75) reported many programs, with 16.3% (n=37) indicating few programs.

Table 3
Programs in student organizations (n=227)

Combined program score	n	%
Few programs and planning mechanisms	37	16.3
Some programs and planning mechanisms	115	50.7
Many programs and planning mechanisms	75	33.0

The fourth section of the questionnaire had six questions aimed at describing the context of the student organization. These questions sought to describe the external environment of the organization, including the department, college, university, and national organization. Individual responses were analyzed to determine an overall context score for each participant's organization. As shown in Table 4, half (49.3%, n=108) of participants indicated their organization was deeply embedded in its external environment. Four out of ten (41.6%, n=91) reported their organization was mildly embedded in its external environment. Less than ten percent (9.1% , n=20) of participants were determined to have a context score that showed their organization was barely embedded in its external environment.

Table 4
Context of student organizations (n=219)

Combined context score	n	%
Barely embedded in external environment	20	9.1
Mildly embedded in external environment	91	41.6
Deeply embedded in external environment	108	49.3

The study's second objective was to describe, in time, the level of physical involvement of positional leaders of undergraduate student organization. Following the four sections regarding the characteristics of their respective student organization, the fifth section of the questionnaire asked participants to think about the time they spent on their activities and responsibilities as a positional leader in their respective student organization. When asked how much time they spent, on average, during the fall semester (or fall quarter) participating in and/or planning for your student organization responsibilities and activities, the category with the most responses (42.8%, n=95) was "2-4 hours". The category with the next most responses (32.0%, n=71) was "less than 2 hours". Only 5.0% (n=11) reported spending more than 12 hours a week on average during the fall semester. When asked about their same involvement during the spring semester (or winter or spring quarters), category rankings remained the same with only slight variations in percentages. Thirty-six percent (36.9%, n=82) indicated spending 2-4 hours and seven percent (7.2%, n=16) reported spending more than 12 hours each week on average. Table 5 shows the results of these two questions.

Table 5
Time spent by positional leaders in student organizations

Hours per week	Less than 2		2-4		5-8		9-12		More than 12		*n* total
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	
Fall semester	71	32.0	95	42.8	36	16.2	9	4.1	11	5.0	222
Spring semester	67	30.2	82	36.9	47	21.2	10	4.5	16	7.2	222

The final objective of this study was to describe the relationship between the characteristics of undergraduate student organizations in colleges of agriculture and the level of involvement by positional leaders of those organizations. As shown in Table 6, a moderate positive correlation (r=.343, significant at the 0.01 level) was found between organization structure and involvement. A small positive correlation of .275 (also significant at the 0.01 level) was also found to exist between organization programs and involvement. A very insubstantial negative correlation (r=-.058) was found between organization advisor and involvement. Finally, a positive but insubstantial correlation (r=.110) was found between organization context and involvement.

Table 6
Relationship between involvement and organization characteristics

Organization characteristic category score	Correlation between characteristic and involvement score
Structure	.343**
Programs	.275**
Advisor	-.058
Context	.110

**. Correlation is significant at the 0.01 level.

The researcher examined data from specific questions in the structure and programs areas of the questionnaire for significant correlations between particular characteristics and the involvement score.

As shown in Table 7, characteristics regarding organization structure with positive correlations significant at the 0.01 level included organization membership, average meeting attendance, meeting frequency, use of parliamentary procedure for meetings, distribution of meeting minutes, number of organization officers, use of standing committees, presence of mission statement, and presence of a constitution. Characteristics regarding organization

structure with positive correlations significant at the 0.05 level included the use of an agenda for organization meetings and the presence of officer/executive meetings.

Table 7
Relationship between specific structure characteristics and involvement

Structure characteristics	Correlation with involvement score
Organization membership	.269**
Average meeting attendance	.192**
Meeting frequency	.240**
Use of agenda for organization meetings	.172*
Use of parliamentary procedure for organization meetings	.262**
Distribution of meeting minutes	.185**
Number of organization officers	.312**
Presence of officer/executive meetings	.161*
Use of standing committees	.309**
Presence of mission statement	.242**
Presence of constitution	.175**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Characteristics regarding organization programs with positive correlations significant at the 0.01 level included planning/hosting fundraisers, planning/hosting events for the public, a developed calendar of events, a developed budget, a developed program of work, standing committee descriptions, and having a member contact information directory (see Table 8). Characteristics regarding organization programs with positive correlations significant at the 0.05 level included planning/hosting community service activities and planning/hosting an annual recognition banquet for members. Only one significant negative correlation was found between any organization structure or organization program items – planning or hosting educational events for members (-.139 at the 0.05 level).

Table 8
Relationship between specific program characteristics and involvement

Program characteristics	Correlation with involvement score
Fundraisers	.250**
Educational events for members	-.139*
Events for public	.183**
Community service activities	.171*
Annual recognition banquet	.169*
Calendar of events	.274**
Budget	.241**
Program of work	.279**
Standing committee descriptions, assignments, goals	.180**
Member directory	.200**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Conclusions/Recommendations/Implications

The following conclusions regarding collegiate student organizations in colleges of agriculture were drawn based upon the findings of this study.

First, collegiate student organizations in colleges of agriculture are highly or moderately structured; and the student positional leaders in the organizations perceive varying levels of advisor engagement, ranging from very minimal involvement to a moderately high level of engagement with the planning of programs. Collegiate student organizations in colleges of agriculture plan and/or host a variety of programs and activities, with more programming focused internally on members than externally, on the public and community. Only about half of organizations implemented planning mechanisms such as budgets, goals, and committee descriptions, yet collegiate student organizations in colleges of agriculture planned some or many programs and activities each year. Collegiate student organizations in colleges of agriculture experienced varying levels of support and resources from the department in which they are housed, and the majority participated in college-wide and university-wide activities as an organization. Finally, collegiate student organizations in colleges of agriculture were found to be deeply or mildly embedded in their external environments.

The following conclusions regarding the involvement of positional leaders as described by time were drawn from the findings of this study.

First, positional leaders of collegiate student organizations in colleges of agriculture spent eight or less hours each week participating in and/or planning for their student organization responsibilities and activities. Further, positional leaders who served in a more highly structured organization tended to spend more hours per week involved in the student organization, and positional leaders whose organization planned and/or hosted more programs and/or had in place more planning mechanisms tended to spend more hours per week involved in the student organization. Next, the engagement level of the organization advisor was not related to the level of involvement of positional leaders in the organization. The level of engagement of the organization in its external environment was not related to the level of involvement of positional leaders in the organization.

Finally, positional leaders whose organization had a more highly structured student organization tended to spend more hours per week involved in the student organization. In some ways, a more highly structured organization demands more time invested on the part of the leaders of the organization. Using an agenda requires time to develop it, holding officer meetings requires time to attend and participate, and more frequent meetings require more time to plan and attend meetings. However, other structural characteristics do not have a direct impact on time invested, such as the size of the organization, average meeting attendance, level of use of parliamentary procedure, or the presence of a mission statement or constitution. One might infer that more highly structured organizations are more formal in nature. Are the specific characteristics demanding of time or does the culture created by the more formal, structured organization create a norm of time investment in the organization? In other words, is it the culmination of many individual, specific characteristics that are each related to more hours spent by students or is the combination of many characteristics – is the whole more impacting than the sum of the parts?

The following conclusions regarding the relationship between organizational characteristics and time invested by positional leaders were drawn from the findings of this study.

There was no significant relationship between the engagement level of the advisor and the involvement level of the positional leaders of the student organization. In fact, the insubstantial correlation that was found was negative. The results of this study indicate that the advisor's involvement has no relationship to the involvement of the organization's leaders. These findings are rather interesting when compared to the findings of Astin's study of retention in college. "Practically all the involvement variables showing positive associations with retention suggest high involvement with faculty, with fellow students, or with academic work" (Astin 1993). Of course, involvement with faculty is just one piece of Astin's findings, but they do suggest that increased interaction with faculty has a positive effect. The findings of this study show no relationship between the advisor's (who is almost always a faculty member in the college of agriculture according to this study's results) level of interaction with the student organization and the time invested by student leaders. While it is not suggested here that time invested in student organizations is synonymous with increased retention in college, Astin's findings did show a

relationship (Astin 1993), which is not necessarily supported by the findings of this study. Furthermore, this study did not examine the impact that the role of the advisor may have on the effectiveness of the organization itself. While it was determined there is no relationship between the advisor's involvement and individual students' involvement, perhaps there are relationships between the advisor's involvement and the success of the organization as a whole.

Positional leaders whose organization plans and/or hosts more programs and has in place more planning mechanisms tend to spend more hours per week involved in the student organization. Similar to the discussion related to the organization's structure, the act of planning more programs does require students to spend more time, although this does not automatically mean that it is the positional leaders of the organization spending time planning additional programs. Nonetheless, an organization that plans and hosts more programs for both its membership and the outside community is related to positional leaders spending more time on student organization responsibilities. Specifically, the development of a budget, program of work, membership directory, and standing committee descriptions offer more substantial planning mechanisms, but also demand more time invested in order to develop these mechanisms. Typically, these planning mechanisms are initially developed by positional leaders even if implemented by committee chairpersons or members.

The level of engagement of the organization in its external environment is not related to the level of involvement of positional leaders in the student organization. While one might expect an organization who is more engaged with its external environment (attending conferences, participating in university-wide activities) to have positional leaders who invest more time, this study did not find a significant relationship between the participants' organization context scores and involvement scores. This is somewhat surprising, given that students who participate in student organizations are more connected to their university and college (Abrahamowicz 1988) and have a more positive attitude toward community involvement (Eklund-Leen and Young 1997). Perhaps relationships might exist for specific components of engagement in the external environment, but on the whole, a significant relationship did not exist. For example, student organizations could participate in university-wide or college-wide activities, but not participate in activities hosted by the national organization or in training hosted by the college. There may be specific components of the external environment that organizations are participating in that would lend to more positive attitudes toward community involvement.

The following three recommendations for practice have been suggested from the findings of this study.

First, collegiate student organizations in colleges of agriculture should pursue a more highly structured organization to maximize involvement of positional leaders. One area of potential growth is the use of standing committees (currently only used by about half of organizations) to involve not only positional leaders, but also additional members. Furthermore, collegiate student organizations should enhance programming to maximize involvement of positional leaders by planning an adequate variety of programs and also developing the necessary planning mechanisms (calendar of events, budget, program of work, etc.) that allow for effective planning of organization programs. One area of potential growth is the addition of more programming targeted at audiences external to the student organization. Finally, while the

majority of student organizations do not report participating in training offered by the college, colleges of agriculture should consider providing resources that encourage student organizations to increase the level of structure and program capacity of their organization. Resources could include short activities facilitated at organization meetings, templates available for budget or program of work development, and online links to additional resources for program planning.

The following recommendations for further research have been suggested from the findings of this study.

Since this study focused only on positional leaders, future research should include all members of student organizations in colleges of agriculture. Furthermore, additional research should include all colleges of agriculture, not just the 1862 land-grant institutions included in this study. This suggested research will obtain a clearer viewpoint of the total organization picture, since perspectives by officers may not represent the perspectives of all members of student organizations. Future research should examine the similarities and/or differences between student involvement in organizations found in colleges of agriculture and student involvement in other colleges within the university.

Future research should examine what differences may or may not exist between male and female students and also between students of different ranks/classifications (freshmen, sophomores, juniors, seniors) regarding student involvement in organizations. Suggested research also should include an examination of the role the advisor has within the organization as a whole and if this role contributes to the effectiveness of the student organization. Since this study found that student organizations host a variety of programs, but that levels of planning mechanisms were less than the level of programming, future research should focus on how collegiate student organization plan programs and activities and how such processes involve members and leaders of the organization. Finally, more research is needed on the intricacies and possible direction of the relationship between student involvement in organizations and student leadership and personal development. While associations and relationships have been found, it is not known whether these relationships are causal or merely correlational.

This study was a beginning glimpse of how positional leaders in collegiate agricultural organizations across the nation describe specific elements of their organization, the time they invest within the organization, and the relationships between organizational elements and time invested. As colleges of agriculture across the nation make decisions regarding which programs and/or organizations to support with funding and staff, information is needed regarding the specific student outcomes as related to involvement in such organizations. Further, as students must make decisions regarding how to invest their time among a myriad of choices on college campuses, studies examining the results of both physical time and psychological energy spent could help students and collegiate advisers make decisions on how invest their total energy.

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PIONEERS IN AN EMERGING FIELD: WHO WERE THE EARLY AGRICULTURAL EDUCATORS?

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Abstract

Agricultural education in the United States has a rich history over the past century. A number of innovative individuals were responsible for developing the program of agricultural education we ascribe to today. These individuals had little from which to lay a foundation, however their work has proved to be beneficial to the success of the field. This historical research study examined the background of early teacher educators in agriculture and early secondary teachers of agriculture as well as the training requirements for early teachers of agriculture. Early teacher educators in agriculture were well educated scholars who recruited qualified individuals to serve as teachers of agriculture and created curricula to meet the demands of vacancies in high school vocational agriculture programs. Today, we are faced with a demand for secondary teachers of agriculture. As we work to fill these vacancies, we must look at the work and characteristics of our predecessors in meeting this need.

Introduction

Formal and informal education in agriculture existed long before the beginning of the 20th century. Agricultural education was taught in elementary and high schools well before the passage of the Federal Vocational Education (Smith-Hughes) Act of 1917 (Hillison, 1987). In addition, collegiate programs existed to prepare future agriculture teachers before 1917. The histories of the first teacher educators in agriculture, the first secondary teachers of agriculture, and the training requirements for pre-service teachers in the early part of the 20th century have not been examined collectively in recent years.

Theoretical Framework

Many individuals in the field of agricultural teacher education are familiar with the fact that teacher education programs in agriculture existed to a certain extent before the passage of the Smith-Hughes Act of 1917 (Hillison, 1987). Iowa State University, Pennsylvania State University, and Texas A&M University are examples of institutions preparing teachers of agriculture before 1917 (Stimson & Lathrop, 1942). Accordingly, many are aware that agriculture was taught in public schools before the Smith-Hughes Act. The Alabama congressional district secondary agricultural schools illustrate this fact (Hillison, 1989; True, 1929).

Teacher education is a relatively new field in academia. Prior to the late 1800s, many teachers did not posses more than an eighth grade education. As normal schools developed through the 19th century, it was recognized that teacher training was a necessary function of colleges and universities (Noll, 1968). Uncertainty as to where teachers of agriculture should be prepared existed from the time of the establishment of the land-grant colleges to the passage of the Smith-Hughes Act (Herren & Hillison, 1996). Existing state normal schools traditionally

known for preparing teachers believed that agriculture teachers could be trained under their programs. Examples of normal schools training teachers of agriculture in the early 1900s for elementary and secondary positions include the Wisconsin county training schools for teachers and the county teacher-training schools in Michigan (True, 1929). Upon passage of the Smith-Hughes Act, most state legislatures decided that the Federal funds allocated for agricultural teacher training would be awarded to land-grant institutions because these colleges had the agricultural equipment, facilities, and faculty necessary to provide sufficient training and preparation (True, 1929).

The Smith-Hughes Act of 1917 provided federal funding for vocational agriculture programs in public high schools (Cook, 1947). Immediately, more teachers of agriculture were needed to fill positions in newly created vocational agriculture programs across the country. Subsequently, teacher educators were needed to prepare these future teachers and departments of agricultural education were created within colleges of agriculture at nearly all land-grant institutions.

Clearly, demand was high for agricultural educators at the secondary and post-secondary level. Individuals forging ahead in the field included people like Rufus Stimson who initiated the idea of the home project plan and Dr. Ashley Storm who was one of the founders of the American Association for the Advancement of Agricultural Teaching (Field, 1929). The names of these individuals are familiar, but many are not aware of the stories behind these names. These were the people creating the curricula and philosophies for agriculture education, the framework from which today's programs are built. Additionally, stories of the early teachers of agriculture have been passed down, and while it is assumed these individuals had some background in production agriculture, little is shared about the path these individuals took to became secondary teachers of agriculture.

A difference existed in the type of agriculture that was taught prior to the passage of the Smith-Hughes Act compared to the content in vocational agriculture programs developed after the Smith-Hughes Act. Comparatively, the preparation for teachers of vocational agriculture programs was different than that of a pre Smith-Hughes teacher of agriculture.

One priority of the National Council for Agricultural Education 10 x 15 Initiative is Agriculture Educator Recruitment ("10 x 15": The long-range goal for agricultural education, n.d.). Recruitment and retention of agricultural educators has long been a recognized issue within the field. As the profession examines this priority of the 10 x 15 Initiative, we must reflect on the backgrounds and training requirements of the people who pioneered an emerging field while working to meet the demands of filling positions in secondary agricultural education.

Purpose and Objectives

The purpose of this study was to examine the background of early agricultural educators and the training and certification requirements necessary for teachers of agriculture prior to, and immediately following the time of the Smith-Hughes Act of 1917. The objectives include:

1. Describe the educational and vocational background of teacher educators in agricultural education in the time period of 1900-1930.

2. Describe the educational and vocational background of teachers of agriculture in the time period of 1900-1930.
3. Describe the training requirements for early teachers of agriculture in the time period of 1900-1930.

Methods/Procedures

Historical research methods were used to gather findings for this study. According to Ary, Jacobs, Razavieh, and Sorensen (2006), the intended result of historical research is "increased understanding of the present and a more rational basis for making choices" (p. 466). Data were collected from *Agricultural Education*, the *Journal of Agricultural Education*, and previous historical titles on agricultural education by True (1929) and Stimson and Lathrop (1942).

Primary sources were utilized when possible and included articles in *Agricultural Education* and an anthology. Secondary sources included articles in *Agricultural Education* and the *Journal of Agricultural Education*, agricultural education history books, and an agricultural education text book. Documents from these sources were reviewed to find information pertaining to teacher educators, teachers of agriculture, and training requirements in order to achieve the research objectives. A variety of individuals and institutions were chosen in order to give the study a national scope.

Historical criticism was employed to evaluate these sources. External criticism found the sources to be genuine and valid in the content they provided. Internal criticism found the sources to be accurate and worthy for the study. Lincoln and Guba's (1985) criteria were used for establishing trustworthiness of the results. The researchers used multiple sources of information to establish credibility of the findings. Thorough records were kept of all documents identified and used in the study. Quotations from articles and books related to early agricultural educators and the training requirements for pre-service teachers of agriculture were used to confirm the results.

Results/Findings

Background of Early Teacher Educators

The earliest teacher educators did not receive formal training in agricultural education at the collegiate level. Even though these individuals did not have a Bachelors, Masters, or Doctorate of Philosophy in Agricultural Education, they did posses educational degrees and in many cases, teaching experience upon appointment to their position as teacher educators in agriculture.

Rufus W. Stimson. Stimson is well known for developing and promoting the home project plan of teaching agriculture and promoting the idea of itinerant teacher-training. He received the Artium Baccalaureus (Bachelor's degree) in philosophy from Harvard University in 1895 and the Artium Magister (Master's degree) from Harvard in 1896 (Moore, 1988). In 1897, Stimson graduated from the Yale Divinity School. He accepted a teaching assignment at the Connecticut Agricultural College and remained there until 1908, serving as president of the institution from 1901-1908. After leaving the Connecticut Agricultural College, Stimson headed up the first permanent school of secondary agriculture in Connecticut, at Northampton (Heald, 1929).

Dr. Kary C. Davis. Kary Davis, noted as being the first student in America to receive a Ph.D. in agriculture, earned this degree at Cornell. Prior to Cornell, he received a Master's degree from Kansas State College. Serving as principal and agriculture teacher in Menomonie, Wisconsin, at the first county agricultural school in America, Davis was recognized nationally and internationally for his methods and solutions of problems in agricultural education. In 1913, the Peabody College in Nashville, Tennessee, called Davis to serve as head of the newly formed School of Country Life. Throughout his career, Davis promoted the job analysis method for organizing agricultural content for high school teachers and eventually published a series of textbooks on the topic (Chesnutt, 1929).

Prof. Walter H. French. This member of the "old guard of vocational agricultural education" (Hamlin, 1929, p. 12) attended Michigan State Normal College, graduated in 1888, and received a Master of Science degree from the University of Michigan. A career in education followed including five years as principal in Litchfield, Michigan, and eight years as commissioner of schools for Hillsdale County, Michigan. He was appointed Deputy Superintendent of Public Instruction for the state of Michigan in 1900. While in Hillsdale County, French formed an association of school officers and eventually served as president of the Michigan State Teacher's Association. Additionally, he studied law while in Hillsdale and was admitted to the bar in 1902 (Noll, 1968).

In 1908, the Michigan Agricultural College established a Department of Agricultural Education and French was chosen as department head. His interests included furthering agricultural education in the elementary and high school settings and providing reading courses for adults. French was an originator of the Association for the Advancement of Agricultural Teaching and a leader in the agricultural section of the National Society for Vocational Education (Hamlin, 1929).

Dr. Ashley V. Storm. Storm's early career included serving as superintendent of schools at Storm Lake, Iowa, Cherokee, Iowa, and finally Iowa City, before becoming an extension professor of public school agriculture at Iowa State College in 1907. While in Iowa City, Storm pursued his Master's degree at the University of Iowa. When Iowa State College formed a Department of Agricultural Education, Storm was selected to chair the department (Field, 1929). According to Beckman, many high school and college faculty members felt that Storm was "headed down a blind alley" (as cited in Field, 1929, p. 10) when he made the choice to leave school administration and pioneer agricultural education. His career took him to the University of Minnesota where he established a Division of Agricultural Education and became the first leader of that entity.

Storm taught in country and city schools in Illinois, Iowa, and Nebraska and owned and operated farms prior to serving as a school superintendent. While in Nebraska, Storm pursued a degree in law during the evenings. He passed the bar and practiced law in Nebraska for a short time before he returned to teaching. Storm served as president of the Northwest Iowa Teacher's Association during his time as an educator and was active in the National Education Association.

Ashley Storm was credited as a "great organizer of short courses in America" (Davis as cited in Field, 1929, p. 15) and assisted Davis in writing the textbook "How to Teach Agriculture." He was a founder and president of the American Association for the Advancement

of Agricultural Teaching as well as a founder and the first national president of Gamma Sigma Delta, an honorary society of agriculture (Field, 1929).

Aretas Wilbur Nolan. A.W. Nolan, born and raised on a farm, began his career in education in 1894 with undergraduate studies at Indiana University; however it wasn't until 1905 that he received the Artium Baccalaureus degree. This 11 year span included time served as a teacher in elementary and secondary schools including a principalship in 1900 and superintendent position beginning in 1904. He attended the Teacher's College at Columbia University in New York, in 1906. The year 1908 began Nolan's career in higher education when he was named Assistant Professor of horticulture and forestry at West Virginia University. He rose to the position of Associate Professor of agricultural education and served in that role until he accepted a position at the University of Illinois (Lawson, 1930).

Nolan began his career at the University of Illinois in 1912 as an Assistant Professor of extension and taught courses in rural education at the University of Chicago during the summers of 1914-1915. Upon passage of the Smith-Hughes Act, Nolan was appointed to state supervisor of agricultural education in Illinois in 1917. While serving in that role, he was enrolled as a graduate student at the University of Illinois, eventually accepting a faculty position in agricultural teacher education as Associate Professor and director of teacher-training in 1920 (Lawson, 1930).

Other leaders in teacher education in agriculture included Jeremiah Lillard of California who served as a lecturer during summer sessions at the University of California, Berkeley in the 1920s. During that time, he also served as president of Sacramento Junior College (Griffin, 1929). Another Californian, Henry Marvin Skidmore, a contemporary of Lillard, served as the state supervisor of classes for training teachers of agriculture at the University of California. Skidmore is credited with developing "a system of apprenticeship teaching that stands somewhat unique among the directed teaching methods employed by various states" (Griffin, 1929, p. 16).

Background of Early Teachers of Agriculture

Prior to the Smith-Hughes Act of 1917, there were few requirements for teachers of agriculture, illustrated by Martin, "In the early days of agricultural education, no certificate was generally required to teach agriculture" (1967, p.12). Holton described the early teacher of agriculture of the 1920s:

> The teacher of vocational agriculture is a man 30 years of age; he has a Bachelor of Science degree from a standard agricultural college and has had 9 semester hours of graduate work; he was born and reared on a farm and has had 11 years of practical experience in farming; he has been teaching vocational agriculture three years and has had one year experience in teaching other subjects before he began teaching vocational agriculture; he receives an annual salary of $2,400 (as cited in Wiseman, 1930, p.51).

According to the editor of *Agricultural Education*, Sherman Dickinson (1930), H.O. Sampson of New Jersey was thought to be the first high school teacher of agriculture in the country at Waterford, Pennsylvania, in 1904-1905. Dickinson made an editorial note that if any reader had a better claim to the title to notify him. After examination of subsequent issues of the magazine, no corrections were published. However, the first teacher of agriculture in Ohio is

documented in Elyria, Ohio, around 1890. During that year, the local school employed a science teacher who "also had a considerable knowledge of agriculture" (Stimson & Lathrop, 1942, p. 359).

Even earlier than these instances, agriculture was being taught in state agricultural schools associated with the land-grant institutions in states such as Alabama, Connecticut, Minnesota, and Rhode Island. Teachers at these schools tended to be faculty members from the land-grant colleges and experiment stations. Additionally, principals of these schools were regularly given teaching duties in addition to their administrative responsibilities.

By 1902, the Association of Agricultural Colleges and Experiment Stations recommended that new teachers of agriculture should be graduates of an agricultural college. Further it was suggested that this person might teach other subjects such as chemistry, botany, and zoology (True, 1929). This group, along with the state board for vocational education in Ohio in 1924 allowed for, or permitted the teacher of agriculture to also serve as the high school principal (Fife as cited in Stimson & Lathrop, 1942). The idea of the "teacher-principal" can be further traced to the beliefs of Liberty Hyde Bailey of Cornell University (Martin, 1967) supporting the notion that early teachers of agriculture served as leaders within schools.

Teachers beginning a career in vocational agriculture after the Smith-Hughes Act often had a different biography than those who began teaching general agriculture before 1917. By 1929, it was recognized that students from schools with agriculture programs were attending the agricultural colleges and that the colleges were then training teachers of agriculture for the local schools (Shepardson, 1929). In order to meet the demand of vocational agriculture teachers in 1917, some states initiated a merger between the county extension agency and local high schools, making extension club agents teachers for the newly formed agriculture programs supported by Smith-Hughes Act funds (Shepardson, 1929). While men made up the majority of individuals planning to be teachers of agriculture, in 1924 there were 55 women in teacher-training programs in agriculture and 4,692 men. Previous to that in 1919, there were 1,289 men and 45 women enrolled in teacher preparation programs across the country (True, 1929).

The following are biographical sketches of four early teachers of agriculture who were highlighted in *Agricultural Education*.

Robert A. Condee, Chino, California. Robert Condee served as principal and agricultural teacher at the Chino Vocational High School, beginning in 1914. He served in this role for nearly 16 years. Condee was very active in the agriculture activities of the state including membership in the State Agricultural Society, the State Board of Agriculture, and the California Holstein Council. He also served as a regent of the University of California. These contacts allowed him to promote the provisions of the Smith-Hughes Act across the state of California. Condee's agriculture experience began with general farming after graduating from high school and later he served as a county horticulture inspector before enetering education (McPhee, 1931).

Carl G. Howard, Sheridan, Wyoming. Howard was named "Master Teacher" in the state of Wyoming for the 1928-1929 school year. The agricultural experience of Howard included farming in Michigan and Illinois, serving as an agricultural engineer in eastern Canada, and managing a 640 acre fruit farm. Howard also served as a second lieutenant of infantry during World War I. His educational experience included attendance in the public schools of Illinois

and a Bachelor of Science degree in agriculture from the University of Illinois in 1917. After coming to Wyoming, he completed graduate work at the University of Wyoming. Howard taught a variety of subjects including physics, chemistry, general agriculture, and vocational agriculture. His vocational teaching experience began in Kimball, Nebraska, in 1919, continued in Las Cruces, New Mexico, leading to Sheridan in 1921. Job analysis work was one of Howard's priorities and he was recognized by his peers as one of the pioneers in this area. He authored a "Job Plan Book for Animal Production" which was disseminated to teachers across Wyoming and neighboring states (Ross, 1929).

The following two individuals were highlighted in a recurring segment in *Agricultural Education*, authored by Dr. Aretas E. Nolan of the University of Illinois. The segment was titled "Successful Teachers of Vocational Agriculture."

Walter Newlin, Casey, Illinois. This teacher of agriculture graduated from the College of Agriculture at the University of Illinois in 1918. Following graduation, he served in World War I and came to Casey to serve as vocational agriculture teacher in 1920. In the first year, Newlin focused on classroom teaching and "careful and tactful study and observation of the community problems" (Nolan, 1929a, p. 3). At the time, many in the community were opposed to the study of agriculture in local high schools. After visiting other departments of vocational agriculture and gaining the cooperation of the community, Newlin developed a growing program. By August 1929, after nine years of teaching, Newlin had prepared nine boys to attend the state agricultural college, some who were planning to become vocational agriculture teachers (Nolan, 1929a).

Jerome Embser, Newton, Illinois. Jerome Embser began teaching vocational agriculture in the summer of 1927. His agricultural experience included farm experience from the time he was a child. At the University of Illinois, Embser completed a general agriculture course and 21 credit hours of professional training in education. Embser's first work in the Newton community was to visit all boys in the vocational agriculture program and to become familiar with their projects (Nolan, 1929b).

Training Requirements for Early Teachers of Agriculture

Since agricultural education existed in public and private elementary and secondary schools prior to the passage of the Smith-Hughes Act in 1917, naturally there were individuals teaching the subject. H.M. Hamlin, former Chairman of Agricultural Education at the University of Illinois, who was enrolled in an agriculture class in Minnesota in 1911 remarked on the training of teachers of agriculture during that time in a speech to his peers. He stated, "What was public school education in agriculture like in 1911? There were no specially prepared teachers of agriculture" (Hamlin, 1967, p. 74).

The lack of individuals who were professionally trained to teach agriculture made it difficult for effective agricultural education to occur in the schools (True, 1929). While there were few individuals trained to teach agriculture, there were institutions offering courses in teaching agriculture. Iowa State College offered courses in pedagogy as early as 1901 for students wishing to teach agriculture. The first class from Iowa State College to complete a special curriculum in agricultural education graduated in 1916 (Stimson & Lathrop, 1942). In 1916, students studying to become teachers of agriculture at the New York State College of

Agriculture were required to complete a minimum of 120 semester hours including a residence of 8 semesters (Hawkins as cited in Stimson & Lathrop, 1942). At Pennsylvania State College in 1910-1911, "a 1-year teachers' course was designed for graduates of high schools, normal schools, and colleges who wished to prepare themselves for teaching agriculture" (Stimson & Lathrop, 1942). By the 1911-1912 academic year, the one-year course expanded into a four-year curriculum. Kyle reported that the Agricultural and Mechanical College of Texas offered courses in agricultural education through the department of horticulture in 1911-1912 (as cited in Stimson & Lathrop, 1942). Many other post-secondary institutions were providing instruction in agriculture for prospective teachers. The instruction took on a number of forms including short courses, summer-school instruction, and four year programs. By 1910, there were 46 agricultural colleges offering teacher-training work in agriculture. Over half of them were offering four year programs (True, 1929).

With the passage of the Smith-Hughes Vocational Education Act of 1917, there was a great demand for teacher-training in vocational agriculture (True, 1929). Even though the Smith-Hughes Act provided Federal funds for teacher-training, each state determined the extent to which teachers would be trained. Iowa State College offered two curricula, one in general agriculture and the other in vocational agriculture until 1938 when the general agriculture program was dropped (Stimson & Lathrop, 1942). In order to meet the demand for vocational agriculture teachers, the Tuskegee Institute in Alabama added an "advanced course" in 1919. The advanced course included an additional year in teacher training for agriculture students who wished to become teachers of agriculture (Stimson & Lathrop, 1942). Courses at the University of Florida in 1919-1920 encompassed methods in teaching agriculture, including methods in selecting material for agricultural education, organizing courses of study, and presenting the subject to pupils. Similar pre-employment courses were offered at the University of Kentucky encompassing content in curriculum development, farm practice supervision, methods in teaching vocational agriculture, teaching prevocational agriculture, advanced problems in agricultural education, selecting teaching materials, evening schools, and research problems in agricultural education (Stimson & Lathrop, 1942).

According to Stimson and Lathrop (1942), the 1920-21 bulletin of the Oregon Agricultural College offered the following courses to prepare teachers of agriculture:

AEd 432	Club work
AEd 421	Elementary education in agriculture
AEd 433	General agriculture for teachers
AEd 156	Secondary education in agriculture
AEd 315	Supervised teaching

Supervised teaching took place locally at Corvallis High School and was offered for six credits. Suggested offerings for pre-service teachers of agriculture at The Ohio State University for 1920-21 are shown below in Table 1.Table 1

Suggested Course Offerings at The Ohio State University, 1920-1921 Academic Year

Type	Course title
Fundamental courses	Elementary Zoology
	General Botany

	Elementary Chemistry or General Chemistry
	Agricultural Mathematics
	General Physics
	Principles of Geology
	General Bacteriology
	Carpentry and Forging (Shopwork)
	Mechanical Drawing
	English
	Principles of Economics
	Survey of Agriculture
Scientific agriculture	General Agricultural Chemistry
	Elementary Soils
	Farm Crops
	Field Crop Production
	Cereal Crops
	Forage Crops
	Farm Horticulture
	Economic Entomology
	Animal Husbandry
	Elementary Live Stock [*sic*] Judging
	Principles of Feeding
	Dairy Cattle Production and Management
	Poultry Husbandry
	Principles of Dairying
	Agricultural Engineering
	Farm Engineering
	Drainage
	Rural Economics
	Farm Accounting
	Farm Management
	Agricultural Economics
Professional educational subjects	Psychology
	Principles of Teaching
	Rural Community Life
	Methods of Teaching Vocational Agriculture
	Observation Teaching of Agriculture
	Practice Teaching of Agriculture
	Methods of Agricultural Extension
	Elective

Note. From *History of the Department of Agricultural Education* (p. 43), by W.H. Wolf, 1969, Columbus, OH: Department of Agricultural Education, The Ohio State University.

True (1929) summarized the average requirements for teacher-training programs as follows: technical agriculture, 49 credit hours; science, 40 credit hours; cultural subjects, 26

credit hours; psychology and education, 18 credit hours; and electives, 11 credit hours for a total of 144 credit hours.

Courses in practice or student teaching were evident in many of these requirements and were a critical component of teacher-training programs from the very beginning of teacher education in agriculture. Edmund Magill, formerly of Virginia Polytechnic Institute, proposed the addition of a fifth-year to the teacher-training program. Magill stated the fifth year should be "devoted largely to a teacher-training program of twelve months, and such agricultural specialization as might be needed" (1929, p. 9). Students at the New York State College of Agriculture were required to complete a half year apprenticeship teaching program. Students received three credit hours and $30 a month for their services, (Hawkins as cited in Stimson & Lathrop, 1942). Seniors in agricultural education at Pennsylvania State College were assigned to selected high schools throughout the state. After graduation they returned to the practice-teaching center for experience in project teaching over the summer months (Stimson & Lathrop, 1942). California began a unique program in 1926 called Cadet teaching that eventually caught on in other states. In that year, "practice teaching was conducted on a semester basis under the direction of the teacher-training departments at the University of California. Cadet teachers were placed in agricultural departments of high schools in certain sections of the state, where they remained during the entire semester, attending classes once a week for the purpose of receiving instruction in professional methods" (Stimson & Lathrop, 1942, p. 43).

In addition to the formal requirements of coursework and student teaching, students who wished to study agricultural education were required to have some type of farm work experience. In 1917, the Bureau of Education reported that 16 institutions preparing teachers of agriculture required students to have some practical experience in farming before graduation (True, 1929). As early as 1918, the Federal Board for Vocational Education recommended that competence in agriculture was a high priority component of the training program for pre-service and in-service teachers (Martin, 1967). By 1918 in Ohio, well-qualified teachers of vocational agriculture were required to have at least two years of farm experience (Stimson & Lathrop, 1942). In the 1920-21 course bulletin of the College of Agriculture at The Ohio State University, all undergraduate students (except those in home economics) were required to have some farm experience. Students were to "gain farm experience each succeeding year" so that by graduation they would have "one full year of resident farm experience" (Wolf, 1969, p.44).

Conclusions/Recommendations/Implications

Background of Early Teacher Educators

Early teacher educators of agriculture were well qualified to develop agricultural education departments at higher education institutions. These individuals possessed Master's and Doctorate degrees in agriculture and/or education. Rufus Stimson, while generally not considered a formal teacher educator, was Harvard and Yale educated, even possessing a degree in divinity. Having teaching experience at the elementary, secondary, and collegiate level in agricultural subjects, early professors were able to bring real experiences to their students even though Agricultural Education was in its infancy as a post-secondary field of study. The individuals examined in this study were innovative. Proposing the idea of home projects (Stimson), recognizing the importance of the problem methods of teaching (Davis), and forming professional organizations (Storm) shows us that these people were committed to the future of

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agricultural education and wasted no time in acknowledging the elements necessary to secure a successful future.

Turn-of-the-century teacher educators were willing to take risks. Ashley Storm was derided by his colleagues when he decided to enter new, undeveloped territory. Walter French studied law while serving as an educator. We must constantly be aware that the elements put in place by our predecessors have secured our position in agricultural education today. If we are to ensure that security for our successors, what do today's teacher educators need to consider for tomorrow?

Background of Early Teachers of Agriculture

Early teachers of agriculture taught other subjects, namely science and were leaders in their schools. Agriculture teachers in the early part of the 20th century were involved in other activities related to agriculture and exhibited the qualities and expectations of today's teachers of agriculture. Individuals like Jerome Embser recognized the importance of the home visit, still an effective practice employed today. The success of these individuals provides motivation to individuals entering the field.

Further examination of the finding related to the teaching of other subjects leads us to the current day. In a time when we must justify the content of secondary agricultural education programs to ensure a future in a comprehensive school system, we realize it is necessary to continue to show stronger links to math and science. As agricultural education spread across the country, science teachers with agriculture experience were sought out to teach vocational agriculture classes.

Training Requirements for Early Teachers of Agriculture

The training requirements for early teachers of agriculture were similar to the requirements for today's students. A mixture of agricultural content and pedagogy classes were required, even under the earliest circumstances when departments were first established. When a demand for teachers of agriculture was felt after the passage of the Smith-Hughes Act in 1917, alternative methods for certifying individuals to be prepared to teach agriculture were engaged. Additional one-year courses and summer sessions were the means by which colleges equipped these people to be successful.

Even at the beginning of teacher-training in agriculture, a strong emphasis was placed on student teaching, or practice teaching, and agricultural experience. As we put this in the context of recruiting teachers of agriculture today, what requirements must be in place to prepare a new cadre of teachers? Are pre-service teachers getting enough practice teaching experience? Should it be year-long as Magill proposed in 1929? How do we work to make certain that graduates have the agricultural experience they need in order to be successful teachers of agriculture? Do we assume that incoming students will have a farm, or some type of agricultural background? Must venues for agricultural work experience be implemented into the teacher education curriculum in addition to the student teaching experience? Again, as we look to other realms outside the current boundaries of agricultural education to recruit the teachers of tomorrow for unknown positions, we must consider the past and how the demand for teachers in a growing and changing field of agricultural education was met.

Summary

Agriculture teacher recruitment is a priority for the National Council for Agricultural Education. Where will we look to find the individuals needed for the positions that will develop over the course of the next decade? Teachers like Walter Newlin encouraged his students to attend college and become teachers of agriculture. In a recent discussion on teacher recruitment, a practicing secondary teacher of agriculture suggested that each current teacher encourage one of their own students to teach agriculture as a future career. This practice will help retain the current teaching force in agriculture, but where will we seek the additional teachers needed to meet the demands of the 10x15 Initiative? Will these teachers be recruited from the population of agriculture college graduates as they were at the passage of the Smith-Hughes Act when the demand for agriculture teachers was also high? Will tomorrow's teachers possess practical agricultural experience? Some of the earliest teachers of agriculture did not have an agricultural background. Can these individuals still be successful if given the appropriate training, content, and experience? How heavily do we rely on youth organizations like 4-H and FFA as a recruitment base for future teachers of agriculture? How were early teachers recruited when 4-H clubs were in their infancy and FFA didn't exist? These are all matters to be considered as we examine recruitment of future teachers of agriculture.

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CREATIVE AND EFFECTIVE TEACHING CHARACTERISTICS
OF UNIVERSITY INSTRUCTORS

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Abstract

The purpose of this study was to explain and predict creative and effective teaching behaviors of university instructors, as perceived by students, in the College of Agriculture, Food and Natural Resources (CAFNR) at the University of Missouri. Creative teaching behaviors were examined using an instrument developed from creativity theories of divergent thinking. Effective teaching behaviors were evaluated using the principles of effective teaching developed by Rosenshine and Furst (1971). The study utilized two populations: undergraduate students and their instructors. Results indicated that students believe CAFNR instructors demonstrated creative teaching behaviors. In addition, the study found a very high, positive and significant correlation (r = .91) between instructors' creativity in teaching and effectiveness of teaching behaviors, as perceived by students. There was also a significant relationship between creative teaching behaviors of experienced and inexperienced instructors when evaluated by students (p = .05).

Introduction and Theoretical Background

Guilford's 1950 presidential address to the American Psychological Association (APA) catapulted creativity into the field of psychological research (Bleedorn, 2003, 2005; Cropley, 2001; Fasko, 2000-2001; Mumford, 2003; Runco, 2000-2001). Nevertheless, defining creativity has been a difficult task (Baker, Rudd, & Pomeroy, 2001; Friedel & Rudd, 2005; Hocevar, 1981; Sternberg, 1999; Starko, 2005). Perkins (1988) defined creativity in terms of creative results, which are both original and appropriate. Torrance (1995), known as a leader in creative research, defined creativity as "the process of forming ideas or hypotheses, testing hypotheses, and communicating the results" (p. 23). Despite differences in definitions, many researchers agree that creativity is comprised of three factors, including novelty, effective for others, and ethical or beneficial to society (Cropley, 2001; Fox, J., & Fox, R., 2000; MacKinnon, 1962; Torrance).

If defining creativity is complex, assessing creativity may be an even greater challenge. Hocevar (1981) stated, "perhaps no psychological concept has proven to be as difficult to measure as creativity" (p. 450). As a result of numerous complex creativity models, many types of creativity assessments have been developed (Feldhusen & Eng Goh, 1995). The variation in creativity models has led some researchers to suggest multiple assessment methods. Feldhusen and Goh stated: "Assessment of such a multidimensional construct as creativity requires multiple channels of measurement such as tests and inventories" (p. 240).

One measure of creativity, the Torrance Tests of Creative Thinking (TTCT), was created within an educational context (Anastasi, 1976). Some researchers have suggested a creative individual should demonstrate attributes of divergent thinking (Bleedorn, 2003, 2005; Guildord, 1956; Starko, 2005; Torrance , 1995). Therefore, tests for divergent thinking have been used to

measure creativity (Guildord, 1956; Hocevar, 1981; Torrance, 1995). Divergent thinking often includes four creativity measures including fluency, flexibility, originality, and elaboration (Guilford; Massialas & Zevin, 1967; Plunker, Beghetto, & Dow, 2004; Starko, 2005; Torrance).

Not surprisingly the educational impact of creativity has been championed by many researchers (Anderson, 2002; Bleedron, 2003, 2005; Cropley, 1967, 2001; Esquivel, 1995; Fox, & Fox, 2000; Hocevar, 1981; Renzulli, 1992; Starko, 2005; Sternberg, 2006; Torrance, 1995). More specifically, the connection between creativity and effective teaching has been suggested by many researchers (Anderson; Bain, 2004; Bleedron, 2003, 2005; Croply, 1967, 2001; Esquivel; Newcomb, McKracken & Warmbrod, 1993; Torrance, 1981, 1995). Renzulli postulated a developmental theory suggesting teachers are a key component of developing creativity, both as mentors and role models. Chambers (1973) found college teachers could encourage creativity in students and that "students viewed these teachers as being more accessible to them, committed to their field, enthusiastic, and intellectually challenging" (Fasko, p. 322). However, can we identify these teachers as creative teachers? If creative teaching is linked to effective teaching, can identifying creative teachers identify effective teaching?

Educational research of creativity in subject specific areas such as agricultural education appears to be lacking. Limited creativity studies have been conducted in agricultural education, (Aschenbrener, Terry, Torres, & Smith, 2007; Baker, et. al, 2001; Friedel & Rudd, 2005), suggesting a research gap exists. However, effective teaching characteristics have been the topic of considerable research (Buchanan, 1997; Miller, Kahler, & Rheault, 1999; Newcomb et al., 1993; Nicholls, 2002; Reid and Johnstone, 1999; Roberts & Dyer, 2004; Rosenshine & Furst, 1971; Westmeyer, 1988). For example, Reid and Johnstone identified six components to good teaching, including approachability, clarity, depth of knowledge, interaction, interest and organization. Interestingly, Reid and Johnstone found differences between the order of these six components when examined from student and instructor perspectives. Feldman (1976) found clarity and stimulating student interest were highly related to good teaching. Feldman also suggested effective instructors were knowledgeable about their content, prepared and organized for class and were enthusiastic. Newcomb et al. (1993) identified thirteen principles of effective teaching. Rosenshine and Furst outlined many of the same principles of effective teaching. Rosenshine and Furst studied eleven variables reported as effective teaching. Rosenshine and Furst found the top five variables associated with effective teaching included clarity, variability, enthusiasm, task-oriented and/or businesslike behavior, and student opportunity to learn criterion material. Similar to creativity, effective teaching may be difficult to define, perhaps due to the multiple perspectives which comprise effective teaching (Young, & Shaw, 1999).

Although creative instructors may positively impact the student-learning environment, little research has focused on teacher creativity. While some may suggest creative teaching is effective teaching (Anderson, 2002; Bain, 2004; Bleedron, 2003, 2005; Chambers, 1973; Croply, 1967, 2001; Davidovitch & Milgram, 2006; Esquivel, 1995; Fasko, 2000-01; Milgram, 1979; Newcomb et al., 1993; Renzulli, 1992; Torrance, 1981, 1995), concrete measures that define creative teachers appear to be lacking. Additionally, creativity research appears to lack identification of characteristics held by creative teachers. Creativity research in subject-specific areas such as agricultural education is also lacking. While some research suggests differences in creativity between gender (Bleedron, 2003, 2005; Starko, 2005), other important distensions may

also exist. For example, does creativity differ between disciplines? Does teaching experience contribute to creative and effective teaching?

Purpose and Objectives

The purpose of this study was to explain and predict students' perceptions of creative and effective teaching of university instructors in CAFNR at the University of Missouri. The following research questions and hypotheses guide this study and identify creativity specifically in the context of instruction and teaching:

1. What are the demographic characteristics of selected undergraduate instructors, including sex, years of teaching experience, age, and teaching discipline?

2. What is the level of creative teaching behaviors exhibited by selected university instructors, as perceived by their students?

3. What is the level of effective teaching behaviors of instructors, as perceived by their students?

4. What is the relationship between creative teaching behaviors of instructors, as perceived by students, and effective teaching behaviors, as perceived by students?

5. What is the amount of variance in creative teaching behaviors of instructors, as perceived by students, accounted for by their age, sex, teaching experience, and discipline?

6. What is the amount of variance in effective teaching behaviors of instructors, as perceived by students, accounted for by their age, sex, teaching experience, and discipline?

Hypotheses

1. H_o: There is no difference between instructors' discipline, natural/physical science or social science, and their level of creative teaching behaviors, as perceived by students.

2. H_o: There is no difference between instructors' teaching experience and their level of creative teaching behaviors, as perceived by students.

3. H_o: There is no difference between instructors' sex and their level of creative teaching behaviors, as perceived by students.

Methodology

This study was descriptive-correlational in nature. Two populations were identified for this non-experimental study to represent both instructors and students. The first population included instructors teaching undergraduate courses in the College of Agriculture, Food, and Natural Resources (CAFNR) at the University of Missouri during the 2007 fall semester ($N= 44$). Instructors who taught seminar, research, and special problems courses were excluded from the frame. Instructors teaching multiple courses or multiple sections of the same course were randomly selected to represent one section of each specific course. Selection error was addressed by confirming participants met the desired criteria via college administrative personnel. The student population included all students enrolled in courses being taught by college instructors who had previously been identified in this study. Selection error was addressed by securing students enrolled in courses through the official university registration system

Threats to external validity, including frame error, were addressed. The frame was selected from a list of all faculty and instructors provided by the college dean's office, which was considered reliable for the purpose of constructing the frame.

A time and place sample was conducted for instructors teaching undergraduate courses in CAFNR during the Fall 2007 semester. The use of a time and place sample, as suggested by Oliver and Hinkle (1982), was justified as the instructor population could be considered representative of future populations in this college. The time and place sample resulted in 44 instructors who met the criteria. Because all members of the population were included in the study, sampling procedures were not imposed. As a result, the threat of sampling error was not a consideration in this study.

Because of the large student population, probabilistic sampling was used. Students were considered an intact group, thus cluster sampling was considered appropriate for this population (Ary, Jacobs, & Razavieh, 2002). Courses were selected where the cluster represented a minimum of 25 students and students were assigned to a specific cluster. An effort was made to assign students with multiple classes to the cluster with the lowest student enrollment preserving as many clusters as possible. A response rate of 50% or a minimum number of 30 respondents was required for a cluster to be included in the study.

A researcher-developed on-line questionnaire, the Creative and Effective Teaching Assessment (CETA), was used to assess teaching effectiveness and creative teaching behaviors of instructors, as perceived by students. Demographic data were collected directly from the instructor population.

The CETA consisted of two parts. The first component of the instrument contained items to be used by students to assess their instructor's creativity in teaching. These items were designed to assess the four constructs of creativity identified by the Torrance Test for Adults (ATTA) (Goff & Torrance, 2002): fluency, originality, elaboration and flexibility. The second component of the instrument was designed to determine students' perceptions of the teaching effectiveness of their instructors. Fifteen statements designed to assess the first five characteristics of effective teachers identified by Rosenshine and Furst (1971) were used on the CETA. These characteristics include: clarity, variability, enthusiasm, task-oriented and business-like behavior, and opportunity to learn criterion material.

Each instrument was assessed independently for validity and reliability. Validity for the CETA was established by a panel of experts for both content and construct validity. Consistent with the recommendation of Salant and Dillman (1994), reliability was not determined for demographic characteristics because demographic characteristics produce little measurement error. To address reliability, a pilot test of the CETA instrument was conducted. The questionnaire was administered to a sample of students ($n = 38$) who had similar characteristics to the population, but who were not selected to participate in the study.

Cronbach's alpha was computed to determine the internal reliability of the CETA for the student pilot test. Sample size differed due to missing data. The pilot test resulted in a Cronbach's alpha level of .97 ($n = 37$) for the entire instrument. The internal reliability for the instructor effectiveness construct measured by the student pilot was .92 ($n = 38$). The student pilot for the four creativity constructs resulted in a Cronbach's alpha of .96 ($n = 38$).

Students selected for the study were contacted through electronic mail in accordance with Dillman's (2007) recommendations following the completion of the 2007 fall semester. The electronic letter was personalized to increase response rate and included a direct link to the questionnaire. After three follow-up requests, total students responses ($n = 921$) yielded 40 student clusters. A final response rate was 73.8%. Students completed the on-line CETA assessment, which was coded to identify student clusters. Coding was also used to match student clusters with demographic data provided by instructors.

Results and Findings

Data were analyzed using SPSS® 15.0. The first research question sought to measure the demographic characteristics of course instructors in terms age, years of teaching experience, sex and teaching discipline (see Table 1).

Table 1
Demographic Characteristics of CAFNR Instructors (n = 40)

Characteristic	*f*	%	Mode	Mean	*SD*	Range
Age			51	47.05	10.48	25 - 77
Years of Teaching			10	15.95	10.98	1 - 47
Sex						
Male	27	67.50				
Female	13	32.50				
Discipline						
Natural/physical	25	62.50				
Social	15	37.50				

CAFNR instructors averaged 47 years of age with a standard deviation of 47.05. The range of ages was from 25 to 77 years. CAFNR instructors averaged slightly less than 16 years of teaching experience and was predominately male (68%). The range in teaching experience was

from 1 to 47 years (*S.D.* = 10.98). In addition, roughly two-thirds (62.50 %) of the instructors taught in courses in natural/physical science areas rather than social science areas.

The purpose of research question two was to determine the level of creative teaching behaviors exhibited by instructors, as perceived by their students. Student clusters were matched with instructors using coded information. Means, standard deviations, modes and ranges were computed for the interval data (see Table 2).

Table 2

Summated Scores for Creative Teaching Behaviors of CAFNR Instructors, as Perceived by Students (n = 40)

Construct	Mean	*SD*	Mode	Range
Summated Creative Teaching Behaviors	5.43	.75	3.32	3.32 - 6.67
Elaboration	5.72	.72	5.53	5.00 - 7.00
Frequency	5.41	.73	3.86	3.00 - 7.00
Flexibility	5.31	.80	2.98	2.75 - 7.00
Originality	5.29	.84	4.56	1.00 - 6.74

Note. Scale: 1 = strongly disagree; 2 = disagree, 3 = slightly disagree, 4 = undecided, 5 = slightly agree, 6 = agree, 7 = strongly agree.

Summated data found the highest mean score for the creativity construct of elaboration (*M* = 5.72; *SD* = .72). The creativity construct of originality had the lowest mean score (*M* = 5.28; *SD* = .84). The summated mean score for creative teaching behaviors, as perceived by students, was 5.43 on a 7-point scale where 7 indicated strongly agree (*SD* = .75).

Table 3

Summated Scores for Students' Perceived Effective Teaching (n = 40)

Construct	Mean	*SD*	Mode	Range
Perceived Effective Teaching	5.64	.69	3.80	3.80 - 6.82
Enthusiasm	5.87	.71	4.27	4.27 - 6.90
Task Oriented	5.83	.53	5.38	4.47 - 6.79
Opportunity to Learn	5.64	.70	6.48	3.53 - 6.88
Clarity	5.58	.85	6.43	3.37 - 6.88
Variability	5.23	.90	3.07	3.07 - 6.81

Note. Scale: 1 = strongly disagree; 2 = disagree, 3 = slightly disagree, 4 = undecided, 5 = slightly agree, 6 = agree, 7 = strongly agree.

Research question three sought to determine the level of effective teaching behaviors, as perceived by students (see Table 3). Students rated enthusiasm to be the most frequently occurring construct of effective teaching (*M* = 5.87; *SD* = .71). Variability had the lowest mean score (*M* = 5.23; *SD* = .90) for effective teaching, as perceived by students. Overall, students

slightly agreed that CAFNR instructors were effective teachers (M = 5.64; SD = .69). Students slightly agreed that instructors effectively demonstrated each of the five effective teaching characteristics.

Research question four sought to describe the relationship between creative teaching behaviors of instructors, as perceived by students, and effective teaching behaviors, as perceived by students. Data were considered interval in nature, thus Pearson product moment correlations were used to analyze the data (see Table 4). Relationships were classified using Davis (1971) conventions for describing magnitude of correlation coefficients. A very high, positive and significant correlation was found between students' perceived effective teaching and students' perception of creative behaviors of instructors (r = .91; p < .05).

Table 4

Pearson Product Moment Correlations for Perceived Creative Teaching Behaviors (n = 40)

Variable	Student Perceived Creative Teaching Behaviors	p - value
Student Perceived Effective Teaching	.91*	.01

* $p \leq .05$.

A simple linear regression analysis was calculated to address research question five. An intercorrelational matrix was generated prior to conducting the regression analysis to analyze the possibility of multicollinearity (see Table 5). The intercorrelational matrix contained the dependent variables (age, sex, experience, and discipline), and instructors' creative teaching behaviors, as perceived by students. Guidelines offered by Berry and Feldman (1985) to combat multicollinearity were used to analyze these data. Bivariate correlations approaching .8 were removed prior to conducting regression analysis. Two variables presented a threat of multicollinearity, as age and teaching experience were highly correlated (r = .80). Because age representing the greatest correlation with the dependent variable, teaching experience was removed prior to the regression.

Table 5
Simple Linear Regression of Perceived Creative Teaching Behaviors (n = 40)

Variable	R	R^2	b	t- value	p-value
	.30	.09			
Age			.02	1.53	.14
Sex[a]			.01	.04	.97
Discipline[b]			-.14	-.56	.58
Perceived Creative Teaching Behaviors					
(constant)			4.56	7.43	.01

Note: Adjusted $R^2 = .04$.
For Model $F_{(3, 34)} = 1.12$; $p>.05$.
[a]Sex coded: female = 0, male = 1; [b] discipline: 0 = social, 1 = natural/physical.

Approximately nine percent of the variance in perceived creative teaching behavior can be explained by the linear combination of age, sex, and discipline ($F_{(3, 34)} = 1.12$; $p> .05$) (see Table 5). However, the regression model was not significant.

The null hypothesis for the first hypothesis was there is no difference between discipline (natural/physical or social science) and level of creative teaching behaviors, as perceived by students. A non-directional, independent samples *t*-test was calculated to test the first null hypothesis. Levene's Test for Equality of Variances was conducted and the variances for student perceptions of creative teaching behaviors ($p = .38$), were calculated. Due to non-significant variances ($p > .05$), equal variances were assumed for each of the variables and evaluated for differences (see Table 6).

Table 6
Independent Samples t Test of Differences Between Disciplines and Students' Perceived Creative Teaching Behaviors of Instructors

Discipline	n	Mean	SD	t-value	p-value
Natural/physical	25	6.00	.40	1.88	.07
Social science	15	5.57	.82		

Differences between disciplines (natural/ physical or social science) and level of creative teaching behaviors ($p = .07$) were not statistically significant. Therefore, the null hypotheses that no differences existed (p> .05) between disciple and level of creative teaching behaviors, as perceived by students, was accepted.

The null hypothesis for hypothesis two was that no relationships exist between teaching experience and level of creative teaching behaviors, as perceived by students. Five years of

teaching experience was chosen to distinguish between novice and veteran teaching experience because that is the experience level at which CAFNR classifies faculty for its annual teaching awards. CAFNR classifies novice instructors as those with five years or less of experience. Therefore, this study followed CAFNR's distinction between novice and veteran instructors and forced teaching experience into a dichotomous variable to examine hypotheses two.

A non-directional, independent t-test was calculated to test the second null hypothesis. Levene's Test for Equality of Variances was conducted and the variances for student perceptions of creative teaching behaviors ($p = .20$), was calculated. Due to non-significant variances ($p > .05$), equal variances were assumed for each of the variables and evaluated for differences (see Table 7).

Table 7

Independent Samples t Test of Differences Between Experience and Creative Teaching Behaviors of Instructors, as Perceived by Students

Teaching Experience	n	Mean	SD	t-value	p-value
> 5 years	31	5.56	.65	2.03	.05*
< 5 years	9	5.00	.94		

* $p \leq .05$.

There was a significant difference between creative teaching behaviors of experienced and in-experienced CAFNR instructors when evaluated by students ($p = .05$). Therefore, the null hypotheses that stated no differences existed between teaching experience and creative teaching behaviors, as perceived by students, was not accepted.

Null hypothesis three stated that no differences existed between sex and level of creative teaching behaviors, as perceived by students. A non-directional, independent samples t-test was calculated to test the second null hypothesis. Levene's Test for Equality of Variances was conducted and the variance for student perceptions of creative teaching behaviors ($p = 1.0$) was calculated. Due to non-significant variances ($p > .05$), equal variances were assumed for each of the variables and evaluated for differences (see Table 8).

Table 8
Independent Samples t Test of Differences Between Sex and Creative Teaching Behaviors of Instructors, as Perceived by Students

Sex	n	Mean	SD	t-value	p-value
Male	27	5.51	.76	-.95	.35
Female	13	5.27	.73		

Students' perceived creative teaching behaviors of CAFNR instructors ($p = .35$) was not statistically different when compared by sex. Therefore, the null hypotheses that no differences existed between sex and level of creative teaching behaviors, as perceived by students, was accepted.

Conclusions, Recommendations, and Implications

Students perceive that instructors in CAFNR demonstrate creative teaching behaviors. However, the range in scores indicates that students varied considerably in their perceptions of instructor creativity in the classroom. Considering the range of scores associated with student perceptions of instructors' use of creative teaching behaviors, it is apparent that students are capable of evaluating creativity in the classroom. This conclusion is a valuable step in research about creative teaching behaviors demonstrated by teachers. Documentation of students' perceptions of creative teaching does not appear to be available in previous literature.

Students believe their instructors are effective teachers. Students agreed that their instructors displayed clarity, variability, opportunity to learn, task oriented, and enthusiasm in their teaching. Enthusiasm was the most frequently reported effective teaching construct demonstrated by college faculty while variability was least observed by students. These findings suggest that students generally believe their teachers demonstrate enthusiasm in the classroom. The ranking of the variability construct suggests students may not be exposed to a variety of instructional methods.

While students agreed that CAFNR instructors demonstrated effective teaching characteristics, the range in scores also suggests students vary in their perceptions of instructors. This indicates students can discern between effective and non-effective instruction. If students can, in fact, differentiate between effective and non-effective instructors, what behaviors do they identify as most important to effective teaching? It is also interesting to note student perceptions of clarity demonstrated in the learning environment. Variability and clarity had the greatest range in scores, which again suggests students are capable of distinguishing when effective teaching behaviors occur. Could high levels of agreement with some constructs, such as enthusiasm, actually reduce other areas, such as clarity? Additional research should be conducted to determine which methods instructors use in the learning environment. Defining and identify teaching methods which improve clarity should also be the focus of future research. Finally, faculty development programs should be designed to address increasing variability and clarity in the learning environment.

Students consider creative instructors to be effective instructors. The strong, positive correlation between these two variables found in this study supports previous findings comparing creative and effective teachers (Anderson, 2002; Bain, 2004; Croply, 1967, 2001; Davidovitch & Milgram, 2006; Esquivel, 1995; Fasko, 2000-01; Newcomb et al., 1993; Torrance, 1981, 1995).

Creative teaching behavior constructs should be compared to each characteristic of effective teaching to provide more specific methods to improve effective teaching.

Discipline is not a factor to consider when addressing creativity of CAFNR university instructors. Perhaps due to the research environment found in both natural/physical and social sciences within universities, creativity does not appear to differ. It would appear appropriate to address all instructors, regardless of discipline, in future research. In addition, educational opportunities to enhance creativity may be appropriately targeted to both natural/physical and social science disciplines.

The consistency of creativity across disciplines may also provide new areas for understanding between the vastly different disciplines. In addition, the ability to enhance effective teaching by increasing creative teaching behaviors should be examined. Do differences in effective teaching occur between disciplines? If creativity does not appear to vary between disciplines, would measures to enhance creative teaching behaviors be effective in both disciplines?

There was a significant difference between students' perceived creative teaching behaviors of CAFNR instructors and the experience of these instructors. Students suggested instructors with more than five years of teaching experience exhibit more creative teaching behaviors. Because students are the ultimate consumer of education offered by instructors, this is an important finding. Further research should address what specific behaviors experienced instructors demonstrated in the classroom which led to the significant differences in student perceptions of creative teaching behaviors. Additionally, would student perceptions of creative teaching be consistent with creative behaviors identified by instructors? Additional qualitative and quantitative research may shed light on these behaviors.

Creative teaching behaviors, as perceived by students, do not appear to differ by the demographic characteristic of sex of the instructor. Sex does not appear to be a significant factor when examining creativity of college instructors. The apparent absence of a gender gap suggests both groups could be addressed by similar professional development opportunities regarding creativity. However, does effective teaching differ by sex? Would female students differ in their perceptions of effective teaching than their male counterparts? Further research should address the differences between sex and effective teaching.

There was a significant difference between students' perceived creative teaching behaviors of effective and non-effective CAFNR instructors. This suggests students are capable of identifying effective instructors and supports the previous findings that effective teaching is closely related to creative instruction. If effective teaching is directly related to creative teaching, then creative instructors may be more effective for students. Replication of this research should be conducted to support the findings between student perceptions of creative teaching behaviors demonstrated by instructors and student perceptions of effective teaching.

Creative and effective teaching behaviors appear to be strongly connected for students. However, little is known about the factors which account for the creative teaching behaviors of instructors. Only nine percent of the variance in creative teaching behaviors, as perceived by students could be accounted for by the linear combination of age, sex, and teaching discipline. What other factors contribute to creative teaching behaviors of instructors? What characteristics of instructors account for additional variance in creative teaching behaviors?

Although considerable research has been conducted on creativity, the influence of creative teaching behaviors offers an opportunity to increase effective teaching practices. Further research, including replication of this study, should be conducted to enhance findings on the impact creative teaching has upon effective teaching. Additional research should include identifying the value students place upon creative teaching behaviors and identifying specific behaviors which student perception of creative and effective teaching.

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FACULTY KNOWLEDGE AND PERCEPTIONS OF THE SCHOLARSHIP OF TEACHING AND LEARNING

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Abstract

The purpose of this study was to determine faculty members' knowledge and perceptions of the Scholarship of Teaching and Learning (SoTL) at a large land-grant university. A survey of faculty with appointments in specific applied sciences colleges and institutes at a large land-grant university served as the population for this study. The objectives of the study were to describe characteristics of faculty in regard to teaching, determine knowledge of the definition of the SoTL, describe faculty involvement in the SoTL, and determine faculty members' perceptions about the value of and attitudes toward the SoTL. Nearly one-third of respondents were not familiar with the SoTL. More than eighty percent indicated that they had never, on their own or through collaboration, completed research about the SoTL. Almost sixty percent of respondents strongly agreed or agreed that SoTL is a valid form of scholarship, yet less than one-third of respondents felt that conducting research in the SoTL would be useful to their tenure and promotion dossier. In general, most faculty were neutral or positive in regards to the SoTL with almost two-thirds indicating they would like to learn more about the topic.

Introduction/ Theoretical Framework

In many classrooms across the nation, teaching occurs behind closed doors. The act of and products of teaching have remained a sole endeavor among the students and the instructor. Unlike traditional forms of scholarship, teaching as a scholarly pursuit is rarely based upon an intellectual inquiry, subject to peer review, and made available to a broader public. Thus, many universities across the nation have been reluctant to accept teaching as a valid form of scholarship (Shulman, 1993). Since the introduction of the concept of the Scholarship of Teaching and Learning (SoTL) more than 15 years ago, the notion of teaching as a scholarly endeavor equal to more traditional forms of scholarship has been the topic of much debate (Witman & Richlin, 2007). The basic concepts surrounding the SoTL were originally proposed by Ernest Boyer and, over the years, have been further refined through many research articles and books over the past ten years (Kreber, 2005).

The move toward documenting the SoTL has been driven by market demands and public concern over the quality of teaching in the classrooms and laboratories of American universities (Kreber, 2007). As such, much attention has been paid to the SoTL and slowly, faculty across disciplines are beginning to recognize its value (Witman & Richlin, 2007). Often, the SoTL means different things to different faculty members. When Boyer proposed the original concepts surrounding the SoTL he did not provide a definition, rather a set of characteristics that served as an outline (Defining SoTL Hand-out, 2008). The literature has indicated several working definitions of the SoTL, in addition to some disagreement in the SoTL communities of practice, regarding one single definition. In describing the SoTL Boyer (1990) stated that "As a scholarly

enterprise, teaching begins with what the teacher knows…Pedagogical procedures must be carefully planned, continuously examined, and relate directly to the subject taught" (Defining SoTL Hand-out, 2008). While this description describes scholarly teaching, it does not serve as the basis upon which most other definitions are regarded (Defining SoTL Hand-out, 2008). According to Lee Shulman (1999), a teaching act is scholarly when it is made available to the academic public, is critically reviewed and evaluated by an academic or teaching discipline, and when said discipline utilizes or develops new work as a result of it. Several variations of this definition exist today, however most center around notions of public availability, peer review, and contribution. For the purpose of this study the researchers adopted the definition used at Illinois State University (ISU) in Normal, Illinois and will define the SoTL as the systematic reflection on teaching and learning made public (Scholarship of Teaching and Learning, n.d.).

The process described by Shulman (1999) is quite common when referring to one's research activity and findings; however, teaching has often been considered a much more private enterprise (Herteis, 2006). As a more consumer-driven, business-model of education emerges, higher education faces increasing pressure from stakeholders regarding program quality. Not only is the value of the curriculum taught being questioned but teaching quality is coming under increasing scrutiny as well. As a result of a more consumer-driven, high stakes notion of American education, "SoTL is an imperative today and not a choice" (Huber & Hutchens, 2005). Disciplines attempt to adopt SoTL practices in different ways. Many faculty members do not engage in the SoTL because of "the absence of support and reward for doing so" (Witman & Richlin, 2007, p.4). While some disciplines have embraced efforts in the SoTL more than others, in general, there is still room for improvement. Ultimately, the reward for conducting work in the SoTL will come from the respective researchers discipline; therefore it is important that studies in and about the SoTL be conducted across disciplines (Witman & Richlin, 2007). By conducting the SoTL work a researcher is able to "explore how to create the vital connection between themselves and the 'subject', themselves and the students, and students and the 'subject'" (Kreber, 2007, p. 3).

Much of the current work being conducted on the SoTL has focused primarily in regard to the status of the SoTL movement itself. Witman and Richlin (2007), in an assessment of the status of the SoTL across different disciplines, found that they first had to address the differences between *scholarly teaching* and the *scholarship of teaching and learning*. They noted that while scholarly teaching and the scholarship of teaching and learning shared similar elements they differed in goals and in their final output (Witman & Richlin, 2007). The SoTL aims to "result in a formal, peer-reviewed communication in an appropriate medium, or venue, which then becomes part of the knowledge base" (Witman & Richlin, 2007, p.2). In contrast, scholarly teaching aims to impact teaching and learning in a classroom in the immediate sense (Witman & Richlin, 2007). Much variation between the disciplines studied was found both in how the SoTL is interpreted as well as how it is valued. Among the professions, and more specifically within higher education, it has been posited that the SoTL is slowly becoming more widespread. Yet, for many years the professions have focused on providing teaching tips to faculty members rather than rewarding scholarly work in the areas of teaching and learning (Witman & Richlin, 2007).

Kreber (2005) suggested several goals or focus areas be considered and applied to the SoTL. In particular SoTL work should be focused on defining the SoTL and "whom we see as practicing the scholarship of teaching" (Kreber, 2005, p. 402). Also, it has been suggested that practitioners broaden their focus and look at larger issues facing curriculum and the overall college mission rather than focusing simply on how students learn (Kreber, 2005). Traditionally, colleges of agriculture have prided themselves in being student centered and often home to the best teachers on campus. As a result, one would expect to find a high level of awareness of the SoTL and an equally high level of participation in the SoTL research. Unfortunately, data to support these claims does not exist, nor does an abundance of research exist on how faculty perceive the SoTL and/or conduct work in the scholarship of teaching and learning, either within colleges of agriculture or university-wide. In order to increase programming in the SoTL, make the results of teaching more public as opposed to an isolated event behind a closed classroom door, and create a sense of value for scholarship in teaching and learning as equal to scholarship in research, more research is needed regarding what faculty know about the SoTL, how they conduct work in the SoTL, and how they value the SoTL in specific colleges.

Purpose/Objectives

The purpose of this study was to determine faculty members' knowledge and perceptions of the SoTL. The following objectives guided the stated purpose:

1. Describe faculty members' rank and levels of experience at a large land grant university.
2. Determine faculty members' knowledge of the definition of the SoTL.
3. Describe faculty members' involvement in the SoTL work.
4. Determine faculty members' perceptions regarding the value of and attitudes toward the SoTL.

Methods/Procedures

The purpose of this study was to determine faculty members' knowledge and perceptions of the SoTL. This applied survey research was conducted in an entirely electronic format. Notices were sent via electronic mail to faculty in the College of Agricultural and Life Sciences at the University of Florida (UF) as well as faculty in the UF Emerging Pathogens, Genetics, and Water Multidisciplinary Institutes. The survey instrument was developed for use with the online service Survey Monkey. Email based surveys present unique challenges for some groups. According to Dillman (2007)

> Certain populations, such as university professors, federal government employees, workers in many companies and corporations, and members of some professional organizations, generally have Internet addresses and access. For these populations, e-mail and Web surveys may have only minor coverage problems (p. 356).

Despite their access to internet, a recent study of faculty members showed an average response rate for email surveys of thirty-two percent compared to forth-seven percent for postal delivered surveys (Shannon & Bradshaw, 2002). Despite this lower rate the researcher chose to deliver the survey electronically, using multiple contacts, due to budgetary and time constraints.

Participants received a pre-notice email message informing them that they will soon be asked to complete a questionnaire (Dillman, 2007). Following the pre-notice email participants received an email message containing a cover letter explaining the study with a link directing them to the Survey Monkey™ website for the instrument. According to Dillman (2007) the email containing the actual link to complete the survey should follow about two to three days later. In total, participants were contacted four times. Studies have shown that when email surveys are used, a four contact strategy produces response rates similar to surveys conducted using the postal service delivered format (Dillman, 2007).

A group of 855 faculty in the College of Agricultural and Life Sciences at the University of Florida (UF) as well as the UF Emerging Pathogens, Genetics, and Water Multidisciplinary Institutes served as the final population of this study. Lists containing faculty names and emails were obtained for each group. A census of the accessible population resulted in 287 questionnaires returned. A total of ninety recipients declined to participate in the study and an additional twelve were not reached due to invalid email addresses. This resulted in a final response rate of 38.1%. To control for non-response error, early and late responders were compared in regard to two select demographic variables. These comparisons were made on the assumption that those participants that respond later, often after additional requests for participation, are more like non-responders (Armstrong & Overton, 1977). After comparison, no significant differences existed between the groups therefore there was no reason to believe that non-respondents were different than respondents. Table 1 outlines participation and response rates in this study.

Table 1: *Response Rates*

Response Categories	Counts
Total	855
Responded	287
Opted Out	90
Invalid Email	12

The survey instrument was developed by the research team based upon a review of literature of similar knowledge and perception studies. Many questions were based on a previously developed instrument used at Illinois State University (ISU) in Normal, Illinois. The research team received written permission from the developer of the ISU instrument to use it as the basis of the instrument for the study. To establish face and content validity the instrument was reviewed by an expert panel of selected faculty in the researchers' department, who were experts in survey design as well as the SoTL work. The reliability of the instrument was analyzed post-hoc, and the instrument yielded a Cronbach's alpha coefficient score of .862.

All data were collected and stored on Survey Monkey™ until participants were contacted using Dillman's (2007) four contact method and been given ample opportunity to respond. Data was then transferred and analyzed using the Statistical Package for the Social Sciences (SPSS). Standard statistical measures were preformed to describe the results and determine relationships between variables. Descriptive statistics including frequencies and percentages were determined and used to describe the respondents' perceptions. Open-ended questions were coded for themes using a basic domain analysis. Recurring themes were identified in the open-ended questions

within the survey, and were coded by hand using highlighter markers. An audit trail, a reflexive journal, and peer debriefing was utilized in order to maintain trustworthiness and credibility of the qualitative data analysis (Denzin & Lincoln, 2005)
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Results/Findings

The first objective of this study was to describe characteristics of the faculty population. The respondents had an average of 13.9 years teaching at the University level. Table 2 contains information regarding total years teaching for respondents. Frequencies and percentages of respondents were reported for each category.

Table 2: Faculty Members' *Total Years of Teaching (n=216)*

Years Taught at University	*f*	%
0-5	58	26.8
6-10	44	20.3
11-15	28	12.9
16-20	23	10.6
21-25	25	11.5
26-30	18	8.3
31+	17	7.7
Other	3	1.3

Table 3 provides data regarding the position held by each of the respondents. Eighty-three percent of respondents indicated they were tenured or tenure track professors. The remaining seventeen percent were lecturers, instructors and individuals holding research titles.

Table 3: *Faculty Members' Departmental Rank (n=234)*

Position Held in Department	*f*	%
Assistant Professor	62	26.5
Associate Professor	53	22.6
Full Professor	79	33.8
Adjunct Faculty Member	2	0.9
Assistant Instructor	1	0.4
Lecturer	6	2.6
Other	31	13.2

The second objective of this study was to determine faculty knowledge of the definition of the SoTL. In order to asses this objective participants were asked to provide their own personal definition of the SoTL. In addition they were asked to discuss the similarities and differences between the SoTL and other types of scholarship. In regard to the ways that faculty members described the SoTL through their own personal definitions, three themes emerged. Such themes included definitions explicitly stating that they didn't know how to define the SoTL, definitions of the SoTL as an individual activity to improve teaching and learning, and finally, definitions of the SoTL as a comprehensive form of scholarship.

More than one-third of the respondents who were asked to define the Scholarship of Teaching and Learning wrote that they had never heard of the SoTL and thus could not define it. Comments such as, "I have not heard of the concept before now," clearly indicated that a number of the individuals in the study, could not define the SoTL in absence of a researcher-developed definition.

The second theme in regard to the ways in which faculty members defined the SoTL involved responses that defined the SoTL as about improving teaching and learning. Among these definitions, the SoTL was defined more as a process of trial and error undertaken on an individual basis rather than a systematic approach to evaluating teaching and learning and then sharing it through presentations and peered reviewed publications. A representative quote of "It is the use of certain teaching methods by professors that have been determined to be effective by research in the field of education" supported this theme.

The third theme regarding the ways in which faculty members defined the SoTL included a small portion of respondents who provided an understanding of the SoTL as moving beyond teaching tips, investigating teaching in systematic and scholarly ways, and making the results of such investigations as well as the creative works products of teaching subject to peer review and available to a larger public. One respondent provided the following definition, "the process of developing research questions, collecting and analyzing data, making inferences and drawing conclusions, and publishing these results on or about teaching and learning." Yet another stated that "SoTL is the study of process, methods, accomplishments (including, assessment of student learning) and the synthesis of this information to share with others in the form of publications, presentations, workshops, etc."

In addition to formulating a general definition for the SoTL, faculty members were also asked to describe the ways in which scholarship in teaching was similar to or different from more traditional forms of scholarship. The major theme that emerged from the data was the difference between what ought to occur and what actually occurs in faculty work. In general, respondents found many more similarities between SoTL and other types of scholarship than differences with one respondent stating simply that there "should be none if done well." Statements similar to this were repeated several times but were often followed by qualifying statements such as "in an ideal world." Responses such as these seem to indicate that while the SoTL may be technically no different than other forms of scholarship; it is often perceived as different. According to one respondent, the only differences lie in the "perception of academic peers." The same respondent went on to state, "the overall feeling is that high SoTL does not grant tenure whereas research scholarship does." Despite an overall sense that there is no real difference between the SoTL and other types of scholarship nearly one third of respondents again answered that they did not know enough about the SoTL to answer the question.

After participants answered the above questions they were provided with a definition of the SoTL which they were to keep in mind as they completed the questionnaire. For the purpose of this study about the SoTL the researcher adopted the definition used at Illinois State University and will define the SoTL as the systematic reflection on teaching and learning made public (Scholarship of teaching and Learning, n.d.).

Based on this definition, Objective three was to describe the current level of faculty involvement in the SoTL. Participants were asked a series of questions regarding their

involvement with the SoTL. Table 4 outlines responses to each of four forced choice questions. In response to the first three questions, more than eighty-percent of respondents indicated that they had never conducted, collaborated, or published SoTL research. Nearly seven percent of respondents indicated some other form of participation in the SoTL. Faculty that indicated being involved in the SoTL in some other way most often listed serving in some capacity as a journal editor or reviewer. The majority of this involvement dealt with regional and national journals in their respective disciplines. There was some mention of grants that had been received to fund projects relating to the SoTL. However, most faculty involvement seemed geared toward the review of others work as opposed to generation of their own work in the SoTL.

Table 4: *Faculty Members' Involvement in the SoTL   f(%)*

Question	Yes	No	n
1. Have you conducted or been involved in SoTL research?	37(17.9)	170(82.1)	207
2. Have you collaborated with colleagues on SoTL research?	38(18.4)	168(81.6)	206
3. Have you ever published SoTL research?	33(16.1)	172(83.9)	205
4. Is there any other way you are involved in SoTL research?	14(6.9)	190(93.1)	204

For Objective four, participants were asked to respond to a series of questions and statements to determine their perceptions about the value of and attitudes toward the SoTL. Table 5 presents faculty responses when asked what type of impact, if any, does or would conducting the SoTL have on your professional career? While fifty percent responded neutral to the question, more than forty-four percent indicated that conducting work in and about the SoTL would have a positive or very positive impact on their professional careers.

Table 5: *Impact of the SoTL on Professional Career (n=178) f(%)*

Question	VP	P	Neutral	N	VN
What impact does or would conducting SoTL research have on your professional career?	12(6.7)	67(37.6)	89(50)	10(5.6)	0(0)

(VP=Very Positive, P= Positive, N=Negative, VN=Very Negative)

Next, participants were asked where published or presented SoTL research would "count" in their annual department or unit evaluations for purposes of promotion and tenure. Table 6 contains participant responses. Nearly forty-five percent of respondents indicated that presenting or publishing SoTL research would count in the teaching area of their annual evaluation. Of the remaining responses, less that thirty percent indicated that SoTL work would count in the area of Scholarship/Research.

Table 6: *The SoTL Status in Departmental Evaluation (n=150) f(%)*

Question	Service/ Extension	Teaching	Scholarship/ Research	I would have a choice
If you present or publish SoTL research, where would it "count" in your departmental annual evaluation?	18(12.0)	66(44.0)	43(28.7)	23(15.3)

Finally, participants were asked to indicate their level of agreement with statements regarding their motivation for and value of the SoTL. Table 7 shows response frequencies and percentages for each of the statements.

Table 7: *Faculty Perceptions of the Value of SoTL (n=175) f(%)*

Statement	SA	A	NA/D	D	SD
1. SoTL has practical value for teachers.	44(25.6)	82(47.7)	43(25.0)	2(1.2)	1(.6)
2. SoTL has practical value for institutions of higher education.	43(25.3)	81(47.6)	43(25.3)	1(.6)	2(1.2)
3. SoTL is important.	40(23.3)	82(47.7)	47(27.3)	2(1.2)	1(.6)
4. SoTL has practical value for students.	35(20.3)	87(50.6)	47(27.3)	2(1.2)	1(.6)
5. Participation in SoTL research would make me a better teacher.	31(18.1)	67(39.2)	66(38.6)	4(2.3)	3(1.8)
6. SoTL is a form of "real" scholarship.	29(17.0)	72(42.1)	63(36.8)	6(3.5)	1(.06)
7. Participating in SoTL research would be personally rewarding to me as a faculty member.	27(15.9)	60(35.3)	70(41.2)	10(5.9)	3(1.8)
8. SoTL would take away time from my other responsibilities as a faculty member.	26(15.1)	69(40.1)	55(32.0)	18(10.5)	4(2.3)
9. SoTL has practical value for the community.	25(14.5)	61(35.5)	80(46.5)	4(2.3)	2(1.2)
10. I would like to learn more about SoTL.	21(12.1)	84(48.6)	48(27.7)	15(8.7)	5(2.9)
11. Knowing SoTL research in ones discipline is important for good teaching.	19(11.2)	74(43.8)	66(39.1)	6(3.6)	4(2.4)
12. Everyone should do some SoTL research.	10(5.8)	40(23.4)	82(48.0)	28(16.4)	611(.4)
13. SoTL is valued in my College.	9(5.2)	42(24.4)	87(50.6)	27(15.7)	7(4.1)
14. SoTL is valued in my Department.	9(5.3)	31(18.1)	87(50.9)	35(20.5)	9(5.3)
15. I am not interested in participating in SoTL research.	8(4.7)	16(9.4)	66(38.8)	55(32.4)	25(14.7)
16. SoTL would be useful to my tenure and promotion dossier.	7(4.1)	39(23.1)	85(50.3)	22(13.0)	16(9.5)
17. SoTL is valued in my University.	4(2.3)	33(19.2)	95(55.2)	32(18.6)	8(4.7)
18. Results from SoTL research are used/applied in my department.	4(2.4)	33(19.6)	91(54.2)	24(14.3)	16(9.5)
19. There is adequate funding for SoTL.	3(1.8)	12(7.1)	98(57.6)	48(28.2)	9(5.3)

(SA=Strongly Agree, A=Agree, NA/D=Neither Agree nor Disagree, D=Disagree, SD=Strongly Disagree)

Nearly seventy-five percent of respondents strongly agreed or agreed that the SoTL was important and had practical value for teachers, students, and institutions of higher education. Respondents were evenly split when asked if the SoTL was valued in their department, college, and university. About fifty percent were neutral in regard to these statements with roughly twenty to twenty-five percent of the remaining respondents either agreeing or disagreeing. Almost sixty percent of respondents strongly agreed or agreed that SoTL is a "real" form of scholarship and participating in the SoTL research would make them a better teacher. Despite this less than one-third of respondents felt that conducting research in the SoTL would be useful to their tenure and promotion dossier.

Conclusions/Recommendations/Implications

Objective one of this study was to describe selected characteristics of the sample, in regard to rank and years in the profession. Respondents represented faculty at various departmental ranks and years of service. Comparisons of these groups indicated no significant differences based on demographics, suggesting that study participants are representative of the faculty population. It might be intuitive to assume that faculty members of higher ranks and/or more years toward tenure would know more about the SoTL, be more supportive of the SoTL, and be more engaged in conducting work in the SoTL. The results of this study were unable to support that anecdotal claim. Thus, faculty in general are largely unengaged in, and unaware of the SoTL, and it is recommended that faculty development programming in the SoTL be inclusive of and responsive to the needs of faculty members across rank and years of service.

The goal of objective two was to determine faculty knowledge of the definition of the SoTL. After reviewing responses, three themes emerged from the data. Due to the fact that, more than one third of respondents indicated that they were not familiar with or had never heard of the SoTL and only a small minority of faculty members could provide an accurate, in depth definition of the SoTL, it was concluded that faculty are limited in their knowledge of and exposure to the SoTL. While not surprising, it is somewhat unfortunate that more than 15 years after the call to action regarding efforts toward creating a more comprehensive model of scholarship that includes scholarship in and of teaching, still more than one-third of faculty are not aware of its existence or meaning. The implication of this finding is that Boyer (1990) was well ahead of his time, almost twenty years ago, when he suggested a model that moved well beyond the scholarship of discovery as the only valid form of faculty work.

In addition to faculty members' inability to form a definition of the SoTL, a group of respondents who were familiar with the term provided definitions that were more consistent with the idea of scholarly teaching. Thus, it was concluded that some faculty members do not make a clear distinction between scholarly teaching and the scholarship of teaching and learning, whereas, this distinction is clearly documented in the SoTL literature (Richlin, 2001). While scholarly teaching and the SoTL certainly have similarities they ultimately have different goals. The goal of scholarly teaching being an immediate impact on teaching and learning in a classroom while the latter results in peer reviewed work that ultimately adds to the knowledge base (Whitman & Richlin, 2007). The implication of this finding is that perhaps faculty development efforts aimed at providing teaching tips to faculty members and helping them become more versed in the teaching and learning literature, while valid in their own right, do not

help faculty make a distinction between how to be a more scholarly teacher and ways to systematically investigate the inputs, process, and outcomes of teaching and learning. It is recommended that research be conducted on how faculty members learn to teach, the ways in which they become scholarly teachers, as well as how they conduct the scholarship of teaching and learning.

It was clear from the results of Objective two that more research and faculty development efforts are needed to increase awareness about the SoTL. Previous studies have indicated a wide range in the levels of acceptance of the SoTL across disciplines and this study seems to support that research (Witman & Richlin, 2007). It would appear that the opportunity exists to build support for the SoTL through in-service programming for faculty, perhaps utilizing those individuals who have a record of producing SoTL research. Given that more information is needed on how faculty members think about their work in regard to the SoTL, it is recommended that more in depth qualitative research be conducted to produce grounded theory on faculty work in the SoTL as well as to provide more information for the design of future quantitative instruments.

In addition to forming a definition of the SoTL, a more comprehensive description of faculty members' knowledge of the SoTL was gleaned by asking faculty to describe the similarities and differences between scholarship in research, or more traditional forms of scholarship, and scholarship in teaching. It was concluded by the ways in which faculty members described such distinctions, that the perceptions by faculty members of what should be and the perceptions of the reality of their professional expectations are different. Qualifying statements made by faculty members such as "in an ideal world", support this conclusion. Faculty members' feel that the SoTL may be technically no different than other forms of scholarship but it is often perceived as different.

The implication of this finding is that for scholarly work in teaching to become more prevalent, it must carry equal weight in the minds of faculty members in regard to promotion and tenure expectations. It is recommended that research be conducted regarding department chairs, deans, and other university level administrators knowledge and perceptions of the SoTL. In addition, future studies should focus on how the SoTL is perceived by tenure and promotion committees across disciplines. There appear to be some contradictions between responses regarding this issue. Responses to other questions indicated that a majority of faculty perceived that the SoTL is a "real" form of scholarship yet less than one-third indicated it would be useful to their tenure and promotion dossier. Further study on this issue will help to refine faculty perceptions about the SoTL and provide insight into what could be done to increase the perceived value of conducting and publishing SoTL research.

Objective three sought to determine faculty involvement in the SoTL. Based upon the results, it was concluded that faculty members by and large were not involved in SoTL work, and those who described involvement in the SoTL, indicated that the nature of their involvement was to review teaching related articles within disciplinary journals. This finding implies that while faculty members described the SoTL as important, they are not involved in the SoTL work for some reason. Perhaps, faculty are not involved due to lack of awareness about the kinds of work they might conduct as a part of the SoTL, they feel that SoTL work is not a part of their

expectations, or they are not supported to conduct SoTL work in terms of funding or through administrator approval. Universities should provide faculty development programming efforts for faculty to learn about opportunity areas in the SoTL. More recognition opportunities as well as resources and support for faculty who are actively engaged in the SoTL should be created and given at the college, university, and national levels.

Objective four was to determine faculty perceptions about the value of and attitude towards the SoTL. Based upon the findings, it was concluded that faculty perceived the potential for SoTL work in a positive light, however, with fifty percent of respondents indicating a neutral opinion regarding the value of the SoTL, it is suggested that further research be conducted regarding faculty members perceived motivation for and task value of conducting work in the SoTL. The need for education about the topic is evident based on responses to questions in objective two of this study. Quality in-service opportunities should be well received by faculty with more than sixty percent indicating they would like to learn more about the SoTL.

A wide range of responses were received when asked where the SoTL research would count in a departmental evaluation. Despite indicating that the SoTL was a "real" form of scholarship, less than one-third of faculty members indicated that they would receive credit for the SoTL in the area of Scholarship/Research, and nearly half of faculty members indicated that SoTL work would count under the Teaching category. Thus, it was concluded that there is a discrepancy in how faculty characterize the nature of scholarly work in teaching. This seems to indicate the need for more uniformity in the area of evaluation as well as promotion and tenure. Future studies should focus on the promotion and tenure process and determine similarities and differences across disciplines as well has indentifying what criteria are used to determine if a work is considered scholarly.

It was further concluded from the results of objective four that faculty members viewed the SoTL work to have practical value for teaching within their disciplines. This finding further implies that there could be a potential to expand faculty work in the SoTL through their willingness to improve teaching and to document the results of such teaching improvements in systematic ways. While improving learning is the ultimate goal of the SoTL, and the previous finding is a positive one, the finding further implies, that faculty members do not make clear distinctions between scholarly teaching and the scholarship of teaching and learning. Faculty development efforts should focus on providing faculty members teaching tips and ways to be come a more scholarly teacher, as well as assisting them in documenting teaching in systematic and scholarly ways, and delineating the differences between the two.

The final conclusion in regard to faculty members' perceptions of and attitudes toward the value of SoTL work was that faculty members are neither positive nor negative in regard to their view of the SoTL as personally rewarding. This finding implies that more value and respect for the SoTL is needed at all levels. Future efforts should focus on developing clear guidelines for how SoTL research can help faculty members experience personal growth as teachers and feel a sense of accomplishment. Additional efforts should be made to recognize and reward faculty who are actively engaged in the SoTL.

This descriptive study was undertaken to provide baseline data for future studies on the Scholarship of Teaching and Learning. The results, while descriptive in nature and limited to this specific population seem to provide ample areas for future study. They also seem to indicate the need for faculty development initiatives focused of building awareness about the SoTL. Additional study regarding faculty roles and responsibilities may be warranted with more than fifty-five percent of respondents indicating that participating in the SoTL research would take time from their other responsibilities as a faculty member. It is clear that much more work is needed to accurately determine the status of the SOTL across disciplines and universities. Previous studies have indicated, and these results seem to support findings indicating a very wide range of acceptance and participations in the SoTL (Whitman & Richlin, 2007). It is hoped that this baseline data will serve as a springboard for future studies about the Scholarship of Teaching and Learning.

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THE EFFECT OF AN INTEGRATED COURSE CLUSTER LEARNING COMMUNITY ON THE ORAL AND WRITTEN COMMUNICATION SKILLS AND TECHNICAL CONTENT KNOWLEDGE OF UPPER-LEVEL COLLEGE OF AGRICULTURE STUDENTS

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Abstract

The purpose of this quasi-experimental study was to determine if upper-level college students who participated in AgPAQ, an integrated course cluster learning community, would demonstrate enhanced learning in the areas of oral communication, written communication, and agronomic/economic technical content knowledge. The population (N=182) consisted of students who participated in AgPAQ, and five comparison groups: students in a farm management class; students in a stand-alone soil, fertilizer, and water management class; students in a soil, fertilizer, and water management class linked with an English course; and students in a paid volunteer group who had not previously participated in AgPAQ. Instruments included three rubrics that measured performance on written communication, oral communication, and agronomic/economic technical content knowledge. Analyses revealed that AgPAQ participants scored higher than non-AgPAQ participants on measures of oral and written communication in all comparisons. Also, AgPAQ participants scored higher on measures of agronomic/economic technical content knowledge than students in the non-AgPAQ paid volunteer group and students in the stand-alone soil, fertilizer, and water management class. AgPAQ participants also scored higher, but not significantly higher, than students in an English and agronomy linked integration. AgPAQ fostered enhanced learning in oral communication, written communication, and agronomic/economic technical content knowledge.

Introduction

In the past, college and university curricula focused on delivering information to students through lectures and other pedagogies that involved little or no social interaction on the part of the students. Though lectures and other didactic strategies still dominate many college courses, highly structured, rote learning pedagogy does not appropriately take into account the individual experiences and goals students bring to classrooms and lecture halls.

The concept that learners bring prior knowledge and experiences to learning environments is the basis of educational philosopher John Dewey's (1933, 1938) notion of "development from within" (Dewey, 1938, p. 1), the idea that education is meaningful when it includes interaction between the learner's prior knowledge and experience and what is being learned. Dewey and others (Cremin, 1962; Ravitch, 1983; Zilversmit, 1993) proposed *progressive education*—education that encourages integrated understanding through unrestricted investigation. Some contemporary pedagogy now offers progressive learning experiences that privilege experience over rote learning, interaction over silence, applied learning over isolated experimentation and lecture, and courses that integrate rather than isolate the academic disciplines to make learning more meaningful.

Higher education should provide opportunities for students to actively use as well as formally demonstrate the knowledge and skills they learn in their courses (Boyer Commission on Educating Undergraduates in the Research University [Boyer Commission], 1998; Kolb, 1984; Taylor, Moore, MacGregor, & Lindblad, 2003). Parents and employers join faculty and administrators in calling for a higher education environment that effectively challenges students and better prepares them for the rapidly changing world (Smith, MacGregor, Matthews, and Gabelnick, 2004).

For employers to keep up with the quickly changing nature of the workplace, they need employees to come to them directly from colleges and universities ready to use their knowledge and skills (Secretary's Commission on Achieving Necessary Skills [SCANS], 1991). In the context of such change and compounded by stiff competition within the worldwide employment market, employers demand a high level of competence. They expect recent graduates to combine information with practical experience (SCANS).

Major agricultural employers recruit and seek employees who have experience and are accomplished at teamwork, critical thinking, problem-solving, and oral and written communication skills (Boyer Commission, 1998). Colleges of agriculture must offer courses that effectively teach these skills.

Theoretical Framework

In 1984, Kolb asserted that experience provides "the foundation for an approach to education and learning as a lifelong process that is soundly based in intellectual traditions of social psychology, philosophy, and cognitive psychology" (p. 3–4). Simply put, experiential learning can help students "achieve higher levels of thought and retain information longer than students who work quietly as individuals" (Gokhale, 1995, p. 22).

Kolb (1984) defines experiential learning as a means "for examining and strengthening the critical linkages among education, work, and personal development" (p. 4). Learning takes place when an individual reflects on a direct experience. Next, they generalize how what they have learned may apply to other situations. Finally, they apply this learning through additional related experiences.

Cove and Love (1996) observed that higher education has struggled with "increasing fragmentation of the learning process, disciplines and knowledge, administrative structure, and community" (p. 2). The learning community concept developed in response to this fragmentation and it provides a means of implementing experiential learning theory. Learning communities are "a variety of curricular approaches that intentionally link or cluster two or more courses, often around an interdisciplinary theme or problem, and enroll a common cohort of students" (Smith et al., 2004, p. 20).

Learning community scholars have identified five major models. Models relevant to this study are the linked courses model and the integrated course clusters model (Gabelnick, MacGregor, Matthews, & Smith, 1990).

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Linked courses are two courses—perhaps from different departments—that are connected such a skills building class (e.g., a writing course) and a class that is more discipline specific (e.g., an agronomics course). In this model, faculty members meet frequently as a team before and during the semester to coordinate syllabi, develop joint assignments, and plan activities focused on the learning community's common educational goals (Gabelnick et al., 1990).

Integrated course clusters are an "expanded form of the linked course model" (Gabelnick et al., 1990, p. 21) in which three or four separate courses are linked by "common themes, historical periods, issues or problems" (Gabelnick et al., p. 32) and are scheduled together to form a "cluster." A learning community course cluster is usually composed of students who register for the learning community, meaning that an integrated course cluster may comprise the entire course load for those students.

Although scholarship about learning communities has proliferated in the past decade, most of that research has focused on learning community models that do not involve agricultural courses. In several cases, the design of learning communities has included a writing course linked to other discipline-specific courses such as engineering, medicine, history, or the humanities (Taylor et al., 2003; Tinto, 2000). Because of past research, there is reason to believe that learning communities can positively affect student learning of technical content (Hanson and Rawlinson, 2003; Lichtenstein, 2005; Seels, Campbell, and Talsma, 2003; Smith and Bath, 2006; Sterba-Boatwright, 2000; Zhao and Kuh, 2004), oral communication skills (Cowen, 2000; Cyphert, 2002; Thompson, 1990), and written communication skills (Cowen; Cyphert; Lichtenstein; Thompson). These are high-priority outcomes for agricultural employers. Even so, no studies have been conducted on integrated course cluster learning communities in agriculture. We do not know whether students who participate in agricultural learning communities develop improved technical content knowledge, oral communication skills, and written communication skills.

Purpose and Hypotheses

The purpose of this study was to determine whether students who participated in an integrated four-course-cluster agriculture-related learning community demonstrated enhanced learning in oral communication, written communication, and agronomic/economic technical content knowledge compared with students who did not participate in the integrated four-course-cluster agriculture-related learning community. This quasi-experimental study was guided by the following research hypotheses:

1. Students who participated in the integrated four-course-cluster agriculture-related learning community will attain higher scores on a measure of oral communication skills than students who participated in an agricultural capstone farm management course.

2. Students who participated in the integrated four-course-cluster agriculture-related learning community will attain higher scores on a measure of written communication skills than students who participated in an agricultural capstone farm management course.

3.   Students who participated in the integrated four-course-cluster agriculture-related learning community will attain higher scores in the area of written communication skills compared with students who participated in a stand-alone soil, fertilizer, and water management course, an English and agronomy linked integration, and a self-selected paid volunteer group of agriculture students who did not participate in the integrated four-course cluster agriculture-related learning community.

4.   Students who participated in the integrated four-course-cluster agriculture-related learning community will attain higher scores in the area of agronomic/economic technical content knowledge compared with students who participated in a stand-alone soil, fertilizer, and water management course, an English and agronomy linked integration, and a self-selected paid volunteer group of agriculture students who did not participate in the integrated four-course-cluster agriculture-related learning community.

5.   A self-selected paid group of past participants from the integrated four-course-cluster agriculture-related learning community will attain higher written communication scores and agronomic/economic technical content knowledge scores when solving a multidisciplinary problem compared with a self-selected paid volunteer group of agriculture students who did not participate in the integrated four-course-cluster agriculture-related learning community.

Procedures

Design

Two of Campbell and Stanley's (1963) research designs were used in this quasi-experimental study. The Nonequivalent Control Group Design was used to test hypotheses one and two. A Modified Static-Group Comparison Design was used to test hypotheses three and four. In the modified static group comparison design, neither treatments nor dependent variable measures were administered concurrently across comparison groups.   The Static-Group Comparison Design was used to test hypothesis five.

Population

The target population was junior and senior undergraduate students in the College of Agriculture at Iowa State University. The accessible population ($N = 182$) consisted of all students who participated in the integrated four-course-cluster agriculture-related learning community during the fall semesters of 2004 and 2005 ($n = 33$) and students from the following comparison groups: an agricultural capstone farm management course during the fall semesters of 2004 and 2005 ($n = 57$); a stand-alone soil, fertilizer, and water management course during the fall semesters of 1996, 1997, and 2003 ($n = 36$); and an English course integrated and linked with a soil, fertilizer, and water management course during the fall semesters of 1999, 2000, and 2002 ($n = 35$). To test hypothesis five, a self-selected paid group of past participants from the integrated four-course-cluster agriculture-related learning community ($n = 7$) and a self-selected paid volunteer group of students who did not participate in the integrated four-course-cluster agriculture-related learning community ($n = 14$) were used. Comparison groups were chosen

based on their shared emphasis on enhancing communication skills and real-world problem solving skills.

Experimental Group

The integrated four-course-cluster agriculture-related learning community was named AgPAQ (**Ag**riculture students **P**roviding integrated solutions to **A**gronomy and farm business management **Q**uestions) and was developed for junior and senior students. AgPAQ was initiated in the fall of 2004 at Iowa State University.

AgPAQ integrated an English class, an agricultural economics class, and two agronomy classes. AgPAQ's mission was to integrate knowledge and skills from each of the linked courses to enable students to successfully solve professional, work-based, agriculture problems. A major aspect of the AgPAQ learning community was the consultant relationship students developed while identifying problems and opportunities and recommending improvements for a local farmer.

Comparison Groups

Students in the farm management capstone classes participated in the management and operation of a diversified farm. This required them to perform decision making responsibilities needed for planning, record keeping, and buying and selling the farm's livestock, crops, and equipment. Farm management capstone students carried out team activities similar to the multidisciplinary integration activities performed by AgPAQ team members. The farm management capstone course was not formally linked to or integrated with any other course. Variables measured in this group as a comparison to the AgPAQ group were written communication and oral communication. Data were collected from committee reports generated at the beginning of each semester and state-of-the-farm reports generated by the same teams at the end of each semester.

In the Agronomy 356 course students learned basic principles related to tillage, soil drainage, soil erosion and erosion control, soil fertility, and nutrient application while making management recommendations that directly affected economic viability and environmental sustainability for a farmer client. These students worked in teams that participated in activities similar to the multidisciplinary integration activities performed by AgPAQ team members. In 1996, 1997, and 2003, Agronomy 356 was not formally linked to or integrated with any other course.

Agronomy 356 and English 309 were linked and integrated in 1999, 2000, and 2002. English 309 covered the theory and practice of writing reports and proposals. Agronomy 356 students learned basic principles related to tillage, soil drainage, soil erosion and erosion control, soil fertility, and nutrient application while making management recommendations directly affected on economic viability and environmental sustainability for a farmer client. These students worked in teams that participated in activities similar to the multidisciplinary integration activities performed by AgPAQ team members.

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In 2005 and 2006, members of the paid AgPAQ volunteer comparison group were recruited by AgPAQ instructors. An invitation was offered to all students who had previously participated in AgPAQ. Past AgPAQ students who became part of this group addressed a professional, work-related multidisciplinary problem similar to the problem they had addressed in AgPAQ. Students worked in teams 12 hours per week for 6 weeks and were paid $500 each.

The paid non-AgPAQ volunteer comparison group consisted of two groups of students who did not participate in AgPAQ and were not associated with any courses in the integration. Students were recruited from within the College of Agriculture at Iowa State University. The volunteers were randomly assigned to work teams to address a set of real multidisciplinary problems similar to the problems addressed by the paid AgPAQ volunteer group. Non-AgPAQ students worked 12 hours per week for 6 weeks and were paid $500 each.

For the Agronomy 356, agronomy/English linked course, AgPAQ volunteer, and non-AgPAQ volunteer groups, variables measured as a comparison to the AgPAQ groups were written communication and agronomic/economic technical content and data sources were the client recommendation reports generated by students at the end of the semester or work period.

Instrumentation

Pretest and post-test instruments used in this study included three rubrics that measured performance on written communication, oral communication, and agronomic/economic technical content knowledge. A 4-point, Likert-type scale was used for scoring each rubric. Each level was given a numeric value for statistical analysis: 3 = exemplary, 2 = proficient, 1 = marginal, and 0 = unacceptable. Face and content validity for each rubric—written, oral, and agronomic/ economic—was established by a panel of experts within each area. Each panel performed a two-round evaluation to verify that each instrument contained the correct criteria to accurately measure elements of written and oral communication as well as agronomic/ economic technical knowledge. At the conclusion of the second round of evaluation, 80% ($n = 4$) of the experts determined the written communication tool was face and content valid, 100% ($n = 5$) of the experts determined the oral communication rubric was face and content valid, and 100% ($n = 5$) of the experts determined the agronomic/economic technical knowledge rubric was face and content valid.

The written communication rubric had five criteria: content, development, organization, sentence structure (grammar, spelling, and mechanics), and style (voice, tone, and word choice). A panel of experts ($n = 9$) used the written communication rubric to score the written communication pieces. Each member of the panel worked individually on a random sample of the pieces. After 2 weeks, the same experts individually scored the same written communication pieces using the same rubric. The two sets of scores were correlated. The intrarater reliability coefficient was .83. To determine interrater reliability, two different groups of raters also scored the reports. Scores from group one were correlated with scores from group two. The correlation yielded a reliability coefficient of .28. First-round posttest data were used to assess internal consistency and yielded a Cronbach's alpha coefficient of .92.

The oral communication rubric had six criteria: organization, style (verbal and non-verbal), content (depth and accuracy), oral language conventions (use of language and grammar and word choice), group interaction (responsiveness to audience and body language), and use of communication aids. A panel of experts ($n = 15$) used the oral communication rubric to score the oral communication pieces. Each member of the panel worked individually on a random sample of the pieces. After 2 weeks, the same experts individually scored the same oral communication pieces using the same rubric. The two sets of scores were correlated. The intrarater reliability coefficient was .89. To determine interrater reliability, two different groups of raters also scored the reports. Scores from group one were correlated with scores from group two. The correlation yielded a reliability coefficient of .46. First-round posttest data were used to assess internal consistency and yielded a Cronbach's alpha coefficient of .90.

The agronomic/economic technical content assessment rubric had 13 criteria: identification of problem and formulation of questions, conceptual framework, soil sampling, nutrient recommendations, drainage, soil conservation, geographic information system and mapping, crop management, analysis and interpretation of data gathered, farm records, budgets, and economic management recommendations. A panel of experts ($n = 15$) used the agronomic/economic rubric to score the recommendation reports. Each member of the panel worked individually on a random sample of the pieces. After 2 weeks, the same experts individually scored the same recommendation reports using the same rubric. The two sets of scores were correlated. The intrarater reliability coefficient was .75. To determine interrater reliability, two different groups of raters also scored the reports. Scores from group one were correlated with scores from group two. The correlation yielded a reliability coefficient of .78. First-round posttest data were used to assess internal consistency and yielded a Cronbach's alpha coefficient of .88.

Data Collection

Professional communication experts—teachers, editors, industry specialists, and graduate students who were pursuing communication degrees—scored the reports individually using the oral communication and written communication rubrics. Professional agronomic/economic experts—professors and industry specialists—scored the recommendation reports using the technical content knowledge rubric. Each rater participated in a training session on how to score the reports using the appropriate rubric. At the conclusion of the training, each evaluator was given a packet that included randomly assigned reports and enough rubrics to score all of the pieces individually.

Data Analysis

Data analysis was performed using SPSS 14.0 for Windows. Data were collected, coded, and analyzed by the authors. Data analysis included frequencies, means, standard deviations, Pearson correlations, general linear models—ANOVA and ANCOVA, and the Tukey post hoc procedure. The alpha level was set a priori at .05.

Results

Hypothesis 1

Analysis of covariance (ANCOVA) was used to adjust the AgPAQ and farm management comparison group oral communication posttest scores based on group differences observed on the pretest. The ANCOVA procedure revealed that the AgPAQ group had significantly higher adjusted posttest means ($F = 54.75$, $p < .001$, Table 1). To illustrate the magnitude of the difference, each adjusted posttest mean score was divided by the highest possible score on the rubric (18 points for the oral communication rubric). AgPAQ participants achieved posttest oral communication scores that were 31% higher than scores of the farm management comparison group.

Table 1
AgPAQ/Farm Management Pretest/Posttest Oral Communication Mean Scores

Groups	Pretest Mean	Posttest Adjusted Mean	SE	95% Confidence Interval for Adjusted Posttest Means	
				Lower Bound	Upper Bound
AgPAQ	14.88	15.88	.53	14.83	16.93
Farm Management	9.59	10.27	.44	9.39	11.16

The data support the hypothesis that students who participated in the AgPAQ integrated course cluster would attain higher scores on a measure of oral communication skills than students who participated in the farm management comparison group.

Hypothesis 2

Analysis of covariance (ANCOVA) was used to adjust the AgPAQ and farm management comparison group written communication posttest scores based on group differences observed on the pretest. The ANCOVA procedure revealed that the AgPAQ group had significantly higher adjusted posttest means ($F = 93.32$, $p < .001$, Table 2). To illustrate the magnitude of the difference, each adjusted posttest mean score was divided by the highest possible score on the rubric (15 points for the oral communication rubric). AgPAQ participants achieved posttest written communication scores that were 46% higher than scores of the farm management comparison group.

The data support the hypothesis that students who participated in the AgPAQ integrated course cluster would attain higher scores on a measure of written communication skills than students who participated in the farm management comparison group.

Table 2

AgPAQ/Farm Management Pretest/posttest Written Communication Mean Scores

Groups	Pretest Mean	Posttest Adjusted Mean	SE	95% Confidence Interval for Adjusted Posttest Means	
				Lower Bound	Upper Bound
AgPAQ	7.82	12.69	.52	11.66	13.72
Farm Management	5.07	5.87	.44	4.98	6.75

Hypothesis 3

Table 3 shows means and standard deviations for written communication scores by group. The ANOVA procedure revealed there were significant differences between the groups' written communication scores ($F = 23.46$, $p < .001$, one-tailed). The Tukey post hoc procedure revealed that the AgPAQ group mean score for written communication was significantly higher than scores of all other groups.

Table 3
Written Communication Mean Scores by Group

Group	M	SD	N
AgPAQ	12.52	1.68	33
Soil, Fertilizer, Water Management	7.47	2.77	36
Agronomy 356/English 309	8.86	3.17	35
Paid Non-AgPAQ Volunteer Group	8.21	2.52	14

Results support the hypothesis that AgPAQ participants would attain higher scores on a measure of written communication skills than students who participated in a stand-alone soil, fertilizer, and water management course, an English and agronomy linked integration, and a self-selected paid volunteer group of agriculture students who did not participate in AgPAQ.

Hypothesis 4

Table 4 shows means and standard deviations for the agronomic/economic technical content knowledge scores by group. The ANOVA procedure revealed there were significant differences between the groups' agronomic/economic technical content knowledge scores ($F = 12.94$, $p < .001$). The Tukey post hoc procedure revealed that group mean differences between AgPAQ and the 356 stand-alone course as well as the paid non-AgPAQ volunteer group were significant. Results partially support the hypothesis that AgPAQ participants would attain higher scores on a measure of agronomic/economic technical content knowledge than students who

participated in a stand-alone soil, fertilizer, and water management course, an English and Agronomy linked integration, and a self-selected paid volunteer group of agriculture students who did not participate in AgPAQ.

Table 4
Agronomic/Economic Technical Content Knowledge Mean Scores by Group

Group	M	SD	N
AgPAQ	23.42[a]	7.76	33
Soil, Fertilizer, Water Management	17.00[b]	5.04	36
Agronomy 356/English 309	21.86[a]	4.81	35
Paid Non-AgPAQ Volunteer Group	13.43[b]	6.81	14

Note. Means with different superscript letters are significantly different at $p < .05$.

Hypothesis 5

Table 5 shows that AgPAQ paid volunteer participants scored significantly higher on written communication and agronomic/economic technical content knowledge than a self-selected paid volunteer group of agriculture students who did not participate in AgPAQ. The research hypothesis was supported.

Table 5
Written Communication and Technical Content Mean Scores by Group

			95% Confidence Interval of the Difference	
Dependent Variable	M	SE	Lower Bound	Upper Bound
Written Communication Score				
AgPAQ	15.00	.00	4.77	8.80
Non-AgPAQ	8.21	.67		
Technical Content Score				
AgPAQ	21.86	1.82	2.37	14.48
Non-AgPAQ	13.43	1.82		

Conclusions and Recommendations

Participation in an integrated four-course-cluster learning community grounded in agriculture—specifically agronomy and agricultural economics—made a significant, positive difference in written communication skills, oral communication skills, and agronomic/economic technical content knowledge attained by upper level college of agriculture students. This conclusion was consistent with previous work supporting the theory that participation in learning communities can improve communication as well as technical content knowledge (Cowen, 2000; Cyphert, 2002; Lichtenstein, 2005; Seels, et al., 2003; Smith & Bath, 2006; Thompson, 1990). Earlier studies determined that learning community participation makes a significant difference in "academic competence, especially in writing" (Lichtenstein, p. 352). Moreover, Smith and

Bath's results add weight to the importance of learning communities when measuring the whole of communication development.

Smith and Bath also measured the effect of learning community participation on discipline knowledge—disciplinary-specific knowledge or technical content knowledge— and found that development of discipline knowledge was significant when measured within learning community environments.

Faculty interested in enhancing students' oral communication skills, written communication skills, and technical content knowledge should consider organizing an integrated course cluster learning community that features a common theme across courses. Course instructors should meet as a team to coordinate syllabi, develop joint assignments, and plan activities focused on the learning community's common educational goals.

Because of the limited scope and focus of this study, caution should be exercised in generalizing results. Further research is needed to more definitively evaluate the effect of upper-level integrated course cluster learning communities. Focusing on the degree of integration may show that a full four-course integration may not be necessary to make a significant difference on written communication skills, oral communication skills, or technical content knowledge.

Future research could include parallel studies that incorporate qualitative methods to complement quantitative results. Researchers might also consider situating learning communities in different major areas of study in agriculture, and incorporating variables such as learner and instructor satisfaction, group dynamics, problem-solving skills, levels of participation, and leadership skills.

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MAJOR COMPARISON OF COGNITIVE POTENTIAL: ARE AGRICULTURE STUDENTS DIFFERENT?

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Abstract

Given the interest, research, and effort extended to help faculty in colleges of agriculture provide educational discourse at higher cognitive levels over the last few years, one would expect that students enrolled in colleges of agriculture would exhibit higher levels of critical thinking and need for cognition. This study thus aimed to discover if the cognitive potential of students enrolled in colleges of agriculture did in fact differ from students enrolled in other colleges. Findings suggest that students enrolled in agriculture had significantly lower GPA, critical thinking disposition, and need for cognition when compared to students not in agriculture. Further research is needed to determine how instructors are integrating critical thinking into the classroom, as well as instructors' level of cognition. It is recommended that further work be done to increase college of agriculture students' cognitive abilities to help them be prepared for today's world.

Introduction

Glaser's studies in the 1940s, Facione's research in the 1990s, and the many others over the years who have explored the ideas and philosophical groundings of cognitive processing and critical thinking have all encouraged educators to find ways to engage students in more meaningful, deeper levels of thought. Research on cognition and critical thinking can be found in literature ranging from feminism, humanities, nursing, and business to science and agricultural education. No matter the discipline, the message from the research is the same: students must be engaged to delve deeper into topics and look critically at knowledge. That message has never been more important than in today's world of information overload, limited resources, and international competition where students must be prepared to employ deeper cognitive processing when faced with ethical, social, economic, and professional issues.

While the body of knowledge on how to increase student's cognitive abilities is large in breadth, the field of agricultural education, specifically, has focused on furthering cognitive skills in the classrooms of colleges of agriculture for many years. Edgar and colleagues noted in their 10-year look at the *Journal of Agricultural Education* that critical thinking was the sixth most published research topic (Edgar, Edgar, Briers, & Rutherford, 2008). Prolific authors in the field have all chimed in to further our knowledge on how to increase critical thinking skills and dispositions, as well as other variables involved in the cognitive process (Burris & Garton, 2006; Friedel, Irani, Rudd, Gallo, Ricketts, & Eckhardt, 2008; Hedges, 1991; Moore, Rudd, & Penfield, 2002; Myers & Dyer, 2006; Ricketts & Rudd, 2004A; Ricketts & Rudd, 2004B; Rudd, Baker, & Hoover, 2000; Torres & Cano, 1995). Cognition researchers outside of agricultural education have determined little difference among majors (Broadbear, Jin, & Bierma, 2005). However, it remains to be seen how much this research has affected students' skills and dispositions in critical thinking and cognition in colleges of agriculture. This study aims to

compare students majoring in agriculture with those in non-agriculture disciplines to gauge cognitive impact at five separate universities. With the heavy push by researchers in agricultural education to teach at higher levels, it could be argued that students in these colleges should learn at higher cognition than students in other colleges. If this is not the case, then more work is needed in furthering cognitive processing with students in colleges of agriculture.

Theoretical Framework

Critical Thinking

Critical thinking is defined in different ways from many different scholars in many different fields. Facione (1990), who conducted a national Delphi study to ultimately define and frame a concept of critical thinking characterized it as "purposeful, self-regulatory judgment, which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (p. 2). In agricultural education, an often cited description of critical thinking is the one provided by Rudd, et al. (2000). They believed critical thinking was "a reasoned, purposive, and introspective approach to solving problems or addressing questions with incomplete evidence and information and for which an incontrovertible solution is unlikely" (p. 5).

Just about every academician and every professional with a connection to education would not only claim critical thinking is important, but they would also argue they are indeed critical thinkers themselves. However, critical thinking is not so easily attained. According to VanGelder (2005) and Kuhn (1991) humans are not built with an inborn capacity for being critical. Critical thinking is actually a multi-dimensional concept consisting of skills (i.e. the ability to analyze or make inferences), dispositions (i.e. a tendency to wonder or a character of understanding), and knowledge (i.e. a mastery of pedagogy in agricultural education) (Mason, 2007).
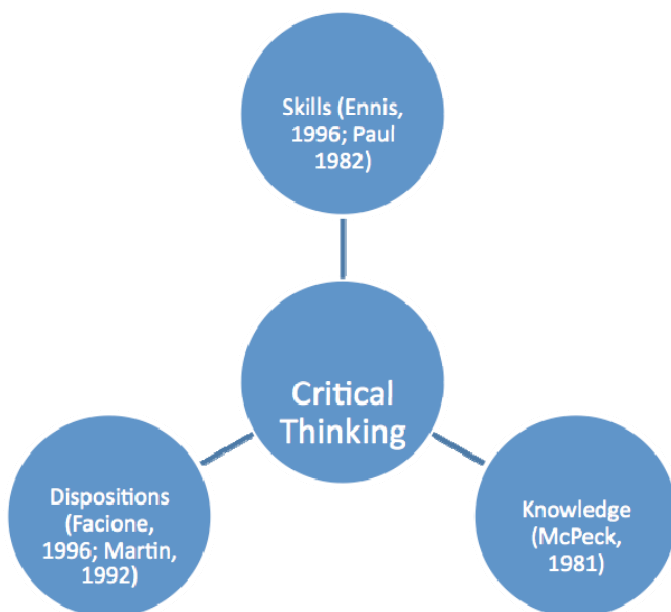

Figure 1. Expert concepts of critical thinking.

Research conducted in agricultural education tends to suggest that the conceptual framework for critical thinking includes skills, dispositions, and knowledge. Conceptually, Facione (1990) agrees that critical thinking includes both skills and dispositions. He believed the requisite critical thinking skills to be interpretation, analysis, evaluation, inference, explanation, and self-regulation. Likewise, he believed that the important critical thinking dispositions were analyticity, self-confidence, inquisitiveness, maturity, open-mindedness, systematicity, and truth seeking. Moore, Rudd, and Penfield (2002) factor analyzed Facione's disposition suggestions and determined that the respective constructs failed to group together adequately. In response, Irani, Rudd, Gallo, Ricketts, Friedel, and Rhoades (2007) developed a three-component model of critical thinking disposition, which is based on the literature and supported with psychometric analysis: engagement, cognitive maturity, and innovativeness.

It would be hard to argue for a simpler model given the historical and theoretical complexity of critical thinking as an area of study. Consider that critical thinking and its origins date back to Socrates and Plato, Aquinas in the Middle Ages, Bacon and his suggestion for "empirical" study, Descartes and his dictate to discipline the mind, and even to a favorite of many in agricultural education – John Dewey.

> From [Dewey's] work, we have increased our sense of the pragmatic basis of human thought (its instrumental nature), and especially its grounding in actual human purposes, goals, and objectives. From the work of…Wittgenstein we have increased our awareness not only of the importance of concepts in human thought, but also of the need to analyze concepts and assess their power and limitations. From the work of Piaget, we have increased our awareness of the egocentric and sociocentric tendencies of human thought and of the special need to develop critical thought, which is able to reason within multiple standpoints, and to be raised to the level of "conscious realization." From the massive contribution of all the "hard" sciences, we have learned the power of information and the importance of gathering information with great care and precision, and with sensitivity to its potential inaccuracy, distortion, or misuse. From the contribution of depth psychology, we have learned how easily the human mind is self-deceived, how easily it unconsciously constructs illusions and delusions, how easily it rationalizes and stereotypes, projects and scapegoats. (Paul, Elder, & Bartell, 2008, p. 19).

Critical thinking has justifiably become an expectant outcome in education. Benefits of heightened critical thinking skill and disposition include improved listening and respect for different ideas, interest in learning, feelings of accomplishment, and nurtured teamwork, communication, and speaking skills (Yang & Chung, 2007). Critical thinking in students is positively and significantly related to leadership development (Ricketts, 2005), grades in school (Burris & Garton, 2006; Ricketts, 2003), and even success in high stakes testing (Williams, Schmidt, Tilliss, Wilkins, & Glasnapp, 2006).

With the seemingly impactful nature of critical thinking, it is reasonable that every educator claims to foster and utilize critical thinking. It would also be helpful if this was the case. In fact, Chang and Yang (2006) conducted a teacher education study and found that teachers need to be proficient users of critical thinking if students are to also adopt the practice.

Do all educators assume a paradigm of collaboration between themselves, students, and dependent industry leaders? According to West, Bross, and Snyder (2007), this type of collaboration is necessary for the development of critical thinking. Do all educators insist on active learning or try to incorporate a measure of service learning? Burbach, Matkin, and Fritz (2004) determined that active learning improves critical thinking, and Joseph, Stone, Grantham, Harmancioglu, and Ibrahim (2007) discovered that one of the positive attributes of service learning was improved cognition.

Educators seeking to develop critical thinking have much to consider. Educators need to make sure they are both infusing critical thinking into the curriculum and that they are overtly teaching thinking strategies (Case, 2005; Friedel, Irani, Rudd, Gall, & Eckhardt, 2006). Educators also need to encourage students to concentrate on critical thinking development over the long-haul (Bartlett & Cox, 2002). Critical thinking development takes continued focus.

Need for Cognition

However, some areas needed for critical thinking cannot always be taught. Cognition, for example is something that develops over time based on experiences and environment. Cacioppo and Petty (1982) described cognition as an individual's inclination to think through events holistically, while one's need for cognition (NFC) is their inclination to elaborate on events and think about them as they search for a reality. NFC has been related to intelligence (Cacioppo & Petty, 1982), academic performance, course grades (Leone & Dalton, 1988; Sadowski & Gulgoz, 1996), learning style (Haugtvedt, Petty, & Cacioppo, 1992), and to critical thinking dispositions (Friedel, Rhoades, Ricketts, Stedman, Irani, 2008). However, it has been found that gender has no effect nor is it related to abstract or verbal reasoning (Cacioppo, Petty, & Morris, 1983).

NFC has been shown to be a tendency that develops through one's experiences and endeavors requiring cognitive thought. Researchers have noted that those who are high in their need for cognition will think more in-depth about arguments presented to them, and will see weaker arguments as unfavorable (Cacioppo & Petty, 1982; Haugtvedt, Petty, & Cacioppo, 1992). Those who are lower in NFC will scrutinize communication less and will tend to avoid anything that requires effortful, cognitive work. Much research has looked at how NFC can change one's attitude, and it has been noted that for those low in NFC, their attitude can change because of a simple cue. While those who are higher in NFC will change their attitude based on the merit of the relevant arguments presented to them (Haugtvedt & Cacioppo, 1992).

A Call for Higher Level of Thinking

Higher order thinking skills, which require students to engage in problem solving and critical thinking processes, have been a research staple in the agricultural education literature over the years. To reiterate, it has been found that students who develop higher levels of cognitive thinking will do better academically. According to, Whittington (1995) in order to foster this in students, it must be fostered in the instructors. The ability to demonstrate higher levels of thinking and problem solving during class can depend heavily on the instructor. In 1993, Whittington and Newcomb explored the cognitive level teachers in a college of agriculture aspired to teach at, and what level they were actually teaching. They noted that while these

instructors had positive attitudes toward and aspirations to teach and test at higher levels of cognition, they were not meeting those goals. Many instructors were conducting the course at lower levels of cognition. It was concluded that some instructors may not fully understand the long-term affects of using higher level cognition in the classroom, and the changes that must be made to their curriculum to engage students at that level. Whittington echoed the findings in 1995, noting that while instructors wanted to engage students at all levels, they tended to mostly have discourse at a lower level. In fact, instructors in this study conducted discourse at a lower level 98% of the time.

Several studies over the years have noted these concerns and indicated that instructors may feel that they do not have the time or experience needed to rethink lesson plans and assessments to engage students at higher levels of thinking. Researchers have continually encouraged faculty in colleges of agriculture to present workshops and seminars to assist other faculty in learning the techniques needed to reach these higher levels of cognition (Whittington, 1995; Whittington, Stup, Bish, & Allen, 1997; McCormick, Whittington, 2000; Miller & Pilcher, 2001; Ewing, Carnes, & Whittington, 2006). Numerous academicians have heeded this call and presented workshops, seminars, and teaching and learning groups to help colleagues in their colleges rethink how they prepare and teach courses to hit at these higher levels of thinking. However, it has yet to be researched how effective these calls have been in actually increasing cognitive thinking in students in colleges of agriculture. If college instructors aspire to teach at higher levels of thinking to engage their students, and if they are receiving help in preparing their classes as such, it could be assumed students would be benefiting. It is important to understand how students in colleges of agriculture are faring in terms of their cognitive potential compared to students outside of such colleges. Are they similar, are they better? In order to continue improving education in colleges of agriculture, we must know the answer.

Research in higher-level thinking has provided evidence that these skills are domain specific (Huitt, 1998). That is, one can exhibit high levels of critical thinking in one domain of knowledge and not be able to transfer those skills to another. This presents a difficulty in consistently measuring cognitive skills of students in colleges of agriculture, because the diversity of agriculture incorporates many different domains. However, one can measure students' disposition towards thinking and their desire for thinking outside the context of a knowledge domain (Facione, Giancarlo, Facione, & Gainen, 1995). Further, dispositions and desires for thinking are fostered through the practice of thinking (Tishman & Andrade, 1996). One may assume from this that high levels of critical thinking disposition and need for cognition are related to the practice of using higher level thinking skills in classrooms located in colleges of agriculture.

Given the interest, research, and effort extended to help faculty in colleges of agriculture provide educational discourse at higher cognitive levels, one would expect that students enrolled in colleges of agriculture would exhibit higher levels of critical thinking and need for cognition. The disposition and desire to use higher level thinking skills are necessary for the employment of those skills (Norris, 1994), which suggests that the measurement of these cognitive attitudes provide indication of the potential in learning cognitive skills. Does the cognitive potential of students enrolled in colleges of agriculture differ from students enrolled in other colleges?

Purpose

Based on the plethora of research in the field of education and agricultural education on the need to further students' cognitive development and skills, this study aims to discover how far agriculture educators have come in improving our students' disposition to using critical thinking compared to students not majoring in colleges of agriculture. The study also seeks to determine if differences exist between students' need for cognition and grade point average among students based on their enrollment in a college of agriculture.

The outlined theoretical framework served as the guiding structure in which the researchers have developed the following hypotheses to be tested:

H_{01} There is no difference in critical thinking disposition between students who are agricultural majors and those who are non-agricultural majors.
H_{02} There is no difference in need for cognition between students who are agricultural majors and those who are non-agricultural majors.
H_{03} There is no difference in grade point averages between students who are agricultural majors and those who are non-agricultural majors.

Methods

This quantitative study sampled participants from four service courses taught in colleges of agriculture at four land-grant universities. The researchers selected courses, which traditionally have had students from a variety of majors, academic ability, and class rank. Direct administration of instrumentation measuring critical thinking, need for cognition, and selected demographics resulted in 317 respondents. Due to the non-random sample, results cannot be generalized past these courses. However, this study incorporated what was conceptualized as a slice in time (Oliver & Hinkle, 1981) sampling of students. This type of sampling (convenience) has been justified by Gall, Borg, and Gall (1996).

Instrumentation

Two instruments testing cognitive potential were used in the study along with questions on gender, age, major, and GPA. The UF-EMI, a 26-item instrument, gauged student critical thinking disposition through three constructs: engagement, cognitive maturity, and innovativeness (Irani, et al., 2007). The combined score of the rating scale (i.e. Likert) instrument can range from 26 points (a low critical thinking disposition) to 130 points (a high critical thinking disposition). Instrument developers report an overall reliability of .92 (Irani, et al., 2007). Cronbach's alpha was run post hoc in this study and found an overall reliability of .92. The UF-EMI also asked questions regarding students' demographic information and GPA.

A student's "tendency to engage and enjoy effortful cognition" was measured with the Need For Cognition Scale (Cacioppo, Petty, & Kao, 1984, p. 306). Cacioppo and colleagues' 18-item instrument utilizes a five-point summated rating scale. An overall summation of items is calculated for the need for cognition score, which has a possible range of 18 points (indicating low NFC) to 90 points (indicating high NFC). Researchers who developed the NFC reported a

Cronbach's alpha reliability coefficient of .90 (Cacioppo, Petty, & Kao, 1984). In this study, post-hoc reliability was calculated and determined as .84.

Data Analysis

Data were analyzed with the Statistical Package for the Social Sciences (SPSS). Means and frequencies were calculated on demographic variables including age, gender, GPA, total NFC score, and total EMI score. Researchers used independent sample t-tests to test the hypotheses identified by this study.

Results

Selected demographics of the 317-person sample were identified using questions from the UF-EMI. Participants ranged in age from 18 to 35 years with a mode of 21 years. The majority of the sample was female (56.2%, $n = 178$). The majority of students in the four courses were seniors ($n=156$, 49%), followed by juniors ($n = 116$, 37%), sophomores ($n = 35$, 11%), and freshman ($n = 10$, 3.2%). Only 13% ($n = 42$) indicated being part of an honors program, and the mean GPA was 3.24. Participants of this study reported being in a variety of 57 majors, which ranged from food science to English. The top number of majors included animal science ($n = 33$, 10%), construction systems management ($n = 29$, 9%), and family youth and consumer sciences ($n = 23$, 7%). Students' academic majors were coded to distinguish whether or not they were affiliated with a college of agriculture at their respective university. Findings indicated that 178 students (56.2%) had majors found in a college of agriculture, while 139 students (43.8%) were working toward a degree not related to agriculture. The demographic information gathered on these participants indicated that most of these students were traditional undergraduate students and predominately juniors or seniors.

The first hypothesis proposed in this study was that there was no difference in critical thinking disposition between students majoring in agriculture and students not majoring in agriculture. Critical thinking disposition scores, as measured by the UF-EMI, for this sample of undergraduate students ranged from 48 to 130 with a mean of 100.19 points. A two-tailed independent sample t-test was conducted to determine if critical thinking disposition scores differed between students in agricultural academic majors and students not in agricultural academic majors. Levene's Test for Equal Variance was performed to test for equal variance between the two groups. The results indicated to reject the null hypothesis ($F = 5.43$, $p = .02$) and concluded that these two groups of students were not equal in variance. Therefore, the researchers interpreted the t-statistic calculated by SPSS when equal variances are not assumed. A significant difference was found ($t = 3.85$, $p = .00$) among total critical thinking disposition scores between students enrolled in an agricultural academic majors ($M = 97.81$) and non-agricultural academic majors ($M = 103.25$). Considering the difference is approaching a medium effect size (Cohen's $d = .43$) (Cohen, 1992), the null hypothesis was rejected and it is concluded the two groups are significantly different in their critical thinking skill disposition. That is, these students enrolled in a college of agriculture have significantly lower levels of critical thinking disposition than those students not enrolled in a college of agriculture. (See Table 1)

Table 1
Differences in Critical Thinking Disposition by College Affiliation

Major	M	SD	T	df	p	Cohen's d
Agriculture majors (n = 178)	97.81	13.73	3.85	313.71	.00	.40
Non-agriculture majors (n = 139)	103.25	11.42				
All Students (n = 317)	100.19	13.03				

Note. Critical thinking disposition was measured by the UF-EMI with 26 items. The possible range for total critical thinking disposition was 26, indicating a low level of critical thinking disposition to 130,indicating high level of critical thinking disposition.

The second hypothesis identified in this study was that there is no difference in need for cognition between students who are agricultural majors and those who are non-agricultural majors. The NFC scale was used to determine students' need for cognition. For this group of students, scores ranged from 24 to 83 points ($M = 60.44$). To test the second hypothesis, a two-tailed t-test was performed. Levene's Test for Equal Variance was calculated to determine if the assumption of equal variance between these two groups was met. There was no significant difference ($F = 1.51$, $p = .22$), indicating a failure to reject the null hypothesis and equal variances can be assumed. Results of the t-test indicated a significant difference ($t = 2.96$, $p = .00$) between these students who were categorized by either being enrolled in a college of agriculture ($M = 58.99$) or not enrolled in a college of agriculture ($M = 62.29$). These findings provided evidence to reject the second null hypothesis and conclude that among these students, those enrolled in a college of agriculture have significantly lower NFC scores than those not enrolled in a college of agriculture. It should be noted that the difference had a small effect size (Cohen's $d = .34$) (See Table 2).

Table 2
Differences in Need for Cognition by College Affiliation

Major	M	SD	T	df	P	Cohens's d
Agriculture majors (n = 178)	58.99	10.36	2.96	315	.00	.34
Non-agriculture majors (n = 139)	62.29	9.08				
All Students	60.44	9.95				

(n = 317)

Note. Need for cognition was measured by the NFC with 18 items. The possible range for total need for cognition was 18–indicating low need for cognition to 90–indicating high need for cognition.

The third hypothesis of this study stated that there is no difference in grade point averages between students who are agricultural majors and those who are non-agricultural majors. A self-reported GPA was collected from participating students during test administration of the UF-EMI. Among these students, GPAs ranged from 1.9 to 4.0 with a mean of 3.24 on a 4.0 scale. A two-tailed t-test was utilized to test this hypothesis. Again, Levene's Test for Equality of Variances was used to determine if equal variances among the two groups' grade point averages could be assumed. The test suggested that there was no significant difference ($F = .21$, $p = .65$) and it was concluded to fail to reject the null hypotheses and assume equal variance for these scores. The t-test performed to test the third hypothesis in this study indicated a significant difference ($t = 3.37$, $p = .00$) in GPAs between students enrolled in a college of agriculture ($M = 3.16$) and students not enrolled in a college of agriculture ($M = 3.33$) at these four land-grant universities. From these findings, it was concluded that participating students enrolled in colleges of agriculture had significantly lower self-reported GPAs than students not enrolled in colleges of agriculture. (See Table 3)

Table 3
Differences in Self-reported GPA by College Affiliation

Major	*M*	*SD*	*T*	*df*	*p*	*Cohens's d*
Agriculture majors	3.16	0.44	3.34	315	.00	.39
(n = 178)						
Non-agriculture majors	3.33	0.44				
(n = 139)						
All Students	3.24	0.45				
(n = 317)						

Note. Grade point average was determined as a self-reported average on a 4.0 scale.

Conclusions/Recommendations

While this study cannot be generalized past these four universities, it is important to note that the students represented a variety of ages, class ranks, and majors in and out of agriculture. While students in agriculture were lower in their cognitive abilities, it is also important to note that the overall averages for critical thinking disposition and need for cognition were not low on the scales and were actually moderate to high.

However, agriculture majors in this study did score significantly lower on critical thinking dispositions than their non-agriculture major counterparts. Studies have been conducted to

determine critical thinking differences between majors within related disciplines (Ricketts, Pringle, & Douglas, 2007; Broadbear, et al., 2005), but this is the first known study of its kind to determine critical thinking differences between students majoring in a college of agriculture and those majoring in other fields. Given the strong science underpinnings of many agricultural disciplines and specific attention given to developing critical thinking at the respective universities, this finding was unexpected.

Research should be conducted that determines the extent of overt and infused focus on the development of critical thinking in the respective colleges of agriculture. Are faculty incorporating active learning strategies and service learning activities, which are known to develop critical thinking (Burbach, et al., 2004; Joseph, et al., 2007)? Research should also determine the critical thinking skills and dispositions of faculty members in colleges of agriculture. Chang and Yang (2006) and Whittington (1995), and researchers in teacher education, would agree – faculty need to be proficient users of critical thinking if students are going to adopt it.

Agriculture majors in this study scored significantly lower on Need for Cognition as well. This finding was not surprising when taken with the other findings of this study. Research has shown that need for cognition is related to academic achievement and critical thinking disposition (Friedel, et al., 2008, Leone & Dalton, 1988; Sadowski & Gulgoz, 1996). An individual's need for cognition is developed through experiences, which require them to engage in deeper cognitive thought (Cacioppo & Petty, 1982). It could thus be assumed that if these students had lower NFC then they may have been exposed to less situations that require deeper cognition than the non-agriculture students. As with critical thinking needs in the classroom, it is important that we understand how teachers are requiring this deeper thought in their classrooms. Whittington (1995) noted that many instructors feel they are giving their students these experiences, when in reality they are not. It is important that we continue to work with these instructors to ensure they are infusing activities that require critical thinking and deep cognition of the subject.

Agriculture majors also had significantly lowers GPAs than non-agriculture majors. It is improbable that instructors in colleges of agriculture grade harder, or inflate grades less. Rather it is more feasible that these students are struggling more academically. Granted, a significant amount of science is included in a degree in agriculture, but the majority of the participants were juniors and seniors so the assumption can be made that the majority of core competencies had been met. Other researchers have noted the relationship between critical thinking and grade point average (Ricketts, 2003; Torres, 1993). Therefore, the finding that agriculture students had lower critical thinking dispositions and lower grade point averages makes sense. However, this ought to be a concern if graduates of colleges of agriculture are to be competitive with non-agriculture majors. Faculty and academic administrators should consider an organized effort to improve critical thinking and need for cognition. This effort should improve the academic success of college of agriculture students.

It is important to note that GPAs used were self-reported rather than actual GPAs obtained from the students' respective universities. Student self-reported items may be inflated due to students overestimating their performance to be perceived as better, also known as the halo

effect. However, research has indicated that the halo effect is constant across students and schools (Pike, 1999). Therefore, if values reported in this study were less than authentic, there was no advantage given to either students enrolled in colleges of agriculture or students not enrolled in colleges of agriculture.

Further research is needed to further explore the cognitive differences between students in colleges of agriculture and those not in colleges of agriculture. Further studies should be conducted at other universities and in other courses to see if similar findings result. Research is also needed to explore if differences exists within majors in colleges of agriculture to see if there are differences between social science students and those in the natural sciences. As indicated earlier, studies must be conducted with instructors in colleges of agriculture to determine their cognitive ability, and their level of infusing critical thinking into their courses. While much research has been done in the field of agriculture education to encourage such integration into courses, it is obvious that more work is still needed, theoretically and practically.

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CHANGES IN TEACHER SELF-EFFICACY AND PERCEPTIONS OF PREPARATION OF AGRICULTURAL EDUCATION TEACHER CANDIDATES

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Abstract

The purpose of this study was to describe the changes in teacher self-efficacy throughout agricultural education teacher candidates' teacher preparation program. Additionally, the researchers sought to describe candidates' perceptions of their preparation. The population was the teacher candidates who student taught during Fall, 2007. Teacher self-efficacy was assessed at three different points during the teacher preparation program using the Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001); in the spring following the teacher preparation coursework, during the second week of the student teaching internship, and at the conclusion of the student teaching internship. Teachers' perceptions of their preparation were assessed during the second week and at the conclusion of the student teaching internship. Candidates reported the lowest overall level of teacher self-efficacy during the spring, and the highest level at the end of the internship experience. Candidates reported the least amount of change in the student engagement domain, and the most change in the classroom management domain. The perceptions of candidates with regard to their preparation did not change during the student teaching internship. The researchers concluded that candidates required assistance in the student engagement domain during their coursework and during the student teaching internship.

Introduction/Theoretical Foundation

Agricultural education at the secondary school level faces a critical teacher shortage. Kantrovich (2007) estimated a teacher deficit of 38.5% in 2007. Of the 785 qualified graduates in 2005-2006, teacher educators estimated that only 69.8% of the graduates planned to enter the profession of agricultural education. The agriculture teacher shortage is not a new trend; "A de-facto 'teacher shortage' has been a constant problem for agricultural education for at least the 40 years covered by this study" (Kantrovich, 2007, p. 3.). The shortage of qualified teachers has been further complicated by the National Council for Agricultural Education's 10X15 initiative. This initiative envisions 10,000 quality agricultural education programs in the U.S. by the year 2015. One goal, specific to recruiting highly-qualified educators is to: "Meet the demand for well-trained, highly qualified agricultural educators for all roles within the profession and encourage their involvement in appropriate professional organizations" (Team Ag Ed, 2007, p. 18). Therefore, a challenge facing the agricultural education profession involves simultaneously remediating the current shortage of qualified professionals and preparing additional qualified agricultural educators to meet the goals of the 10X15 initiative.

Overcoming the teacher shortage will involve the preparation of future teachers with the belief that they have the potential for success as an agricultural educator. Investigating teacher personal characteristics associated with teacher success and retention in the profession is one essential element to reduce the teacher shortage by improving the rate of retention. In the field of agricultural education, teacher self-efficacy has been found to be positively associated with

teacher retention (Whittington, McConnell & Knobloch, 2006; Knobloch & Whittington, 2003); little additional research has been conducted in the field to validate the relationship between teacher self-efficacy and retention. However, "A strong sense of efficacy can support higher motivation, greater effort, persistence, and resilience. Consequently, helping teachers develop strong efficacy beliefs early in their career will pay lasting dividends" (Woolfolk Hoy & Hoy, 2009). Therefore, this investigation of teacher self-efficacy among teacher education candidates is important and significant in agricultural education as the profession attempts to recruit and retain new teachers.

Bandura's social cognitive theory (Bandura, 1986) and the associated theory of self-efficacy (Bandura, 1997) provided the theoretical foundation for this study. Social cognitive theory is rooted in the view that individuals are agents proactively engaged in their own development and can make things happen by their actions. Key to social cognitive theory is the fact that, aside from personal and environmental factors, individuals possess self-beliefs that enable them to exercise a measure of control over their thoughts, feelings, and actions. The idea that an individual has the potential to influence change, regardless of his/her skills, is central to social cognitive theory (Pajares, 2002). Bandura (1994) further suggested that individual self-efficacy is derived from four main sources: mastery experiences, physiological and emotional arousal, vicarious experiences, and social persuasion.

Self-efficacy, in the context of teachers and teaching is often referred to as *teacher self-efficacy*. Tschannen-Moran and Woolfolk Hoy (2001) suggested that teacher self-efficacy was a simple idea with significant implications. The authors described teacher self-efficacy as ". . . a judgment about his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (p. 1). Teacher self-efficacy is related to teacher behavior, level of effort, enthusiasm, planning, resoluteness, creativeness, willingness to work with more difficult students, and commitment to teaching (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Teachers with a high sense of self-efficacy believe they can overcome problems through time and effort, while teachers with a low sense of self-efficacy are typically beset with discipline issues and resort to punitive methods of classroom management. Teachers with a low sense of teacher self-efficacy believe that little can be done to reach unmotivated students, and that their influence as a teacher is limited by environmental factors that are beyond their control. Conversely, a teacher with a high sense of teacher self-efficacy is more inclined to create a dynamic, student-centered learning environment in which students take ownership of their learning; whereas teachers with a low sense of self-efficacy would likely devote more time to non-academic, managerial tasks (Bandura, 1997).

Teacher preparation is an important factor in teacher self-efficacy. If teachers do not feel that they are adequately prepared to perform a task, they likely not succeed at that task. Knobloch and Whittington (2002) found that teacher preparation quality was associated with student teacher sense of teacher self-efficacy. Ross, Cousins and Gadalla (1996) found that "feelings of being well-prepared" was associated with a sense of teacher self-efficacy. Additionally, Rubecks and Enochs (1991) found teacher self-efficacy was predicted by university coursework related to future teaching requirement. Darling-Hammond, Chung, and Frelow (2002) examined the relationship between perceptions of preparation and teacher self-efficacy and found that ratings of their overall teacher preparedness were significantly related to

their sense of efficacy about whether they are able to make a difference in student learning. Teachers in this study who " . . . felt underprepared were significantly more likely to feel uncertain about how to teach some of their students and more likely to believe that student's peers and home environments influence learning more than teachers do" (p. 294). Knobloch (2006) found a relationship between student teacher perceptions of their teacher preparation program and their sense of teacher self-efficacy; student teachers who held more positive perceptions of their teacher preparation program were more efficacious at the conclusion of their student teaching experience. Whittington, McConnell, and Knobloch (2006) found that student perceptions of their student teaching experience was positively related (r = .39) to their sense of teacher self-efficacy.

Knobloch (2001) reported that early field experiences and teaching peers influenced teacher candidates' sense of teacher self-efficacy. He suggested that students become more efficacious about their teaching because they had observed and experienced teaching in real settings and had taught their peers. Knobloch and Whittington (2003) studied the self-efficacy of student teachers, first, second, and third-year teachers during the first ten weeks of school. Student teachers were the only group that experienced an increase in self-efficacy during the first ten week period while first-year teachers (as a group) experienced the greatest decline.

Rocca and Washburn (2006) investigated differences in self-efficacy between traditionally and alternatively certified teachers. The two groups did not differ in their perceived self-efficacy, however, alternatively certified teachers were about 10 years older than traditionally certified teachers. The researchers questioned why the two groups were similar in their level of self-efficacy, since the alternatively certified teachers did not have formal training in education. However, they did not question the age difference of the two groups, nor did they attribute the results to the age difference of the alternatively certified teachers. Knobloch (2006) found that student teachers at two different institutions reported similarly high levels of teaching self-efficacy; however, the student teachers differed in their perception of environmental factors that contributed to teacher self-efficacy. The environmental factors were: supportive principal behaviors, cooperating teacher competence, and number of class preparations. Knobloch speculated that student teachers may have had an inflated sense of teacher self-efficacy, which remained inflated throughout the student teaching experience as a result of support from their cooperating teachers.

Roberts, Harlin, & Ricketts (2006) assessed teacher self-efficacy among student teachers at four different points during a 15-week student teaching experience. The researchers examined the three domains (*student engagement, instructional strategies,* and *classroom management)* identified by Tschannen-Moran and Woolfolk Hoy (2001). In the *student engagement* domain, the students' teacher self-efficacy scores dropped during the middle of the experience, and were highest at the end of the experience. The *instructional strategies* domain exhibited a similar pattern. The changes were less pronounced in the *classroom management* domain but followed the same pattern as the other two domains. The researchers observed that ". . . limited knowledge exists about teaching efficacy of preservice agricultural science teachers, largely due to the paucity of research in this area. Existing research has largely been conducted by just a few researchers, in only a few states" (Roberts, et al., 2006, p. 84). The results of this study were corroborated by a later study that measured teacher self-efficacy of agricultural education teacher candidates at four institutions (Harlin, Roberts, Briers, Mowen, & Edgar, 2007). The teacher

candidates assessed exhibited a similar pattern of change in their teacher self-efficacy, with a scores decreasing in the middle of the experience, and increasing toward the end. Roberts, Harlin, & Ricketts (2006) suggested that future research examine the changes in overall teacher self-efficacy in different teacher candidate populations. Additionally, the researchers questioned if different teacher candidate populations were the most efficacious in instructional strategies and the least efficacious in the student engagement domain.

Purpose/Objectives

The purpose of this study was to assess agricultural education teacher candidates' perceptions of teacher self-efficacy at different points during their teacher preparation experience and candidates' perceptions of their level of preparation. The following research objectives guided the study.
1. Describe agricultural education teacher candidates' teacher self-efficacy at three different points during their teacher preparation experience.
2. Describe agricultural education teacher candidates' perceptions of their preparation at the beginning of the student teaching internship and at the conclusion of the student teaching internship.
3. Determine the discrepancy between agricultural education teacher candidates' perceived sense of teacher self-efficacy and level of preparation at the beginning and at the conclusion of the student teaching internship.

Methods

The population for this descriptive study consisted of the entire cohort of Agricultural Education teacher candidates at a midwestern land-grant university who completed their internship during the fall 2007 academic term. The population frame was identified by the faculty coordinator of the student teaching internship. Twenty-four individuals met the criteria of having completed their ten-week student teaching internship in Agricultural Education during in the fall of 2007.

The researchers utilized the *Teachers' Sense of Efficacy Scale* (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Tschannen-Moran & Woolfolk Hoy, 2001) to assess the perceived teacher self-efficacy of the agricultural education teacher candidates. This instrument has been extensively tested in studies involving various groups of teachers and pre-service teacher candidates, and subjected to factor analysis procedures to assess construct validity. This study utilized the long summated rating scale (24 items) consisting of three distinct domains: *efficacy for instructional strategies* (8 items), *efficacy for classroom management* (8 items), and *efficacy for student engagement* (8 items). The published reliabilities for each domain were 0.91, 0.90 and 0.87, respectively.

Data were collected at three different points during the teacher preparation program. The first assessment was at the conclusion of the spring "Student Teaching Block," in which the agricultural education teacher candidates enrolled as a cohort group in a series of teacher preparation courses. A second assessment was completed the following fall during the second week of the 10-week student teaching internship. The third and final assessment was

performed at the conclusion of the 10-week student teaching internship during an on-campus workshop.

The original instrument was adapted assess teacher candidate perceptions of their preparation in the items on the *Teachers' Sense of Efficacy Scale,* similar to the Borich (1980) needs assessment model. The teacher self-efficacy scale asked participants to rate each item following the stem: "How much can you do to . . . < Item? >" on a scale from 1 = None, to 9 = A Great Deal. Preparation items asked respondents to rate each item following the stem: "How well prepared were you to . . .   < Item? >" on a scale from 1 = Not Prepared to 9 = Very Well Prepared. Discrepancy scores were calculated for each of the three domains (*efficacy for instructional strategies, efficacy for classroom management,* and *efficacy for student engagement)* by subtracting the mean preparation score from the mean teacher self-efficacy score in each domain.

The spring assessment utilized only the *Teacher Efficacy Scale* (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Tschannen-Moran & Woolfolk Hoy, 2001). The two assessments during and after the student teaching internship utilized modified instruments that incorporated items relative to the candidate's perception of their preparation. Data were analyzed using the Statistical Package for the Social Sciences (SPSS).

Findings/Results

The population consisted of 24 agricultural education teacher candidates. Two-thirds of the respondents were female and one-third were male. The candidates ranged from 21 to 26 years of age.

The first research objective was to describe the agricultural education teacher candidates' sense of teacher self-efficacy. The first assessment was in Spring, 2007, at the conclusion of the student teaching block, the second assessment was during the second week of the student teaching internship, and the final assessment was after the completion of the student teaching internship. Candidates reported the lowest levels (μ = 6.23) of overall teacher self-efficacy (Table 1) at the conclusion of the student teaching block experience, and the highest levels of overall teacher self-efficacy (μ = 7.30) at the conclusion of the student teaching internship.

Table 1
Teacher candidate (N=24) perceptions of overall teacher self-efficacy

Time	Min	Max	μ	σ
Student teaching block	4.88	7.88	6.23	0.78
2nd week of student teaching	5.08	9.00	7.11	1.22
End of student teaching	5.83	8.92	7.30	0.99

Note. 1 = Nothing, 3= Very Little, 5= Some Influence, 7= Quite a Bit, 9 = A Great Deal

The researchers sought to describe teacher self-efficacy in three domains (*efficacy for instructional strategies, efficacy for classroom management,* and *efficacy for student engagement)* at three different points during the teacher education program (see Table 2, Table 3, & Table 4). Teacher candidates experienced the least change in the student engagement domain from the first assessment to the last assessment, and the largest change in the classroom management domain.

In the student engagement domain, candidates reported the lowest teacher self-efficacy levels (μ = 6.24) at the conclusion of the student teaching block, with a range from 4.88 to 7.63. Candidates reported the highest teacher self-efficacy levels (μ = 7.14), with scores ranging from 5.38 to 9.0 at the conclusion of the student teaching internship. The range during the second week of student teaching was slightly larger, with scores ranging from 4.38 to 9.00 and an average of 6.76. The scores in the student engagement domain continued to rise throughout the teacher preparation experience, while scores in the other two domains increased between the student teaching block and the second week of the student teaching experience, and then decreased slightly at the end of the student teaching internship.

Table 2
Teacher candidate (N=24) perceptions of teacher self-efficacy in the student engagement domain

Time	Min	Max	μ	σ
Student teaching block	4.88	7.63	6.24	0.71
2nd week of student teaching	4.38	9.00	6.76	1.41
End of student teaching	5.38	9.00	7.14	1.05

Note. 1 = Nothing, 3= Very Little, 5= Some Influence, 7= Quite a Bit, 9 = A Great Deal

In the classroom management domain, candidates reported the highest levels (μ = 7.40), of teacher self-efficacy during the second week of the student teaching internship. Candidates were the least efficacious in the classroom management domain at the conclusion of the student teaching block (μ = 6.18), with scores ranging from 4.88 to 8.00. The candidates' sense of teacher self-efficacy decreased at the end of the student teaching experience (μ = 7.38), with scores ranging from 5.13 to 9.00.

Table 3
Teacher candidate (N=24) perceptions of teacher self-efficacy in the classroom management domain

Time	Min	Max	μ	σ
Student teaching block	4.88	8.00	6.18	0.88

2nd week of student teaching	5.63	9.00	7.40	1.18
End of student teaching	5.13	9.00	7.38	1.11

Note. 1 = Nothing, 3= Very Little, 5= Some Influence, 7= Quite a Bit, 9 = A Great Deal

Candidates were the most efficacious in the instructional strategies domain during the second week of their student teaching internship (μ = 7.44), with a range of 5.63 to 8.00, and the least efficacious at the end of the student teaching block (μ = 6.29), with scores ranging from 4.63 to 8.0. The candidates' sense of teacher self-efficacy decreased at the end of the student teaching internship to an average of 7.37, with a range from 5.88 to 9.0.

Table 4
Teacher candidate (N=24) perceptions of teacher self-efficacy in the instructional strategies domain

Time	Min	Max	μ	σ
Student teaching block	4.63	8.00	6.29	0.93
2nd week of student teaching	5.63	8.00	7.44	1.15
End of student teaching	5.88	9.00	7.37	1.00

Note. 1 = Nothing, 3= Very Little, 5= Some Influence, 7= Quite a Bit, 9 = A Great Deal

Figure 1 illustrates the change in overall teacher self-efficacy and within each of the three underlying domains. The only teacher self-efficacy domain that produced increased scores over the three data collection periods was the student engagement domain; however, this domain also had the lowest summated mean in the final two assessments. The classroom management domain and the instructional strategies domain both evidenced an increase in scores during the second week of the student teaching internship, but then decreased slightly at the end of the student teaching internship.
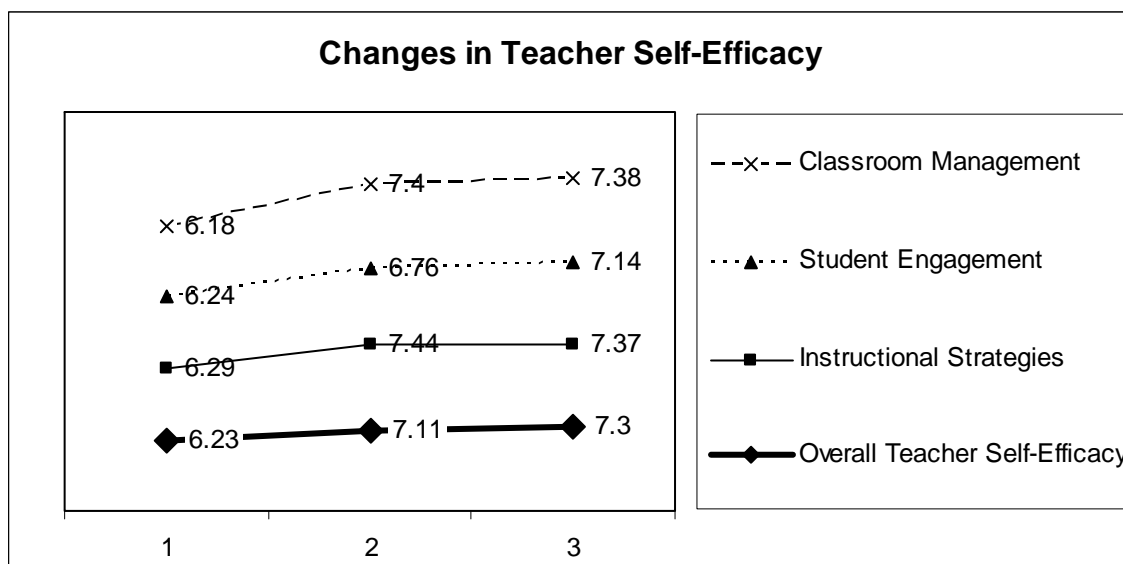
Figure 1. Changes in teacher self-efficacy (1= Student Teaching Block, 2= 2nd week of student teaching, 3= End of student teaching)

The second research objective was to describe teacher candidates' perceptions of their preparation at the beginning and at the end of their student teaching internship. The candidates' perceptions of their preparation remained consistent throughout the student teaching internship (Table 5). The respondents indicated that they were the least prepared in the student engagement domain, and were the most prepared in the classroom management and instructional strategies domain.

Table 5
Teacher candidate (N=24) perceptions of their preparation

Domain	2nd week of student teaching		End of student teaching	
	μ	σ	μ	σ
Student engagement	6.20	1.02	6.22	1.02
Classroom management	6.72	1.30	6.76	1.25
Instructional strategies	6.78	1.05	6.72	1.06
Overall	6.55	0.96	6.56	1.05

Note. 1= Not Prepared, 3= Slightly Prepared, 5= Fairly Well Prepared, 7= Well Prepared, 9 = Very Well Prepared

The third research question was to describe the discrepancy between teacher candidates' reported levels of teacher self-efficacy and their perceptions of their preparation. The discrepancy score was used to determine if the candidates' levels of teacher self-efficacy were

equivalent to their perceptions of their preparation. The overall discrepancy was greatest at the conclusion of the student teaching internship. The discrepancy in the student engagement domain increased between the second week of the student teaching internship and the end of the internship. The classroom management and instructional strategies domains remained fairly stable throughout the student teaching internship.

Table 6

Discrepancy between teacher candidate (N=24) perceptions of teacher self-efficacy and level of preparation in three domains of teacher self-efficacy.

Domain	2nd week of student teaching Discrepancy	End of student teaching Discrepancy
Student engagement	0.56	0.92
Classroom management	0.68	0.62
Instructional strategies	0.66	0.65
Overall	0.56	0.74

Conclusions/Recommendations/Implications

The researchers sought to assess agricultural education teacher candidates' levels of teacher self-efficacy and their perceptions of their preparation. The agricultural education teacher candidates' sense of teacher self-efficacy changed throughout the pre-service teacher education program. Although the timing of the assessments differed from previous studies, the observed changes in teacher self-efficacy corroborated previously-reported research (Knobloch, 2006; Knobloch & Whittington, 2003; Roberts, Harlin, & Ricketts, 2006). Specifically, Roberts, Harlin, and Ricketts (2006) suggested that there was a need to investigate teacher self-efficacy in multiple teacher candidate populations, and to determine if those populations had similar changes in teacher self-efficacy, and were the most efficacious in the instructional strategies domain, and least efficacious in the student engagement domain. The results of this study support the findings of Roberts, Harlin, and Ricketts (2006), as agricultural education teacher candidates in this study reported the lowest levels of teacher self-efficacy in the student engagement domain, and the highest scores in the instructional strategies domain. Teacher candidates were not assessed in the middle of the student teaching experience, so it cannot be determined if they experienced a decline in teacher self-efficacy in the middle of the student teaching internship.

Agricultural education teacher candidates revealed the lowest overall sense of teacher self-efficacy during the student teaching block, and the highest overall sense of teacher self-efficacy at the end of the student teaching internship. Based on these findings, the researchers concluded that the student teaching internship increased the candidates' sense of teacher self-efficacy. Knobloch (2006) speculated that teacher candidates ". . . may feel that they already know how to teach before their student teaching experience" (p. 45). However, the lower teacher

self-efficacy scores reported at the end of the student teaching block seem to contradict Knobloch's (2006) conclusion. Conversely, candidates may be somewhat overwhelmed at the end of their teacher preparation course work, which may contribute to their lower levels of teacher self-efficacy at that time.

In the student engagement domain, candidates had the lowest levels of teacher self-efficacy during two of the three assessment periods. The intensive preparation during the student teaching block and the experiences during the student teaching internship do not appear to improve candidate perceptions of teacher self-efficacy in the student engagement domain when compared to the classroom management domain and the instructional strategies domain. Roberts, Harlin, and Ricketts (2006) noted that teacher self-efficacy scores in the student engagement domain may be slightly lower than in the other domains due to ". . . the complex nature of interacting and connecting with diverse youth, coupled with a novice teacher's attention to the mechanics of instruction and classroom management" (p. 90). However, since the student engagement domain produced the least amount of positive change in teacher self-efficacy, increased assistance in this area throughout the teacher preparation program may be warranted. Early field experiences in which teacher education candidates can practice and hone their skills in respect to the student engagement domain may improve the candidates' perceptions of teacher self-efficacy in this domain.

The incorporation of the Borich (1980) needs assessment model identified areas where candidates may need additional assistance or professional development. Candidate perceptions of their preparation remained consistent throughout the student teaching experience. The student engagement domain had notably lower preparation scores than the other domains. Based on this finding, the researchers concluded that candidates may require more assistance in the student engagement domain prior to the student teaching internship.

The researchers sought to describe the discrepancy between candidates' teacher self-efficacy and their perceptions of their preparation. Because the candidate's perception of their preparation was the same at the beginning of the student teaching internship as it was at the end of the internship, the discrepancy score increased as the candidates levels of teacher self-efficacy increased. Candidate perceptions of preparation, while lower than the respective levels of teacher self-efficacy do not appear to change throughout the student teaching internship. Further research should examine why student teachers rate their preparation lower than their teacher self-efficacy.

This study, although replicating previous studies tracking the changes of teacher self-efficacy in agricultural education, adds to the knowledge base of teacher self-efficacy in agricultural education by assessing candidates' perceptions of their preparation. The lower levels of preparation reported in the student engagement domain are troubling. Candidates may not feel adequately prepared to influence student achievement by engaging them in the learning process, resulting in a lower teacher self-efficacy score in this domain. Further research should be conducted in an effort to improve teacher candidates' sense of teacher self-efficacy in the student engagement domain.

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ARE THEY SATISFIED?
USING AGRICULTURAL EDUCATION GRADUATES' GEFT SCORES TO ASSESS JOB SATISFACTION

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Abstract

The purpose of this study was to assess satisfaction variables (salary, academic advising, career satisfaction, and overall program quality) of agricultural education graduates at the University of Missouri according to their learning style. The Group Embedded Figures Test (GEFT) was used to measure learning style. The results of the study revealed the overall mean GEFT score for the graduates were 12.9, indicating the group were more field-independent than field-dependent. Over two-thirds (68.93%) of the graduates were identified as field-independent. No practical differences existed in employment decisions between those who were field-independent and those who were field-dependent. When job satisfaction scores were correlated with GEFT scores, a positive, low correlation existed (r = .11), indicating that GEFT was not a good predictor of job satisfaction, even though it had been linked with academic performance and overall success in higher education (Cano, 1999; Cano & Porter, 1997; Garton, Dauve, & Thompson, 1999; Torres, 1993; Torres & Cano, 1994). When aspects of academic advising mean scores were compared by learning style, little differences existed. In all, when compared by learning style, little differences existed in current employment, salary, academic advising, overall program quality, and job satisfaction.

Introduction – Theoretical Framework

Not all graduates enter the exact professions in which they were prepared. Likewise, not all agricultural education graduates enter the teaching profession. In a study of agricultural education graduates at the University of Missouri, Cartmell and Garton (2000) found over one-third had entered professions outside of teaching. With graduates entering non-teaching jobs, agricultural education programs must be able to prepare students for a variety of careers.

Specifically, the agricultural education curriculum should address the educational and career preparation needs of students who desire careers outside of school-based teaching (Goecker, 1992) because when students are equipped for a variety of careers, the preparation is reflected well upon the university. However, not all graduates feel prepared once they graduate. According to Candy and Crebert (1991), graduates sometimes struggle because they are unfamiliar with how to cope in a new environment. Graduates fail to adjust to the lack of a structured environment such as those provided in higher education settings. Because graduates struggle to adjust to their new environment, it becomes increasingly important for universities to track their graduates, know where they go, and what becomes of them in their future endeavors. It also becomes important to identify factors, within the control of the university, that contribute to preparing students for successful careers. Martin, Milne-Home, Barrett, Spalding, and Jones (2000) concluded that identifying such factors could better prepare graduates for their chosen

careers and meet the needs of employers. However, the task of improving these factors becomes more difficult when a program offers a variety of career options.

A possible factor to consider is job satisfaction. Job satisfaction could be viewed as a determinant for the retention of graduates in their chosen career. "Job satisfaction refers to the individual's attitude toward the various aspects of their job as well as the job in general" (Rogers, Clow & Kash, 1994, p. 15). For graduates to maximize their performance on the job, they must be satisfied with their job.

Tse & Wilton (1988) stated in order for people to experience satisfaction on the job, they must perceive themselves as performing successfully. Given the context of the university setting, the way a person performs or learns could be used to predict their job satisfaction. Pace (1987; cited in Martin et al. 2000) noted that "perceptions of learning . . . were related to college satisfaction" (p. 201). If a student's perception of learning relates to being satisfied in college, can learning style be used to predict one's career satisfaction?

Lovelace (2005) stated that "learning style is the way that students begin to concentrate on, process, internalize, and remember new and difficult academic information" (p. 176-177). Learning style has been explained as distinct behaviors which serve as stable indicators of how a person learns and adapts to his/her learning environment (Gregorc, 1979). It has also been identified as a factor influencing how students transition from school to work. Candy and Crebert (1991) noted a disparity between how a university prepares a student for work and how the workplace utilizes that employee's learning style.

One form of measuring one's learning style is the group embedded figures test (GEFT). An extensive amount of research in agricultural education has linked learning style to field-dependence/independence (Guild & Garger, 1985; Witkin, Oltman, Raskin & Karp 1971) GEFT test. Individuals who prefer a field-dependent learning style tend to have a global perception, struggle to solve problems, are more attuned to their social environment, learn better when concepts are humanized, and favor a spectator approach to learning. Additionally, field-dependent learners tend to be more extrinsically motivated and learn better when organization and structure is provided by the teacher (Witkin, Moore, Goodenough, & Cox, 1977).

Conversely, individuals who prefer a field-independent learning style tend to view concepts more analytically, and find it easier to solve problems. They also tend to favor learning activities that require individual effort and study. Additionally, field-independent learners prefer to develop their own structure and organization for learning, are intrinsically motivated, and are less receptive to social reinforcement (Witkin et al., 1977). In a study of Ohio State University majors, Kitchel and Cano (2001) found that 64% were field-independent.

Hughes (1937) posited that for success and satisfaction to occur in one's job, both objective and subjective criteria must be present. Heslin (2005) noted that objective career success entails pay and promotions while subjective career success entails job satisfaction, earnings, and job status. Kaskiri (2006) stated that success related to one's career is based upon criteria such as salary and level of job satisfaction as well as predictors such as cognitive ability,

socio-economic status, and personality factors. To that end, can one's GEFT score be used to predict job satisfaction?

While learning styles (e.g. GEFT scores) have been found to have a positive relationship with academic performance, as measured by grade point average (Torres, 1993; Torres & Cano, 1994), performance in agriculture courses (Garton, Dauve, & Thompson, 1999), and overall success in higher education (Cano & Porter, 1997; Cano, 1999), there have been no studies that have sought to determine if relationships exist between GEFT score (learning style) and career satisfaction of agricultural education graduates. However, the claim seems plausible. Vangsnes (2007) stated

> It has been shown . . . that individuals in different career fields exhibit characteristics of learning that seem to correlate with job responsibilities. What has not been discussed is a possible relationship between vocational satisfaction in relationship to preferred learning style (p. 66).

In fact, Vangsnes suggested that a "person's satisfaction with his/her job, has to do with the way people learn, or their learning style" (p.1). Vangsness further posited "If people pursue their desired field of study based upon their learning style, then it is reasonable to assume they will also exhibit more vocation/career satisfaction than those individuals who have not" (p. 66). Therefore, the central foci driving this study were twofold: to examine if and where the relationships between graduate satisfaction and their learning style existed and to determine what implications graduates' learning style had upon their career choice.

Purpose and Objectives

The purpose of this study was to compare the career satisfaction variables (salary, academic advising, career satisfaction and overall program quality) of agricultural education graduates at the University of Missouri according to their GEFT score. The following objectives were formulated for the study:

1. Describe the salary and GEFT scores of the population.

2. Compare graduates on their current employment decision by their GEFT scores.

3. Compare graduates' salaries, perceptions of the academic advising they received, and their views about the overall program quality by their GEFT scores.

4. Compare graduates' level of career satisfaction by their learning style and determine if a relationship exists between their perceptions of career satisfaction and GEFT scores.

Methods

This research was descriptive-correlational in nature and consisted of a five-year census of agricultural education graduates ($N = 112$) from the University of Missouri. Students enrolled in agricultural education at this institution choose between two degree options: teacher

certification and leadership. Those who choose the teacher certification option acquire a teaching license and develop skills to teach agriculture in school-based settings, while those in the leadership option develop and apply their leadership, communication, and human relation skills to careers in industry by planning, managing, and disseminating information in non-formal educational settings. In all, a total of 96 graduates responded for an 86% response rate.

In particular, the population for this study consisted of the same group used in a related study by (Garton & Robinson, 2006). As to avoid duplication of the findings, yet properly describe the context of the sample, the following demographic data of graduates are provided: 86% were employed full-time. Of these full-time graduates, 39% were employed as secondary public school teachers, and the remaining 61% of graduates were employed in various industry positions such as sales, management, and communications to name a few.

For the purpose of this study, two parallel questionnaires were developed: one for graduates who pursued careers in industry and one for graduates who pursued teaching school-based agriculture. The questionnaires consisted of seven sections: occupational status, current job satisfaction, factors influencing occupational change, educational experiences, program assessment, quality of academic advising, and open-ended questions.

The Brayfield-Rothe (1951) job satisfaction instrument, as modified by Warner (1973), was included for collecting data pertaining to this study in section one. This section consisted of job satisfaction and dissatisfaction factors and used a five-point Likert scale consisting of: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree and 5 = strongly agree. The researchers developed the remaining six sections of the questionnaire.

Agricultural education faculty and university career placement personnel served as the panel of experts and established the content and face validity of the instruments. Reliability for the job satisfaction section was established through prior research with secondary agriculture teachers. Cano and Miller (1992) reported a Cronbach's alpha coefficient of .94 for the summated scale. Reliability for the remaining sections was established through a pilot test with 16 senior agricultural education students. Spearman-Brown split-half reliability coefficients ranged from .82 for the quality of academic advising section to .69 for the educational experiences section.

The Group Embedded Figures Test (GEFT) (Witkin et al., 1971) was administered during the graduates' undergraduate program to assess the preferred learning style of students as field-dependent or field-independent. The possible range of scores on the GEFT is zero to 18. Individuals scoring a 0-11 were considered to prefer a field-dependent learning style, while individuals scoring 12-18 were considered to prefer a field-independent learning style. The GEFT is a standardized instrument that has been used in educational research for more than 30 years (Guild & Garger, 1985). The validity and reliability of the GEFT was established by the developers of the instrument. The GEFT is a timed test; therefore, internal consistency was measured by treating each section as split halves (r = .82) (Witkin et al., 1971). Descriptive statistics (means, frequencies, percentages, and standard deviations) were used to analyze the data. A Pearson-product moment correlation was used, for objective five, in an effort to describe the relationship between career satisfaction and learning style.

Findings

Objective one sought to describe the salary and GEFT scores of the population. A comparison of salaries revealed that only one graduate with a public school teaching career earned less than $20,000, while 10 graduates with industry careers earned less than $20,000 (Table 1). Likewise, none of the public school teaching graduates earned $50,000 or greater; however, nine graduates in industry positions earned $50,000 per year or more.

Table 1
Salary Comparison of Graduates in Secondary Teaching vs. Industry Careers

	Public School Teaching		Industry Position	
Salary	*f*	%	*f*	%
Less than $20,000	1	2.7	10	17.9
$20,000 – 24,999	1	2.7	5	8.9
$25,000 – 29,999	3	8.1	8	14.3
$30,000 – 34,999	13	35.1	7	12.5
$35,000 – 39,999	15	40.5	8	14.3
$40,000 – 44,999	3	8.1	4	7.1
$45,000 – 49,999	1	2.7	5	8.9
$50,000 or greater	0	0	9	16.1
Total	37	100.0	56	100.0

An analysis of GEFT scores revealed a mean score of 12.88 (*SD* = 3.89), indicating that the group was more field-independent than field-dependent (Figure 1). The most frequent score was 15 (*n* = 19), followed by scores of 14 and 18 (*n* = 11) for each; thus, it was found that 32 (31%) of those who completed the GEFT were field-dependent and 71 (69%) were field-independent.
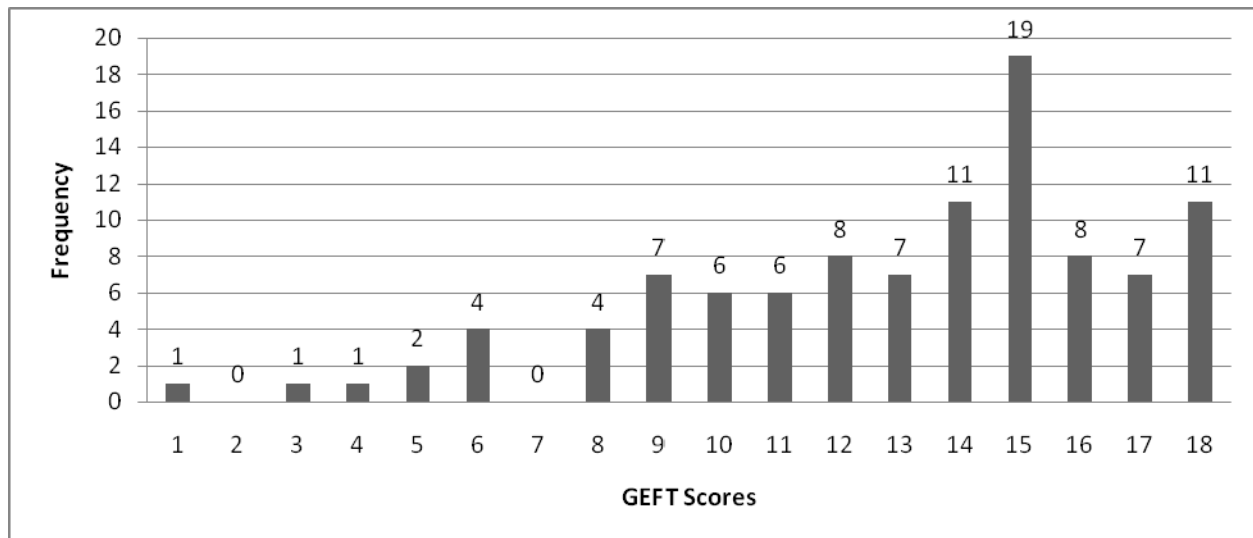
Figure 1. Distribution of GEFT learning style scores.

In meeting objective 2, which was to compare graduates on their current employment decision by their learning style, Table 2 was constructed and sorted by difference in percent from highest to lowest. When comparing percentage break-outs by employment decision, the highest percentage difference between those who were field-dependent and those who were field-independent was in "sales" (difference = 7.79%) and "public school teaching" (difference = 7.46%) as their current employment.

Table 2
Current Employment Decisions Compared By GEFT Scores

Employment Decision	Field-Dependent		Field-Independent		Differences
	f	*%*	*f*	*%*	
Sales	6	20.69	8	12.90	7.79
Public School Teaching	10	34.48	26	41.94	7.46
Communications	1	3.45	4	6.45	3.00
Education/Training (non-school)	1	3.45	4	6.45	3.00
Government Agencies	2	6.90	1	1.61	5.29
Management	3	10.34	8	12.90	2.56
Other	2	6.90	3	4.84	2.06
Graduate School	2	6.90	4	6.45	0.45
Production Agriculture	1	3.45	2	3.23	0.22
Financial Services	1	3.45	2	3.23	0.22
Total	29	100.00	62	100.00	

Objective three sought to compare graduates' salary, academic advising, and overall program quality by their GEFT scores. An examination of the distribution revealed that the pattern appears similar (Figure 2).

Figure2. Distribution of salary by GEFT scores.

The biggest discrepancy occurred at $50,000 or more. Nearly 15% of field-dependent graduates made $50,000 or more as compared to roughly 7% of field-independent graduates. In addition, roughly 14% of field-independent learners made less that $20,000 as compared to 11% of field-dependent graduates.

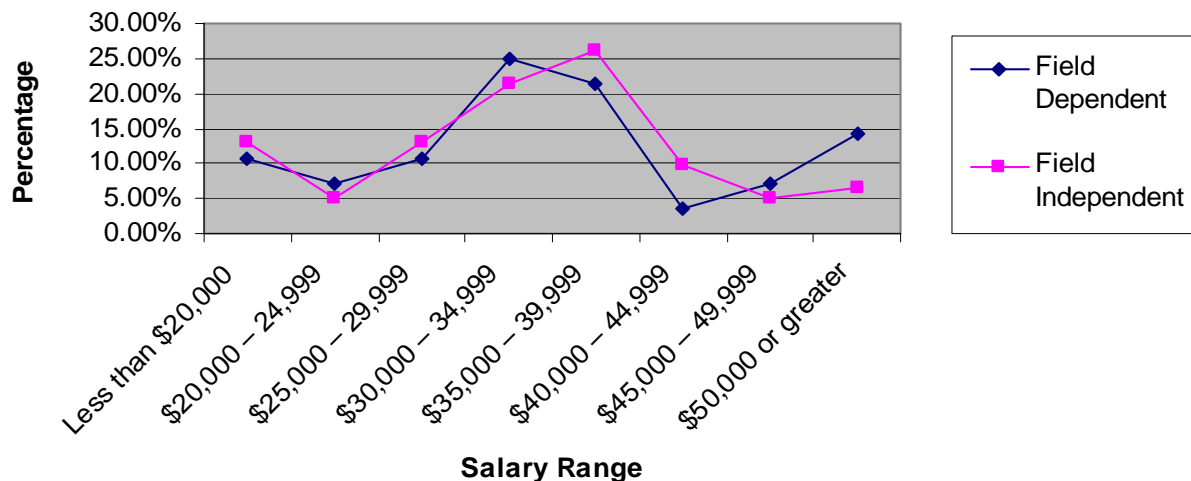Table 3 compared academic advising mean scores by GEFT scores and was sorted by differences in mean scores from highest to lowest. Differences in the academic advising mean scores by learning style ranged from .03 to .25. Six academic advising items had a mean score difference above .10 while four items had mean score differences below .10. The largest mean score difference was for the item "planning courses" (difference = .25), and "Organization – Records" (difference = .19), "degree requirements" (difference =. 17), "meeting availability" (difference = .13) and "academic excellence" (difference = .12) followed respectively. "Career advising" (difference = .03) had the smallest mean score difference. As a whole, both field-dependent and field-independent graduates were most satisfied with their academic advisor's ability to prepare them for their degree's requirements (M_{f-d} = 4.59, M_{f-i} = 4.42). Likewise, both field-dependent and field-independent graduates were least satisfied with the academic advising item "experiences – career preparation" (M_{f-d} = 3.48, M_{f-i} = 3.53).

Table 3
Academic Advising Mean Scores Compared by GEFT Scores

Academic Advising Items	Field-Dependent		Field-Independent		Differences
	M	SD	M	SD	
Planning Courses	4.41	.73	4.16	.91	.25
Organization - Records	4.48	.51	4.29	.88	.19
Degree Requirements	4.59	.57	4.42	.84	.17
Meeting Availability	4.45	.69	4.32	.84	.13
Academic Excellence	4.31	.71	4.19	.90	.12
Academic Progress	4.21	.73	4.10	.96	.11
Adequate Time	4.41	.73	4.35	.87	.06
Respect – Value Opinion	4.28	.96	4.34	.85	.06
Experiences – Career Preparation	3.48	.99	3.53	1.13	.05
Career Advising	3.69	1.04	3.66	1.07	.03

Note. Scale: 1 = Poor, 2 = Fair, 3 = Satisfactory, 4 = Very Good, 5 = Excellent

Table 4 compared overall program quality mean scores by GEFT scores and was sorted by differences in mean scores from highest to lowest. Eight overall program quality items had a mean score difference above .10 while six items had mean score differences below .10.

The largest mean score difference was with the item "job placement" (difference = .28). The second highest was a difference of .27 with the item "student organizations." "Internships" (difference = .25), "quality of students" (difference = .20) and "support since graduation" (difference = .17) rounded out the top five. Both field-dependent and field-independent learners scored "ag ed facilities" (difference = 2.97) exactly the same.

Table 4
Overall Program Quality Item Mean Scores as Compared by GEFT Scores

Overall Program Quality Items	Field-Dependent		Field-Independent		Differences
	M	SD	M	SD	
Job Placement	2.68	.90	2.96	.89	.28
Student Organizations	3.82	.39	3.55	.70	.27
Internships	3.67	.62	3.42	.88	.25
Quality of Students	3.72	.45	3.52	.54	.20
Support Since Graduation	3.11	.83	2.94	.94	.17
Instruction	3.76	.44	3.63	.49	.13
Computer Support	3.04	.88	2.93	.79	.11
Availability of Ag Ed Courses	3.59	.50	3.69	.53	.10
Curriculum Organization	3.62	.56	3.71	.49	.09
Availability of Required Courses	3.11	.74	3.18	.59	.07
Courses Preparing for Employment	3.34	.55	3.40	.59	.06
Faculty Competence	3.76	.44	3.73	.45	.03
Courses Preparing for Grad School	3.47	.64	3.46	.69	.01
Ag Ed Facilities	2.97	.73	2.97	.79	.00

Note. Scale: 1 = Poor, 2 = Fair, 3 = Good, 4 = Excellent

Objective four sought to compare graduates' level of career satisfaction by their GEFT scores and determine if a relationship existed between career satisfaction and learning style. Career satisfaction mean scores differed by .05 between field-dependent and field-independent learners (Table 5). A low positive Pearson-product moment correlation of .11 was found between overall job satisfaction and GEFT scores (Davis, 1971).

Table 5
Overall Career Satisfaction Mean Scores by GEFT Scores

Variable	Field-Dependent		Field-Independent	
	M	SD	M	SD
Overall Job Satisfaction	4.12	.41	4.17	.45

Note. r = .11; Scale: 1 = Strongly Disagree to 5 = Strongly Agree

Conclusions/Recommendations/Implications

With regard to salaries, graduates in school-based teaching positions were more similar as opposed to those with industry careers. Approximately 75% of the school-based teachers earned a salary in the range of $30,000 to $39,999. While some industry professionals started at lower salaries as compared to school-based teachers, there is no ceiling as to the salary an industry professional can make.

Of these graduates, the overall mean GEFT score was 12.9, indicating the group leaned toward being more field-independent than field-dependent. Over two-thirds (69%) were identified as field-independent, meaning the group as a whole tended to be more analytical and independent in its learning preference (Witkin et al., 1977). This finding is consistent with the findings of Kitchel and Cano (2001), who found that 64% of agricultural education majors were field-independent.

While both field-dependent and field-independent learners were equally satisfied with their chosen career, the graduates in this study with the highest salaries were predominately field-dependent. Specifically, a higher percentage of graduates entering sales type positions were more field-dependent, while those teaching in public schools were predominately field-independent.

Little differences existed when comparing aspects of academic advising mean scores by GEFT score. The item "help in planning courses for degree program" had the highest amount of discrepancy, while "quality and availability of job placement" held the highest mean score difference between learning styles on overall program quality. Overall, graduates tended to be very positive toward the advising they received regardless of learning style.

Job satisfaction mean scores were calculated and correlated with GEFT scores. A positive, low correlation resulted, indicating that GEFT was not a good predictor of job satisfaction even though it had previously been linked with academic performance and overall success in higher education (Cano, 1999; Cano & Porter, 1997; Garton, Dauve, & Thompson, 1999; Torres, 1993; Torres & Cano, 1994).

Implications

One could imply the reason more field-dependent learners are entering sales positions and earning greater salaries is due to the fact that these individuals are more extrinsically motivated. Maybe these individuals have recognized and applied their strengths and preferred learning styles in the workforce. If so, perhaps this finding supports Vangsnes's (2007) assumption that "If people purse their desired field of study based upon their learning style, then it is reasonable to assume they will also exhibit more vocation/career satisfaction than those individuals who have not" (p. 66). Further, is it possible more field-independent learners are entering the teaching ranks as opposed to field-dependent learners because much of their job requires individual effort and study (i.e., grading papers, writing lesson plans, designing rubrics) and they like to control their own structure for the learning process which occurs in the classroom?

Recommendations for Practice

While little differences existed in current employment, salary, academic advising, overall program quality, and job satisfaction when compared with GEFT scores, faculty at this university can note that learning style, either randomly or programmatically, is being addressed in overall program quality and academic advising. Further, , faculty should continue to assist students in learning about their preferred learning style in an effort to assist them in gauging their performance with various courses in academia as GEFT has been associated with influencing academic performance (Cano, 1999; Cano & Porter, 1997; Garton, Dauve, & Thompson, 1999; Torres, 1993; Torres & Cano, 1994).

Recommendations for Further Research

GEFT learning style was not a good predictor of job satisfaction. Therefore, further research on the relationship between learning styles and job satisfaction may not be warranted. However, Kaskiri (2006) noted numerous factors that could be used to predict one's career success, such as cognitive ability, socio-economic status, and personality factors. Perhaps these factors may better explain career satisfaction that learning style. Therefore, future research should focus on these areas to determine if they are good predictors of job satisfaction. Martin et al. (2000) called for an evaluation of workplace preparation of college graduates. If learning style is not a valuable predictor, then what is? Further investigation is warranted outside of GEFT scores to identify aspects that may be significantly related to agricultural education graduates' career satisfaction.

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PREDICTORS OF JOB STRESS AMONG MISSOURI SECONDARY AGRICULTURAL EDUCATION TEACHERS

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Abstract

The study sought to describe the demographic characteristics and explain the current level of job stress among secondary agriculture teachers in Missouri. The sample consisted of secondary agriculture teachers (n=252). Data were collected using the Job Stress Survey (Spielberger & Vagg, 1999). From the findings it was concluded that the average secondary agriculture teacher was a male with over 11 years of experience. Almost half work in a single teacher department and reported working between 46-65 hours per week. The majority of teachers also reported that they received social support from friends, family, professional associations and community organizations. The number of hours per week at work was the largest predictor on each index scale used to measure job stress. The second predictor on the Lack of Support Index scale was years of service at the current school. The second predictor of both Job Pressure Index and Job Stress Index scores was the total years of teaching experience, suggesting that the longer teachers stay in the profession or at their current school, the less stressed they tend to be.

Introduction

There are a variety of definitions of stress, from very simple to complex. Humphrey and Humphrey (1986) defined stress as "any factor acting internally or externally that makes it difficult to adapt and that demands increased effort from the person to maintain a state of equilibrium within himself and his external environment" (p. 2-3). According to the American Psychological Association (2007), one-third of people in the U.S. regularly report experiencing extreme levels of stress and nearly one in five reports that they experienced their highest level of stress 15 or more days per month. Concern with the effects of job stress on productivity, absenteeism, and health-related problems has increased dramatically during the last decade (Vagg & Spielberger, 1998).

The most influential theory for conducting research on job stress has been Person-Environment (PE) fit theory (Brewer & McMahan, 2004, Edwards & Cooper, 1990, Spielberger & Vagg, 1999). The PE fit theory is proposed as an approach for understanding the process of adjustment between individuals and their work environment (Caplan, 1987). According to this theory, stress and strain in the workplace result from the interaction of an individual with his or her work environment (Vagg & Spielberger, 1998). The interaction between individual and environment determines whether or not a situation is stressful (Brewer & McMahan, 2004). When demands of the job exceed a person's ability to meet those demands, the fit between an individual and their environment is incompatible.

PE fit theory consists of two basic characteristics regarding a person and the environment. The first measurement is objective and the second is subjective. The objective environment indicates physical and social situations and events as they exist, independent of the person's perceptions, whereas the subjective environment refers to situations and events as perceived by the person (Edwards & Rothbard, 1999). This study focuses on subjective fit measures of PE because this study is concerned with perceptions of job stress.

Review of Literature

Most people think that stress is a result of a key life event; a major illness, a death in the family, or the loss of a job. However, they tend to ignore the little insults of everyday life (London & Spielberger, 1983). Job stressors include factors such as work conditions, technological advancements, work responsibilities, underutilization, lack of autonomy, role conflict, lack of support from supervisors and colleagues, the organizational climate and transferable job skills (Cooper & Payne, 1988). Specifically, among teachers, it is not surprising that 23 percent of teachers believe that they have a poor ability to cope with stress (Humphrey & Humphrey, 1986). Our educational system has undergone vast and rapid changes, including the introduction of the No Child Left Behind Act. While most teachers agree that teaching is rewarding, it is a difficult career because of too few resources, too much paperwork, crowded classrooms, students with emotional problems, low salary and high-stakes standardized testing (Strauss, 2002).

The variety of stressors for secondary teachers is clear. However, stress among teachers is not simply exposure to these sources of difficulty, but can vary due to psychological and social support (Griffith, Steptoe & Cropley, 1999). The personal characteristics of teachers include personality, ability, physical and demographic traits. These combine with the stressors in the environment to produce strain in the person (Cooper, 1998). Secondary agriculture teachers face even greater job demands than non-career and technical education teacher as they often work well beyond a 40-hour work week to supervise student projects, coach career development teams, evaluate student work and prepare lessons (Croom, 2003; Straquadine, 1990). Other factors influencing stress include personality as it makes a significant contribution to the performance and well-being of the individual (Kenny, 1999). Further, research suggests that personal attributes such as gender can also influence work stress, identifying women as experiencing an overall greater amount of work-related stress (Piltch, Walsh, Mangione, & Jennings, 1994, Spielberger & Reheiser, 1995, Bhatnagar, 1988 & Gadzella, Ginther, Tomcala, & Bryant, 1991).

The end result of teacher stress is that many talented men and women with high expectations of achievement are dispirited and disillusioned. Some leave the teaching profession; others stay, but are plagued by a multitude of physical, emotional and behavioral stress-related manifestations (Milstein & Golaszewski, 1985). This is particularly true for new teachers. Roulston, Legette, and Womack (2005) confirm that about thirty-three percent of new teachers quit the teaching profession within the first three years of their career. Having the ability to deal with stress is vital in teacher retention. According to Croom (2003), agriculture teachers experience moderate levels of emotional exhaustion in their work.

The demands of the job coupled with the range of responsibilities of operating, managing and teaching in an agricultural education department may well create stress in teachers. Little problems do add up; taking more of a toll on the health and well-being on individuals than do the rare, major crises (London & Spielberger, 1983). Based on one estimate, 54 percent of all worker absences are in some way stress related, and cost U.S. industries over $150 million per year (Elkin & Rosch, 1990; Karasek & Theorell, 1990). It is the combination of work place environment, personality, gender and job experience that create stressful situations among teachers. It is important to identify the source of stress in agriculture teacher as little recent research has been done in this area. Researching the source of job stress relative to agriculture teachers has implications for improving the nature of the job and may provide insight into possible interventions in cases where stress exist.

Purpose and Research Objectives

The purpose of the study was to explain and predict job stress among agriculture teachers in Missouri using selected characteristics. The following research objectives were addressed in the study:
1. Describe selected characteristics of secondary agriculture teachers (Gender, Hours a Week at Work, Personality Type, Number of Teachers in Department, Sources of Social Support, Number of Years Teaching, Number of Children, and Number of Years at Current School).
2. Describe the level of job stress among secondary agriculture teachers.
3. Predict job stress from selected characteristics of secondary agriculture teachers.

Procedures

The design for this study was descriptive-correlational research. The target population was Missouri secondary agriculture teachers ($N = 445$) during the 2007-2008 academic year. The frame was obtained from the Missouri Department of Elementary and Secondary Education Directory of Agricultural Education. Physical and email addresses for the agriculture teachers were also obtained from the directory. Deliberate effort was made remove duplicate names and ensure an accurate frame was obtained. For this study, a census was sought.

Instrumentation

Data were collected using the Job Stress Survey (JSS) developed by Spielberger and Vagg (1991). The JSS is a standardized, commercial instrument designed to measure job stress as a function of job-related items that are perceived to be a source of severe and frequent stress. The JSS contained three sections. Section one sought to determine secondary teachers' perceived level of severity of 30 common job-related stressors using a scale from 1-9; nine being the most stressful measure.

The second section sought to determine the frequency secondary teachers encountered the job-related stressor at work during the previous six months using a scale that ranged from zero days experienced to more than nine occurrences in the last six months (0 – 9+). The two responses (severity and frequency) were used to produce three stress index scores: Job Stress

Index (JS-X), Lack of Support Index (LS-X), and Job Pressure Index (JP-X). Index scores were calculated by multiplying severity scores by frequency scores. In addition to the three index scores, six subscales were produced to measure various forms of stress. They included: Job Stress-Frequency (JS-F), Job Stress-Severity (JS-S), Lack of Support-Frequency (LS-F), Lack of Support-Severity (LS-S), Job Pressure-Severity (JP-S) and Job Pressure-Frequency (JP-F). A third section was added to the questionnaire which sought teachers' personal, home and work-related information.

Spielberger and Vagg (1999) report that validity and reliability of the JSS were established through the results of previous studies. The creation of the instrument was detailed in the *Job stress survey: Professional Manual.* The manual further reported that the job-related items in the JSS were analyzed for construct validity using factor analysis. Alpha coefficients of .89 or higher for the JS-X, JS-S, and JS-F, and .80 or higher for the 10-item JP and LS subscales were reported (Spielberger & Vagg, 1999).

Data Collection

Data were collected during the months of March and April of 2008. For secondary teachers in Missouri, this period of time can be characterized as representing a high level of activity to included FFA Career Development Event activities as well as typical spring academic semester, instructional activities and events. Three points of contact with secondary teachers were made to collect data. The data collection process began by sending teachers a signed 3"x5" pre-notice postcard announcing the intent of the study and the forth coming email. Two days later a personalized email using the HostedSurvey.com service which included the personalized URL hyperlink to an online questionnaire was sent to subjects. The beginning page of the online instrument contained an opening page message to the teachers detailing the importance of the study and their participation; as well as instructions for completing the online questionnaire. An email reminder was sent via HostedSurvey.com to those who had not responded by the specified date. The email, including the URL (again), further encouraged teacher participation. As a result, a response rate was 42% ($n = 193$) was achieved.

Teachers who responded were assumed to represent response bias. Miller and Smith (1983) suggested procedures for examining response bias by comparing a sampling of non-respondent data to respondent data. Toward that end, two weeks after the first reminder email, a random sample representing 30% ($n = 71$) of the non-respondents was taken. The sample size was determined following the suggestion of Miller and Smith (1983). Non-respondents were sent a mailed envelope packet containing a revised and signed cover letter, a paper copy of the questionnaire, and a self-addressed, stamped return envelope as a reminder to participate in the study. The final contact with non-respondents was approximately 20 days after the initial mailing, and consisted of a personalized email with a personalized link to the online questionnaire. These efforts yielded an 83% ($n = 59$) response rate.

Data from respondents ($n = 193$) and non-respondents ($n = 59$) were statistically compared on the primary variables of interest (J S-X, LS-X, and JP-X). Using an independent samples t-test, no significant ($p<.05$) differences were found between the respondent and non-respondent data. Thus, non-respondent data were pooled with the respondent data, yielding a total response

rate of 252 (57%) acknowledging some remaining potential for response error (Miller & Smith, 1983). All returned and/or submitted questionnaires yielded usable data. Data were coded by the researchers and analyzed using SPSS (v.15). Frequencies and percentages were reported and measures of central tendencies and variability were used to summarize the data. Stepwise multiple regression was also used in analyzing the data. According to Cohen and Cohen (1983), stepwise multiple regression is used when the goal of the researcher is explanatory and/or predictive in nature; while Lewis-Beck, Bryman, and Liao (2004) suggest that stepwise multiple regression is appropriate when there is inadequate theory or subject knowledge to indicate the priority of one independent variable over another. An alpha level of .05 was set *a priori*.

Results

Research question one sought to describe selected characteristics of secondary agriculture teachers in Missouri and the schools where they taught. Table 1 displays these data. There were 174 male teachers (73%) and 65 female teachers (27%). The majority (74%) of secondary agriculture teachers work between 46 to 65 hours a week. Two thirds of the teachers (66%) describe themselves as extroverts. Approximately half of the teachers were employed in a single teacher department (f = 111). Almost all (f = 236, 98%) teachers indicated receiving social support from friends and/or family with about one-third of teachers indicating social support from membership in professional associations (f = 86, 36%) and community organizations (f = 87, 36%). Agriculture teachers had an average of 11 (M = 11.4, SD = 8.52) years teaching experience and 8.7 (SD = 8.07) years at their current school. They also had an average of 1.5 (SD = 1.33) children.

Research objective two sought to describe the level of job stress among Missouri secondary agriculture teachers in terms of overall Job Stress, Job Pressure, and Lack of Support. The job stress results in Table 2 reveal that agriculture teachers are in the 60th percentile of managerial/professional norm data on the Job Stress Index. Managerial/professional was chosen as the norm data over the other norm group offerings reported in the manual because it most closely resembled the population being studied. Secondary agriculture teachers are also in the 69th percentile on Job Pressure severity and in the 68th percentile on the Job Pressure Index. However, agriculture teachers are in the 26th percentile among managerial/professionals on Lack of Support Severity and in the 56th percentile on Lack of Support Index.

Table 1

Characteristics of Secondary Agriculture Teachers in Missouri (n = 252)

Characteristic	*f*	*%*	*M*	*SD*	*Range*
Gender					
Male	174	72.8			
Female	65	27.2			
Hours a Week at Work					
36-45 hours	13	5.4			
46-55 hours	85	35.6			
56-65 hours	92	38.5			
66-75 hours	39	16.3			
75+ hours	10	4.2			
Personality Type					
Extrovert	158	66.1			
Introvert	81	33.9			
Number of Teachers in Department			1.72	0.82	
1	111	46.4			
2	93	38.9			
3	26	10.9			
4	8	3.3			
5	1	0.4			
Source of Social Support					
Friends and Families					
No	3	1.3			
Yes	236	98.7			
Professional Associations					
No	153	64.0			
Yes	86	36.0			
Community Organizations					
No	152	63.6			
Yes	87	36.4			
Number of Years Teaching			11.41	8.52	1-37
Number of Children			1.50	1.33	0-6
Number of Years at Current School			8.70	8.07	1-37
Days a Week of Exercise			1.83	2.05	1-7

Stepwise multiple regression analysis was conducted to address research question three. The regression analysis was used to estimate the proportion of variance in job stress accounted for by its linear combination with selected teacher characteristics. A regression analysis was conducted for each measure of job stress to include: Job Stress Index (JS-X), Lack of Support Index (LS-X), and Job Pressure Index (JP-X). Intercorrelations were calculated to check for multicollinearity. According to Berry and Feldman (1991), bivariate correlations between independent variables (X_i) yielding a .80 or higher were considered to display a high degree of multicollinearity (See Table 3).

Table 2
Missouri Secondary Agriculture Teacher Job Stress Results (n = 252)

	Agriculture Teacher Data		M/P Norm Data[c]
	M	*SD*	*% ile*
Job Stress			
Severity[a]	4.78	1.34	41
Frequency[b]	3.77	1.58	51
Index	22.38	12.21	60
Job Pressure			
Severity[a]	5.15	1.41	69
Frequency[b]	4.83	1.91	53
Index	28.61	14.73	68
Lack of Support			
Severity[a]	4.76	1.67	26
Frequency[b]	3.07	1.92	51
Index	19.43	14.94	56

Note: [a]: scale= 1-9 with 1=low, 5=moderate and 9=high; [b]: scale= 0-9 representing number of occurrences in the last six months; [c]: M/P= Managerial/Professional

Table 3

Summary Table of Bivariate Intercorrelation between Selected Teacher Characteristics (n = 252)

Variable	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	Y_1	Y_2	Y_3
Gender (X_1)	1	-.31	-.25	.02	-.29	-.09	.06	-.12	.03	-.05	.07	.14	.13	.14
Number of Children (X_2)		1	.48	.13	.54	.02	-.15	-.21	.19	.04	.01	-.18	-.05	-.13
Years at Current School (X_3)			1	.06	.86	.08	-.13	-.06	.08	.06	-.02	-.19	-.16	-.20
Number of Teachers in Department (X_4)				1	.04	.05	-.06	-.03	.08	-.02	.01	.04	-.05	-.01
Teaching Experience (X_5)					1	.08	-.07	-.10	.07	.04	-.04	-.17	-.17	-.20
Exercise (X_6)						1	.01	.06	.03	.02	.06	-.13	-.10	-.12
Hours/Week at work (X_7)							1	-.01	-.03	-.11	-.07	.30	.30	.34
Personality Type (X_8)								1	-.01	-.10	.01	.06	.10	.11
Community Support (X_9)									1	.38	.01	-.05	-.01	-.02
Professional Associations (X_{10})										1	-.08	.03	-.10	-.04
Family/Friends (X_{11})											1	-.04	.01	-.01
LS-X (Y_1)												1	.88	.39
JP-X (Y_2)													1	.61
JS-X (Y_3)														1

Note:

X_1: 1=Male, 2=Female

X_7: 1=36-45 hours, 2=46-55 hours, 3=56-65 hours, 4=66-75 hours, 5=75+ hours

X_8: 1=Extrovert, 2=Introvert

X_9: 1=Yes, 0=No

X_{10}: 1=Yes, 0=No

X_{11}: 1=Yes, 0=No

Stepwise method was employed to determine the best predictor of three dependent variables – job stress as measured by the Job Stress Index (JS-X), Job Pressure Index (JP-X) and Lack of Support Index (LS-X). The regression model was computed with selected teacher characteristics, including gender, number of children, years at current school, years of teaching experience, number of teachers in the department, exercise, hours/week at work, personality type, community support, professional associations, as well as family/friend support.

The regression model (see Table 4) depicts two teacher characteristics found to be significant in the regression equation for the Lack of Support Index (LS-X) as a measure of job stress. Eleven percent of the variance (Adjusted R^2= .11; $F_{(df = 2, 234)}$ = 15.43, $p < .05$) in agriculture teachers' LS-X Index scores can be predicted by the number of hours per week at work and years employed at the current school. Based upon the bivariate intercorrelations results, one variable (years of teaching experience) was removed before the regression was completed.

Table 4
Stepwise Regression of Predictors of Job Stress (Lack of Support Index) among Missouri Secondary Agriculture Teachers (n = 252)

Variable	R	R^2	B	t-value	p- value
	.34	.12			
Hours/week at work[a]			4.53	4.57	.01*
Yrs. at current school			-0.30	-2.58	.01*
(Constant)			9.28	2.92	.01*

[a]Coded: 1= 36-45 hours, 2=46-55 hours, 3=56-65 hours, 4=66-74 hours, 5=75+ hours; Adjusted R^2=.11; $F_{(df = 2, 234)}$ = 15.43 , *p<.05

Table 5 displays the regression model which depicts the two secondary agriculture teacher characteristics found to be significant in the regression equation for the Job Pressure Index (JP-X) as a measure of job stress. Ten percent of the variance (Adjusted R^2=.10; $F_{(df = 2, 233)}$ = 14.48,; p<.05) in agriculture teachers' JP-X Index score can be predicted by the number hours per week at work and years of teaching experience. Based upon the bivariate intercorrelation results, one variable (years at current school) was removed before the regression was completed.

Table 5
Stepwise Regression of Predictors of Job Stress (Job Pressure Index) among Secondary Agriculture Teachers in Missouri (n = 252)

Variable	R	R^2	b	t-value	p- value
	.33	.11			
Hours/week at work[a]			4.54	4.63	.01*
Yrs. Teaching Experience			-0.26	-2.43	.02*
(Constant)			18.98	5.94	.01*

[a]Coded: 1= 36-45 hours, 2=46-55 hours, 3=56-65 hours, 4=66-74 hours, 5=75+ hours; Adjusted R^2=.10; $F_{(df = 2, 233)}$ =14.48, *p<.05

The regression model (see Table 6) depicts the two teacher characteristics found to be significant in the regression equation for the Job Stress Index (JS-X) as a measurement of job

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stress. Fourteen percent of the variance (Adjusted R^2=.14; $F_{(df = 2, 232)}$ =19.06, $p<.05$) in agriculture teachers' JS-X Index score can be predicted by the number of hours per week at work and years of teaching experience. Based upon the bivariate intercorrelation results, one variable (years at current school) was removed before the regression was completed.

Table 6
Stepwise Regression of Predictors of Job Stress (Job Stress Index) among Secondary Agriculture Teachers in Missouri (n = 252)

Variable	R	R^2	b	t-value	p- value
	.38	.14			
Hours/week at work[a]			4.17	5.19	.01*
Yrs. Teaching Experience			-0.25	-2.69	.01*
(Constant)			13.30	5.12	.01*

[a]Coded: 1= 36-45 hours, 2=46-55 hours, 3=56-65 hours, 4=66-74 hours, 5=75+ hours; Adjusted R^2=.14; $F_{(df=2, 232)}$ = 19.06, *$p<.05$

Conclusions, Implications and Recommendations

As a general profile, secondary agriculture teachers in Missouri are largely male, have an average of 11 years of teaching experience, with more than eight and a half years at their current school. About half work in single teacher departments and nearly everyone reported receiving social support. Almost all teachers reported working more than forty hours per week.

Based upon the findings of the study, Missouri secondary agriculture teachers, on average, are not in a state of overall stress. According to the *Job Stress Survey manual*, stress scores above the 70th percentile on a comparable norm data suggest a state of stress. Job Pressure was the highest norm percentile score at 68, including a job pressure severity score at the 69th percentile. While this does not indicate overall stress, the scores are relatively high and there are individual items that rate well above norm data for managerial/professional occupations.

Specifically, secondary agriculture teachers indicated that they felt a frequent overall lack of organizational support. The lack of organizational support could lead to a feeling of isolation or disenfranchisement. Teachers should continue to maintain their relationships with friends and family who support their careers. However, there is room for improvement in seeking support from among the community organizations and professional associations. If not in place, secondary agriculture teachers should work to create an advisory council or alumni group to provide community support of the teacher and program. Secondary teachers who are not already members of a professional organization should seek out groups like the Missouri Vocational Agriculture Teacher Association.

"Hours per week at work" was the largest predictor of each index used to measure job stress (LS-X, JP-X and JS-X). This indicates that teachers are stressed because of the time demand of teaching secondary agriculture. The findings support the literature and indicate that almost all teachers were working well beyond a regular 40-hour work week. Secondary teachers should find ways to become more efficiently in their efforts to complete job-related assignments while spending less time at school. Additionally, time management techniques such as delegating

tasks to school volunteers or prioritizing could assist teachers in their use of time. Missouri Agricultural Education Joint State Staff should design and implement in-service workshops and/or provide online educational efforts aimed at helping secondary teachers manage their time and work more efficiently. These delivery efforts should be sensitive to the already over-worked teacher.

The second predictor of the Lack of Support Index (LS-X) stress was years of service at the current school. The second predictor of both Job Pressure Index (JP-X) and Job Stress Index (JS-X) scores was the total years of teaching experience. This suggests that the longer secondary agriculture teachers stay in the profession, the less stressed they tend to be. Conversely, novice teachers will need more support to deal with the higher levels of stress. Formal mentoring and induction programs, for first and second year teachers may be used to address this concern. Mentoring programs need continued support, but possible expansion into a more informal mentoring process for the secondary teachers with three to five years of experience should be explored.

The literature reviewed indicated that teachers were stressed. However, this study did not uncover all of the components contributing to that stress. There would be benefit from further studies seeking to account for the unknown predictors of job stress. Additional areas of focus might be the work/family interrelationship and/or a closer study of school environmental components (i.e., student/teacher interactions). An agricultural education specific study might be better able to explain the stress caused by items like FFA activities or Supervised Agricultural Experiences (SAE).

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JOB STRESS AMONG SECONDARY AGRICULTURE TEACHERS: HIGHS AND LOWS

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Abstract

The study sought to describe the current level of job stress among secondary agriculture teachers. The sample consisted secondary agriculture teachers (n = 252) in Missouri. Data were collected using the Job Stress Survey (Spielberger & Vagg, 1999). From the findings of the study it was concluded that the typical secondary agriculture teacher was a male with over 11 years of experience and work between 46-65 hours per week. Overall, secondary agriculture teachers in Missouri were not in a state of stress; however, approximately one-third are in a state of stress. Certain job-related items rated as being stressful with the most stressful item being excessive paperwork. Secondary agriculture teachers also found working overtime, meeting deadlines and frequent interruptions as stressful.

Introduction and Theoretical Framework

Stress is a growing concern in today's society. According to the American Psychological Association (2007) one-third of people in the U.S. regularly report experiencing extreme levels of stress and nearly one in five report that they experienced their highest level of stress 15 or more days per month. Greenberg (1984) defines stress as "the physical, mental, or emotional reaction resulting from an individual's response to environmental tensions, conflicts, pressures, and other stimuli" (p. 2). Stress is excitement, challenge, inspiration to do well and perform at high levels, but at the same time stress makes individuals fearful, angry, frustrated and unable to relax (Cosgrove, 2000).

Concern with the effects of job stress on productivity, absenteeism, and health-related problems have increased dramatically during the last decade (Vagg & Spielberger, 1998). Teachers are no exception. Unproductive levels of stress can be harmful to teachers and may affect their teaching, personal lives and, most importantly, their students (Adams, 1999). While most teachers agree that teaching is rewarding, it is a difficult career because of too few resources, too much paperwork, crowded classrooms, students with emotional problems, low salary and high-stakes standardized testing (Strauss, 2002). Humphrey and Humphrey (1986) estimated that teachers make more than 400 decisions a day. This is particularly true in agricultural education as teachers face the additional challenge of meeting both the traditional teacher role as well as the specific programmatic roles in their programs (Torres, Ulmer & Aschenbrener, 2007). Adding to frequent decision making, secondary agriculture teachers work well beyond a 40-hour work week preparing lessons, evaluating student work, coaching career development teams, and supervising student projects (Croom, 2003; Straquadine, 1990; Torres, Ulmer & Aschenbrener, 2007).

Job stress research relative to secondary agriculture teachers has implications for improving the nature of the job and providing insight into possible interventions. The most influential

framework for conducting research on job stress has been person-environment (PE) fit theory (Brewer & McMahan, 2004, Edwards & Cooper, 1990, Spielberger & Vagg, 1999). The PE fit theory is proposed as an approach for understanding the process of adjustment between individuals and their work environment (Caplan, 1987). According to the theory, stress and strain in the workplace result from the interaction of an individual with his or her work environment (Vagg & Spielberger, 1998). The interaction between an individual and his or her environment determines whether or not a situation is stressful for that person (Brewer & McMahan, 2004). When demands of the job exceed a person's ability to meet those demands the fit between an individual and their environment is incompatible; leading to a condition of stress.

PE fit theory identifies of two basic measures regarding a person and the environment. The first measurement is objective and the second is subjective. The objective environment indicates physical and social situations and events as they exist, independent of the person's perceptions, whereas the subjective environment refers to situations and events as perceived by the person (Edwards & Rothbard, 1999). This study focuses on subjective fit measures of PE because this study is concerned with job stress and the perceived misfit between perceptions and values.

Review of Literature

Teacher stress literature is a subset of a much larger effort to investigate the affects of job stress in a variety of occupations and settings (Guglielmi & Tatrow, 1998). However, stress in education is not new. Hans Selye, President of the International Institute of Stress, began conducting research on the topic of stress in education over forty years ago (Greenberg, 1984). Humphrey and Humphrey (1986) researched the affect of teacher stress. They reported that teachers averaged four and a half days of absences each year with a third of those absences being related to stress. In addition, it was reported that 35 percent of teachers indicated they called in sick due to fatigue and 84 percent believe that there were health hazards in teaching. Furthermore, 80 percent said their view of teaching had changed since beginning in the profession, and 23 percent admitted having a poor ability to cope with stress (Humphrey & Humphrey, 1986).

Many studies have attempted to identify the sources of stress in elementary and secondary school teachers (Borg & Riding, 1991; Farber, 1984; Friedman, 1991; Guglielmi & Tatrow, 1998; Kyriacou & Sutcliffe, 1978; Mazur & Lynch, 1989; Milstein, Golaszewski, & Duquette, 1984; Mykletun, 1984; & Olson & Matuskey, 1982). According to Cosgrove (2000), factors leading to teacher stress are students who are poorly prepared, student indiscipline, poor working conditions, time pressures, low job status, and conflicts with colleagues. Other factors leading to teacher stress include role overload, poor learner behavior, lack of resources, class size, diversity in individuals with whom they have to work, and lack of motivation of co-workers (Smylie, 1999).

Recognizing the variety of roles and responsibilities secondary agriculture teachers have is important in understanding their stress. Agriculture teachers draw upon physical, emotional and intellectual resources in order to be effective in the classroom (Cano, 1990). The phenomenon of increasing job responsibilities in agricultural education is well documented in the literature (Delnero & Montgomery, 2001). One early observation cited by the National Research Council

(1988) was that secondary agriculture teachers spend a great deal of time helping students excel in production oriented FFA competitive events and award programs and less time on classroom instruction. In recent years, more, not less has been added to the job responsibilities in agricultural education. Effective secondary agriculture teachers possess five common performance qualities of productive teaching behaviors: organized, structured class management, positive interpersonal relationships, professional responsibilities, and personal characteristics (Miller, Kahler, & Rheault, 1989).

The combination of varied teaching roles, the individual and the environment in which they teach are grounds for stressful situations. Research conducted by Heath-Camp and Camp (1990), and Myers, Dyer and Washburn (2005) on problems of beginning secondary agriculture teachers; and Cano (1990) and Croom (2003) on secondary agriculture teacher burnout are a sample of some research that related to the issue of agriculture teacher stress. However, there is a lack of research in the specific area of teacher stress among secondary agriculture teachers. Although a vast amount of research has been conducted on teacher stress nationally and internationally, secondary agriculture teachers have gone largely unstudied.

Purpose and Research Objectives

The purpose of the study was to explore and describe the level of job stress among secondary agriculture teachers in Missouri. The following research objectives guided the study:
1. Describe selected characteristics of secondary agriculture teachers (gender, years of experience, multi-teacher department, amount of time at work).
2. Describe the level of job stress perceived by secondary agriculture teachers.
3. Identify factors related to stress among secondary agriculture teachers with high stress.
4. Identify the highest/least stressors of secondary agriculture teachers.

Procedures

The design for this study was descriptive-survey research. The target population was Missouri secondary agriculture teachers ($N = 445$) during the 2007-2008 academic year. The frame was obtained from the Missouri Department of Elementary and Secondary Education Directory of Agricultural Education. Physical and email addresses for the agriculture teachers were also obtained from the directory. Deliberate effort was made remove duplicate names and ensure an accurate frame was obtained. For this study, a census was sought.

Instrumentation

Data were collected using the Job Stress Survey (JSS) developed by Spielberger and Vagg (1991). The JSS is a standardized, commercial instrument designed to measure job stress as a function of job-related items that are perceived to be a source of severe and frequent stress. The JSS contained three sections. Section one sought to determine teachers' perceived level of severity of 30 common job-related stressors using a scale from 1-9; nine being the most stressful measure.

The second section sought to determine the frequency teachers encountered the job-related stressor at work during the previous six months using a scale that ranged from zero days experienced to more than nine occurrences in the last six months (0 – 9+). The two responses (severity and frequency) were used to produce three stress index scores: Job Stress Index (JS-X), Lack of Support Index (LS-X), and Job Pressure Index (JP-X). Index scores were calculated by multiplying severity scores by frequency scores. In addition to the three index scores, six subscales were produced to measure various forms of stress. They included: Job Stress-Frequency (JS-F), Job Stress-Severity (JS-S), Lack of Support-Frequency (LS-F), Lack of Support-Severity (LS-S), Job Pressure-Severity (JP-S) and Job Pressure-Frequency (JP-F). A third section was added to the questionnaire which sought teachers' personal, home and work-related information.

Spielberger and Vagg (1999) report that validity and reliability of the JSS were established through the results of previous studies. The creation of the instrument was detailed in the *Job stress survey: Professional Manual.* The manual further reported that the job-related items in the JSS were analyzed for construct validity using factor analysis. Alpha coefficients of .89 or higher for the JS-X, JS-S, and JS-F, and .80 or higher for the 10-item JP and LS subscales were reported (Spielberger & Vagg, 1999).

Data Collection

Data were collected during the months of March and April of 2008. For secondary teachers in Missouri, this period of time can be characterized as representing a high level of activity to included FFA Career Development Event activities as well as typical spring academic semester, instructional activities and events. Three points of contact with teachers were made to collect data. The data collection process began by sending teachers a signed 3"x5" pre-notice postcard announcing the intent of the study and the forth coming email. Two days later a personalized email using the HostedSurvey.com service which included the personalized URL hyperlink to an online questionnaire was sent to subjects. The beginning page of the online instrument contained an opening page message to the teachers detailing the importance of the study and their participation; as well as instructions for completing the online questionnaire. An email reminder was sent via HostedSurvey.com to those who had not responded by the specified date. The email, including the URL (again), further encouraged teacher participation. As a result, a response rate was 42% (n = 193) was achieved.

Teachers who responded were assumed to represent response bias. Miller and Smith (1983) suggested procedures for examining response bias by comparing a sampling of non-respondent data to respondent data. Toward that end, two weeks after the first reminder email, a random sample representing 30% (n = 71) of the non-respondents was taken. The sample size was determined following the suggestion of Miller and Smith (1983). Non-respondents were sent a mailed envelope packet containing a revised and signed cover letter, a paper copy of the questionnaire, and a self-addressed, stamped return envelope as a reminder to participate in the study. The final contact with non-respondents was approximately 20 days after the initial mailing, and consisted of a personalized email with a personalized link to the online questionnaire. These efforts yielded an 83% (n = 59) response rate.

Data from respondents (*n* = 193) and non-respondents (*n* = 59) were statistically compared on the primary variables of interest (J S-X, LS-X, and JP-X). Using an independent samples t-test, no significant (*p* < .05) differences were found between the respondent and non-respondent data. Thus, non-respondent data were pooled with the respondent data, yielding a total response rate of 252 (57%) acknowledging some remaining potential for response error (Miller & Smith, 1983). All returned and/or submitted questionnaires yielded usable data. Data were coded by the researchers and analyzed using SPSS (v.15). Frequencies and percentages were reported and measures of central tendencies and variability were used to summarize the data. Correlation analysis was used reporting Person-Product Moment correlations; describing the correlation magnitudes using Davis' (1971) conventions. An alpha level of .05 was set *a priori*.

Results

Research question one sought to describe characteristics of secondary agriculture teachers and the schools where they taught. Table 1 displays these characteristics. There were 174 (73%) male teachers and 65 (27%) female teachers. The majority (74%) of secondary agriculture teachers work 46-65 hours a week. Approximately half (*f* = 111) of the teachers were employed in a single teacher agricultural education department. In addition, agriculture teachers had an average of 11 years teaching (*SD* = 8.52) experience with individuals experiences ranging from 1 to 37.

Table 1
Characteristics of Secondary Agriculture Teachers (n = 252)

Characteristic	*f*	%	*M*	*SD*	Range
Gender					
Male	174	72.8			
Female	65	27.2			
Hours a Week at Work					
36-45 hours	13	5.4			
46-55 hours	85	35.6			
56-65 hours	92	38.5			
66-75 hours	39	16.3			
75+ hours	10	4.2			
Number of Teachers in Department			1.72	.82	
1	111	46.4			
2	93	38.9			
3	26	10.9			
4	8	3.3			
5	1	0.4			
Number of Years Teaching			11.41	8.52	1 - 37

Research objective two sought to describe the level of job stress among Missouri secondary agriculture teachers in terms of overall Job Stress (JS-X), Job Pressure (JP-X), and Lack of Support (LS-X). The job stress results in Table 2 reveal that secondary agriculture teachers are in the 60th percentile of managerial/professional norm data on the Job Stress Index. Managerial/professional was chosen as the norm data over the other norm group offerings

reported in the manual because it most closely resembled the population being studied. Secondary agriculture teachers are also in the 69th percentile on Job Pressure Severity and in the 68th percentile on the Job Pressure Index. However, agriculture teachers are in the 26th percentile among managerial/professionals on Lack of Support Severity and in the 56th percentile on Lack of Support Index.

Table 2
Secondary Agriculture Teacher Job Stress Survey Results (n = 252)

	Agriculture Teacher Data		M/P Norm Data[c]
	M	*SD*	*% ile*
Job Stress			
Severity[a]	4.78	1.34	41
Frequency[b]	3.77	1.58	51
Index	22.38	12.21	60
Job Pressure			
Severity[a]	5.15	1.41	69
Frequency[b]	4.83	1.91	53
Index	28.61	14.73	68
Lack of Support			
Severity[a]	4.76	1.67	26
Frequency[b]	3.07	1.92	51
Index	19.43	14.94	56

Note: [a]scale= 1-9 with 1=low, 5=moderate and 9=high; [b]scale= 0-9 representing number of occurrences in the last six months; [c]M/P= Managerial/Professional

Of the 252 secondary agriculture teachers, thirty-five percent (*n* = 87) scored at or above the 70th percentile of the Managerial/Professional norm data, indicating they experience high levels of stress (JS-X score ≥ 25.07). Table 3 identifies the association of selected teacher characteristics with job stress score (JS-X) among secondary agriculture teachers who are under high stress. Correlational analysis revealed only one significant teacher characteristic related to stress (JS-X); hours worked per week (*r* = .33; *p*<.05). Other bivariate associations (gender, number of teachers in the program and teaching experience) were not statistically significant (*p*>.05) and negligible.

Table 3
Characteristics Associated with Job Stress among High Stress Teachers (n = 87)

Job Stress Index (JS-X)	*R*	*p-value*
Gender[a]	-.07	.55
Hours Worked per Week	.33	.01*
Number of Teachers	-.04	.69
Number of Years Teaching	-.06	.58

[a]Gender: 1 = Male, 2 = Female; *p<.05

Table 4 identifies the 10 highest stressors as reported by secondary agriculture teachers and corresponding norm percentiles for other managerial/professionals. For item analysis, Spielberger and Vagg indicated that special attention be given to items where the index score is

more than one half of the standard deviation above the mean for the comparison group. As revealed by the Job Stress Index (JS-X) score, the most stressful item for secondary agriculture teachers is "excessive paperwork" ($M = 53.05$, $SD = 26.09$) indicating a high level of severity ($M = 7.07$, $SD = 1.95$) and frequency ($M = 7.03$, $SD = 2.66$). Teachers also rated "working overtime" ($M = 43.2$, $SD = 22.77$), "meeting deadlines" ($M = 41.87$, $SD = 25.90$)," insufficient personal time" ($M = 31.42$, $SD = 28.89$), and "fellow workers not doing their jobs" ($M = 30.08$, $SD = 28.76$) as being stressors; each above the national norm for managerial professionals.

Table 4

High Stress Items among Secondary Agriculture Teachers (n = 252)

| | Secondary Agriculture Teachers | | | | | | M/P[c] Norm Data | |
| | JS-X | | Severity[a] | | Frequency[b] | | JS-X | |
Stressor	M	SD	M	SD	M	SD	M	SD
Excessive paperwork	53.05	26.09	7.07	1.95	7.03	2.66	31.09	25.18
Working overtime	43.20	22.77	5.38	2.24	7.91	2.26	23.40	21.25
Meeting deadlines	41.87	25.90	6.01	2.19	6.40	2.99	32.68	22.59
Frequent interruptions	32.32	24.33	4.71	2.27	6.09	3.24	36.04	24.27
Insufficient personal time	31.42	28.89	4.98	2.55	5.10	3.65	11.94	19.62
Fellow workers not doing job	30.08	28.76	5.60	2.65	4.33	3.44	27.68	25.69
Inadequate salary	28.21	29.83	5.28	2.45	4.17	3.96	28.70	30.87
Critical on-the-spot decisions	26.82	19.62	4.57	2.01	5.64	2.94	22.11	18.45
Inadequate/poor quality equipment	26.47	25.83	5.18	2.40	4.24	3.40	22.51	25.15
Poorly motivated co-workers	26.44	28.02	4.95	2.54	4.12	3.49	21.79	23.99

Note: [a]: scale= 1-9 with 1=low, 5=moderate and 9=high; [b]: scale= 0-9 representing number of occurrences in the last six months; [c]: M/P= Managerial/Professional

Table 5 displays items that ranked as the 10 lowest of the 30 stressors among secondary agriculture teachers. Ranking as the lowest stress item was "periods of inactivity" ($M = 4.55$, $SD = 9.33$), stemming from low severity ($M = 2.79$, $SD = 2.00$) and low frequency ($M = 1.30$, $SD = 1.92$) scores. Agriculture teachers also rated "insufficient personnel" ($M = 14.21$, $SD = 19.75$) well below the national norm for managerial/professionals.

Table 5
Low Stress Items among Secondary Agriculture Teachers (n = 252)

Stressor	JS-X M	JS-X SD	Severity[a] M	Severity[a] SD	Frequency[b] M	Frequency[b] SD	M/P[c] Norm Data JS-X M	M/P[c] Norm Data JS-X SD
	Secondary Agriculture Teachers						M/P[c] Norm Data	
Dealing with crisis situations	17.87	19.21	5.21	2.31	3.06	2.69	28.63	22.51
Noisy work area	17.40	22.51	3.44	2.22	4.01	3.83	18.35	22.78
Personal insult from student/parent/ colleague	16.86	21.00	5.18	2.56	2.67	2.69	10.78	16.90
Frequent change from boring to demanding	14.53	18.31	3.55	2.06	3.40	3.36	14.23	17.94
Insufficient personnel	14.21	19.75	4.57	2.30	2.48	2.76	32.63	27.75
Difficulty getting along with supervisor	12.04	21.42	4.29	2.79	1.86	2.72	9.01	17.81
Lack of opportunity for advancement	11.16	19.02	4.11	2.29	1.88	2.86	19.30	27.51
Poor or inadequate supervision	10.16	17.35	3.60	2.20	2.00	2.83	13.75	22.02
Competition for advancement	5.10	12.84	3.31	2.06	0.98	1.93	11.22	19.52
Periods of inactivity	4.55	9.33	2.79	2.00	1.30	1.92	6.31	13.86

Note: [a]: scale= 1-9 with 1=low, 5=moderate and 9=high; [b]: scale= 0-9 representing number of occurrences in the last six months; [c]: M/P= Managerial/Professional

Conclusions, Implications and Recommendations

A profile of secondary agriculture teachers in Missouri suggest they are mostly male, have an average of 11 years of teaching experience, and about half work in single teacher agricultural education departments. Almost all teachers reported working more than forty five hours per week.

However, based upon the findings of the study, secondary agriculture teachers in Missouri, on average, are not in a state of overall stress. According to the Job Stress Survey manual, stress scores above the 70th percentile (or a group mean equal to or greater than 25.07) on a comparable norm data suggest a state of stress. While this does not indicate overall stress, the scores are relatively high and there are some individual items that rate well above national norms for managerial and/or professional occupations. However, approximately one-third of the agriculture teachers in this study are in a state of stress scoring at or above the 70th percentile. This draws a parallel to statistics reported by the American Psychological Association (2007) that one-third of people in the U.S. regularly experience stress. Job Pressure was the highest norm percentile score at 68, including a job pressure severity score at the 69th percentile.

For the 35% of teachers who are in a state of stress, the more hours a week that were spent on school work the more stress they appear to be. Agriculture teachers working overtime should

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be identified and given proper guidance and support. These teachers might benefit from a time management workshop to help reduce stress induced by long work weeks.

Secondary agriculture teachers indicated that they felt a frequent overall lack of support, including financial and collegial. This could lead to a feeling of isolation or disenfranchisement. Teachers should begin to build strong community relationships and, if not already in place, work to build an advisory council to support the program and the teacher. Involvement in professional organizations may also fill the role of supporting these agriculture teachers. Take advantage of summer institutes and in-service opportunities to make connections and gain support from other teachers with similar instructional interests.

The Person-Environment fit theory suggests that physical, mental and/or emotional stress occurs when a person does not fit their environment. With the secondary agriculture teachers, it appears it is not the work area or the supervisors that are creating stress. A majority of the high stress items tend to represent time issues (i.e., "working overtime", "meeting deadlines", and "insufficient personal time"). This might suggest that teachers would benefit from in-service training in time management. This state should offer various forms and offerings of time management training during summer institutes or summer conference as a professional development opportunity.

Two other high stress statements found were "poorly motivated coworker" and "fellow workers not doing job" which supports what was found in the literature. This is classified as the environmental component of the PE fit model. Individual school administrators and program directors need to be aware of how the characteristics of the workplace create stress among the teachers. District administrators need to institute a proactive employee assistance program to manage stress in the schools.

Two job-related issues dealing with proper funding ("inadequate salary", "inadequate/poor quality equipment") also contribute to high stress among the agriculture teachers. The lack of resources such as salary and/or equipment is making the teaching environment more stressful. Local and state government should re-examine allocation procedures to ensure agriculture programs are receiving proper financial support and that teachers are being compensated fairly.

Low stress items can be generalized as work surroundings and/or support issues (i.e., "noisy work area", "difficulty getting along with supervisor", and "poor or inadequate supervision"). This would tend to indicate that school personnel and setting itself contribute minimally to secondary agriculture teachers' stress. It is important to recognize the job related items that are not perceived as teacher stressors so that adequate focus can be shifted from these items to the high stress items. Good management and continuous monitoring by administrators will ensure that these remain low stress items while on the job.

Secondary agriculture teachers will benefit from further examination of stress to help explain contributing factors. For example, can personal (e.g., gender and/or personality) or family (e.g., marital status and/or number of children at home) attributes explain stress levels among agriculture teachers? Other factor variations within agricultural education include single

versus multi-teacher departments, region of the state, and years of teaching experience. Additional, the benefits of employee assistance programs for teachers should researched to identify programs that are successful at reducing or maintaining low stress levels. Furthermore, the agricultural education profession, in general, would benefit from understanding the characteristics of low and high stress teaching environments.

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DOES MIND MATTER?
MIND STYLES[TM] AND RELATIONAL SATISFACTION AMONG AGRICULTURAL EDUCATION MENTOR/PROTÉGÉ PAIRS

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Abstract

Agricultural education is facing a teacher shortage. As a result, many states have implemented a mentoring program to help retain early career teachers. One of the challenges facing mentoring programs is the process of creating successful pairs. The purpose of this study was to determine if the Mind Styles[TM] of mentors and protégés influenced satisfaction with the mentoring relationship. The study also describes the demographics, Mind Styles[TM], and relational satisfaction scores of both mentors and protégés. Data were collected using the Gregorc Style Delineator™ as well as the Mentoring Relationship Questionnaire. The target population for this study was all mentors and first year protégés in Missouri. The average age of mentors was 40.83 with the average protégé being 25.28 years of age. The mentor group was 80% male while the protégés were 69% male. The group was largely Concrete Sequential, but all styles did appear at least once. Differences in relational satisfaction based on Mind Style™ combinations were found for three different combinations. A huge effect size was found for the Concrete Sequential mentors and Abstract Random protégés, indicating a difference in satisfaction.

Introduction/Theoretical Framework

The federal *No Child Left Behind Act* called for strengthening and improving teacher quality in all educational areas (Bush, 2002). In order to meet rising educational expectations, it has become more and more important to not only improve teacher preparation at the university level, but to also provide additional assistance to young teachers in the field. Such initiatives are not new to education. In fact, the National Commission on Teaching and America's Future (1996) suggested a number of strategies for supporting beginning teachers, one of which emphasized the development of an effective induction program that utilized teacher mentoring. Specifically, within the field of agricultural education in which many teachers are known to leave the professional within the first five years, an effective induction program could contribute to teacher retention. As Camp, Broyles and Skelton (2002) noted, agricultural education faces an ongoing shortage of qualified teachers in the field.

In Missouri, a mentoring program has been established to address issues encountered by beginning teachers. As early as 1985, the *Excellence in Education Act* was passed by the state legislature. It required school districts to not only provide professional development for all teachers, but to also assign a formal mentor to beginning teachers (Department of Elementary and Secondary Education [DESE], 1988). In effort to comply with the policy, many school districts paired beginning teachers with mentors from within their school district. As a consequence, most beginning agriculture teachers were matched with mentors outside of their discipline.

In 2003, DESE mandated that each Division of Career and Technical Education (CTE) provide structure and support for mentor programs. At that time, CTE programs began providing beginning agriculture teachers with formal mentors from within their own discipline.

According to minutes of the May 2007 Agricultural Education Joint Staff meeting, current requirements for the mentoring program stipulate that all new teachers who have not completed a formal mentoring program must participate. Mentors for beginning teachers were to be chosen by district supervisors with specific guidelines serving as parameters for the selection of mentors. The parameters for mentors included the following requirements: a) must be from the same area, b) must not be a cooperating teacher, c) should advise a superior FFA chapter; d) must have buy in from the protégé, e) must attend the same professional meetings as their protégé, f) must fulfill the SAE requirements for cooperating teaching centers in the state. A maximum of two protégés may be assigned per mentor, and, if more than one protégé is assigned to a single mentor, both protégés must be in the same year of the program (Joint Staff Minutes, May 2007).

Greiman, Birkenholz and Stewart (2003) investigated mentoring in agricultural education, specifically addressing the perceptions of formal mentors and novice teachers in terms of psychosocial assistance. Most recent studies have focused on mentoring programs where the mentor was a teacher within the novice teacher's school. Peiter, Terry, and Cartmell (2003) found that many first year agricultural educators experience problems during their first year of teaching and receive no help from a mentor. This finding is important because recent legislation requires and finances a *mandatory* mentoring program for all novice teachers in Missouri, not just CTE teachers (DESE, 2007).

The study of beginning teachers and mentors by Greiman et al. (2003) sought to determine the satisfaction of both mentors and protégés with the mentoring process and the similarity of their relationship. This study showed that mentors were more satisfied with the mentoring process than beginning teachers. In addition, mentors also perceived more of a similarity among the pair than did beginning teachers. Data showed a significant positive relationship between perceived satisfaction and perceived similarity among both mentors and protégés. Nonetheless, in most mentor/protégé pairings, little to no consideration is given to identifying similarities between mentors and protégés. Quite often, other factors, such as location, availability and other convenience-related factors seem to play a larger role in the selection.

Interestingly, within agricultural education, much research has been done on the effects of preferred mind styles. Personality type has been used to assist teachers in understanding learning styles, communication styles, relationships, teamwork and leadership (Hammer, 1996). Dyer and Osborn (1996) working with the idea that an instructional method that corresponds to each preferred style found that by matching instructional styles to preference, the quality of instruction was improved. Further, it was reported that students enrolled in a college of agriculture were primarily field independent learners when completing the Group Embedded Figures Test (GEFT) (Cano, 1999). It should be noted that a field independent learner is the equivalent of a CS/CR on the Gregorc Style Delineator™ (Myers & Dyer, 2006).

The Gregorc Style Delineator™ (Gregorc, 1982) is designed to reveal two types of mediation abilities: perception and ordering. Gregorc defines perceptual abilities as the means

through which individuals grasp information. These perceptual abilities emerge on a continuum, which consists of abstractness and concreteness at opposing ends. Concrete people tend to grasp concepts that they can experience through their physical senses of touch, taste, sight, smell and hearing. In addition, people who are concrete, often see the world as right or wrong and black or white. Generally, abstract people would see shades of grey and recognize areas in which things could be right *and* wrong.

Gregorc (1982) also describes the way an individual arranges, systematizes, and references information. This is known as their ordering abilities. Ordering abilities are represented by a continuum ranging from sequenced to random. For example, some individuals can only process information if it is given in a logical, ordered manner (sequenced). If information is not presented in this way, they will typically have to put the information into some kind of sequence before processing it. Meanwhile, a random person can process information in an atypical and seemingly "random" manner. By placing a person's learning style within this continuum, they can be classified into one of four learning styles: Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), or Concrete Random (CR).

While Gregorc (1982) identifies four separate Mind Styles™, no one style is considered to be better or worse than the others. Every individual can learn in any situation. However, everyone has a preferred Mind Style™. Gregorc noted that very few learners are flexible enough to reach far beyond their own *perception* and *ordering* abilities. Could this have a consequence when looking at mentor and protégé relationships? Would such information have the potential to improve mentor/protégé pairings? If protégés were paired with more similar mentors, would the mentoring process be more successful? To address such questions and determine if a difference exists between relational satisfaction based on Mind Style™, this study sought to move from *perceived* similarity to *measured* similarity.

Theoretical Framework

Kram (1985) described mentoring as a developmental relationship in which mentors provide functions that enhance both an individuals' growth and advancement. According to Kram's mentor role theory, there are two types of functions of a developmental mentoring relationship: career functions and psychosocial functions. This classification provides a theoretical framework in which mentoring relationships can be evaluated.

Psychosocial functions serve to build up the identities, competence, and effectiveness of the protégés and the mentors in their professional roles. These functions include acceptance, counseling, friendship, and role modeling. The fifth psychosocial function, social, was incorporated into the theory later (Ragins & McFarlin, 1990). Kram (1985) also suggested that the larger the number of functions that are provided by the mentor, the more beneficial the relationship would be to the person being mentored. Since studies have indicated that mentor/protégé pairs who think they are similar perceive a better experience, it logically follows that those mentors would provide a better experience for their protégés.

Purpose/Research Questions

The purpose of this study was two-fold. First, the study sought to describe the relational satisfaction of agricultural education mentors and protégés. Additionally, the study sought to explain the difference in satisfaction with the relationship based on Mind Style™. Four research questions were developed to guide the study:

1. What are the demographic characteristics of agricultural education mentor/protégé pairs in Missouri?
2. What is the level of relational satisfaction of mentors and protégés in Missouri?
3. What is the Gregorc Mind Style™ (AS, CS, AR, CR) of agricultural education mentors and protégés?
4. What is the difference in the level of relational satisfaction based on the Mind Style™ combination between mentors and protégés?

Methodology

The study was descriptive-survey research. The target populations for the study were agriculture teachers in Missouri during their first year of teaching during the 2007-2008 school year (*N*=32), and their assigned mentors (*N*=28). Due to the small target population, a census was appropriate.

Two instruments were used in the study: the Gregorc Style Delineator™ (GSD) and the Mentor Relationship Questionnaire (MRQ). The Gregorc Style Delineator™ is a commercially available instrument with established validity and reliability.

When completing the GSD, users must rank their feelings using numbers one through four on 40 words especially chosen to illicit a positive or negative psychological association (Gregorc, 1997). The user then totals the values to reveal a style profile which includes a score for perceptiveness ranging from Abstract (A) to Concrete (C) and a score in ordering ability from Random (R) to Sequential (S). These two scores create four possible style combinations: AS, CS, AR, CR (Gregorc, 1997). Gregorc established validity for the GSD and reported reliability with alpha coefficients from 0.85 to 0.88. In addition, Gregorc published internal consistency reliability coefficients ranging from 0.89 for the AS scale to 0.93 for the AR scale (Gregorc, 1982b).

The relational satisfaction of the mentors and protégés was collected using the MRQ, developed by Greiman in 2002 and revised in 2004. Section one of the beginning teachers' version of the instrument asked subjects to identify the extent to which their mentoring relationship met their psychosocial needs. There were 15 statements in this section, representing each of the 5 areas of psychosocial function (acceptance, counseling, friendship, role modeling and social.) The next section had the user identify the extent to which their mentor met those needs. The third section required the user to rate their perceived likeness and their perceived level of satisfaction with the relationship. The final section collected demographic information. An alternate form of this instrument was created to survey mentors and it followed the same design as the protégé instrument.

Validity for both forms of the MRQ was established through prior research with a panel of experts (N=8) who had an identifiable research focus on mentoring (Greiman, 2002). Reliability

estimates for the perceived satisfaction section of the instruments were reported as alpha coefficients equaling .99 for the beginning teacher version and .98 for the mentor version (Greiman, 2002).

The Gregorc instrument was administered to both mentors and protégés as part of the state's Fall Mentor/Protégé Conference. The results were collected during a workshop that taught the participants about their Mind Style™ and how they could use that knowledge to have a better relationship with each other. In order to obtain data from non-respondents, absentees were asked to complete the GSD while attending fall area meetings. This was data collection procedure was acceptable since Mind Style™ is not time sensitive.

All participants received a pre-participation e-mail regarding the impending survey. The MRQ was mailed on March 1, 2008 with a cover letter signed by the program administrator. Also included was a return envelope with paid postage was included. Those subjects who had not responded within 10 days received a follow-up e-mail to encourage their participation. One week later, a second package was sent to non-respondents. A final contact via phone was made approximately 25 days after the initial packets were mailed to encourage participation. The resulting response rate was 100% ($n = 28$) for mentors and 78% ($n = 25$) for protégés. Early responders were compared to those who responded after personal contact and no significant differences were found (Miller & Smith, 1983). As a result, it was concluded that the responding sample appropriately represents the population. For the purposes of data analysis, however, only complete data sets could be utilized yielding 23 pairs of useable data (mentors: n = 23, 82%; protégés: n = 23, 72%). To address research questions one, two, and three, descriptive statistics were calculated as appropriate. Based upon the type of data involved, frequencies, percentages, means, standard deviations and ranges were calculated. To address research question four, mentor/protégé pairs were identified by the Mind Style™ combination. For comparisons with more that one pair, Cohen's *d* was calculated to identify differences in relational satisfaction.

Findings

Research question one sought to describe the demographic characteristics of agricultural education mentors and protégés (see Tables 1 and 2). A total of 46 mentoring program participants completed the demographics component of the mailed questionnaire. The ages of mentors ranged from 26 to 60 years ($M = 40.30$; $SD = 9.51$). Ages of protégés' ranged from 22 to 36 years ($M = 25.30$; $SD = 3.86$). A total of 17 (73.91%) mentors were male. Similarly, with regard to protégés, 15 (65.21%) were male, while 8 (34.78%) were female. The mentors had from 2.5 to 30 ($M = 15.24$; $SD = 7.86$) years of experience.

Table 1
Demographic Characteristics of Mentors (n =23)

	f	*%*	*M*	*SD*	Range
Sex					
Male	17	73.91			
Female	6	26.09			
Age			40.30	9.51	26-60
Years Taught			15.24	7.86	2.5-30

When asked about the type of school the protégés taught within, 20 (87%) taught in a comprehensive high school. The certification status of 5 (21.78%) protégés was found to be temporary. The protégés taught in departments ranging from 1 to 3 (*M* = 1.52; *SD* = 0.59) teachers. The protégés had an average of slightly more than 92 (*SD* = 58.53; Range = 25-280) students in their program.

Table 2
Demographic Characteristics of Protégés (n = 23)

	f	*%*	*M*	*SD*	Range
Kind of High School					
Comprehensive	20	87.00			
AVTS Career Center	3	13.00			
Sex					
Male	15	65.21			
Female	8	34.78			
Certification Status					
Certified	18	78.26			
Temporary	5	21.74			
Age			25.30	3.86	22-36
Number of Students			92.26	58.53	25-280
Number of Instructors			1.52	0.59	1-3

Research question two sought to describe the level of relational satisfaction of agricultural education mentors and protégés. Responses to five items included on the MRQ were used to describe the level of relational satisfaction using a seven-point Likert scale, ranging from Strongly Disagree to Strongly Agree. For ease of interpretation, responses were reduced into three categories: disagree, neutral, and agree. As shown in Table 3, a higher percentage of protégés responded more favorably to the items than did mentors. When asked about the mentoring experience, approximately 87% of the mentors agreed it was positive. Within the protégés, 95.65% agreed it was a positive experience. As for the opportunity to interact with their counterpart, almost 87% of the mentors agreed that they were glad for the opportunity. Approximately 65% of the protégés agreed that they were glad for the opportunity to interact. Mentors and protégés were asked if the relationship was successful. Over 95% of the protégés indicated that the relationship was successful. In comparison, just over 82% of the mentors indicted the relationship was successful. Approximately, 9% of the protégés indicated that if they were in the program again, they would not want the same mentor, while approximately 9% of the

mentors would not want the same protégé. Over 91% of mentors and protégés, were satisfied with the interaction within the pairs.

Table 3

Descriptive Statistics for Perceived Relational Satisfaction of Mentoring Program Participants (n = 46)

	Protégés						Mentors					
	Disagree		Neutral		Agree		Disagree		Neutral		Agree	
Question	f	%	f	%	f	%	f	%	f	%	f	%
The relationship has been a positive experience.	1	4.35	0	0.00	22	95.65	2	8.70	1	4.35	20	86.95
I am glad I had the opportunity to interact with my entry-year mentor/beginning teacher protégé.	1	4.35	0	0.00	22	95.65	1	4.35	2	8.70	20	86.95
The relationship has been successful.	1	4.35	0	0.00	22	95.65	2	8.70	2	8.70	19	82.60
If I had it to do over again, I would want the same entry-year mentor/beginning teacher protégé.	2	8.70	0	0.00	21	91.30	2	8.70	3	13.04	18	78.26
I was satisfied with the interaction.	2	8.70	0	0.00	21	91.30	2	8.70	0	0.00	21	91.30

Note. Protégés (*n* = 23); Mentors (*n* = 23).

Overall, both protégés (*M* = 6.20; *SD* = 1.33) and mentors (*M* = 5.64; *SD* = 1.38) were satisfied with their relationships, as indicated by mean summated scores within the range of the Agree and Strongly Agree categories (see Table 4).

Table 4

Descriptive Statistics for Summated Mentoring Relationship Satisfaction (n = 46)

	M	SD	Range
Mentor	5.64	1.38	1.00 – 7.00
Protégé	6.20	1.33	1.40 – 7.00

Note. Mentors (*n* = 23); Protégés (*n* = 23).

Research question three sought to describe the Mind Styles™ of mentoring program participants. Frequencies and percentages for each of the four Mind Styles™ are shown in Table 5. Based on the descriptive statistics provided, the largest proportion of agricultural education mentors involved in the mentoring program are classified Concrete Sequential (CS) (58.62%). Conversely, only one mentor was classified as Abstract Random (AR). Similarly, the majority (76.92%) of protégés were classified as Concrete Sequential. Only six protégés were not Concrete Sequential, with three classified as Abstract Random, two as Abstract Sequential and one classified as Concrete Random.

Table 5

Mind Styles™ of Mentoring Program Participants as Measured by the Gregorc Style Delineator™ (n = 46)

	Mentors		Protégés	
Style	*f*	*%*	*f*	*%*
Concrete Sequential	14	60.87	17	73.91
Concrete Random	5	21.74	1	4.35
Abstract Sequential	3	13.04	2	8.70
Abstract Random	1	4.35	3	13.04

Note. Mentors (*n* = 23); Protégés (*n* = 23).

In order to further analyze the pairings of mentors and protégés and assess similarities in Mind Style™, Table 6 provides a listing of mentor/protégé combinations, and the frequencies and percentages for each pairing. The most frequent combination is CS-CS (47.83%), 13% (f = 3) of the population was categorized as CR-CS. Half of the possible combinations did not appear in our population. It should be noted that the combinations reflect mentor/protégé pairs, in that order. The mean score for each combination is also presented for each group.

Table 6

Comparison of Mentor and Protégé Relational Satisfaction within Mind Styles^{TM} Pairs (n=23 pairs)

			Mentor		Protégé	
Combination	*f*	*%*	*M*	*SD*	*M*	*SD*
CS – CR	1	4.35	5.00	-	6.00	-
CS – AR	2	8.70	5.50	0.71	7.00	0.00
CS – CS	11	47.83	5.42	1.72	5.80	1.76
AS – CR	2	8.70	6.50	0.71	6.30	0.42
AS – CS	2	8.70	6.80	0.00	6.70	0.42
CR – AS	1	4.35	4.00	-	7.00	-
CR – AR	1	4.35	6.60	-	7.00	-
CR – CS	3	13.04	5.53	1.29	6.27	1.10

Note. no pairing for CS-AS, AS-AS, AS-AR, AR-AR, AR-AS, AR-CR, AR-CS, or CR-CR.

Research question four investigated the difference in summated relational satisfaction scores as measured by the MRQ, as based on the GSD combination of mentor/protégé pairs. Due to the small population, several of the Mind Style™ combinations did not have more than one pair and several had none. For the combinations that had one pair, differences can only be observed. The CR – AS combination appears to have a large difference in relational satisfaction with the mentor indicating a 4.00 summated total and the protégé indicating at 7.00 total. The other combination with a noticeable difference was the CS – CR combination. The mentor rated a 5.00 summated total and the protégé had a 6.00 total. For the combinations that had more than one pair, a Cohen's d (Thalheimer & Cook, 2002) was calculated. The CS – AR combination had a huge effect size with a Cohen's d of 3.05. The combination of CS – CS had a small effect size with a Cohen's d of 0.16. The Cohen's d for the AS – CR combination was 0.35 creating a small effect size. Likewise the AS – CS combination had a small effect size with a Cohen's d of 0.34. The CR – CS combination had a medium effect size with a 0.63 Cohen's d.

Conclusions/Implications/Recommendations

Most mentoring program participants are male, including over 80% of mentors and nearly three-quarters of all protégés. These numbers might indicate a changing demographic among the early career teachers with more females becoming teachers of agricultural education. If so, could this indicate a potential demand for female mentors in the future?

With regard to age, perhaps the most interesting finding was the range of ages among both mentors and protégés. Age for mentors ranged from 26-60 with protégés ranging from 22-36. Such a large range of ages among mentors could be a result of the need to satisfy state requirements. The age range for the protégés could indicate increased lateral entry or second career professionals entering the field.

The findings related to satisfaction with the current mentoring relationship indicate that both mentors and protégés are satisfied, although protégés are more satisfied than mentors. What, if anything, could be done to increase the satisfaction of mentors involved in the mentoring relationship? What factors contribute to their slightly lower satisfaction? The program has been designed to assist teachers in their first year of teaching, therefore, a high relational satisfaction is a positive outcome. Since the importance of the program has been stressed to the mentors, could their lower satisfaction be a factor of self-efficacy? Professionals know the importance of a quality mentor. The mentor teachers might be indicating that they could have done more in the relationship.

Approximately 10% of protégés would not choose the same mentor if they could choose again. Although they would not choose the same mentor, overall relational satisfaction was still high, implying that the protégés still benefitted from the mentor despite a less than perfect experience. The program must continue to improve the process of assigning mentor to protégés. While identifying mentors, input should be collected from many sources (i.e. teacher educators, state personnel, protégés, etc).

The GSD results for the group studied seemed to support the findings of Cano (1999) where he found that many college of agriculture students are field independent. The subjects in this study were college of agriculture students, and therefore, it should not be surprising that 59% of mentors and 77% of protégés were Concrete Sequential. As Myers and Dyers (2006) indicated, a field independent learner according to the GEFT is the equivalent to a Concrete Sequential or Concrete Random on the GSD.

The GSD has many implications for assessing relationships, particularly between and among teachers and students. The findings for this group of mentors and protégés investigated in indicated that Mind Style™ did not affect the relational satisfaction. Further, a mentor/protégé relationship can be similar to a teacher/student relationship, but is not necessarily the same. Transfer of knowledge and/or information was not measured within this study. Perhaps the mentors and protégés were satisfied with the relationship and Mind Style™ was not a factor in the relationship. However, could Mind Style™ be a factor in the teaching and learning process between the individuals? Further study is necessary to investigate this topic.

Although the small population created complications when determining the difference in satisfaction based on Mind Style[TM], some differences were found. Through observation, it appears that mentors were less satisfied with the relation in the CS – CR combination and the CR – AS combination. The huge effect size for the CS – AR combination indicates a disconnect in the relational satisfaction. The lower satisfaction for the mentors may indicate that concrete sequential mentors have difficulty working with the abstract random protégés. The abstract random protégés don't mind the structure of the mentors, but the concrete sequential mentor has a hard time dealing with the protégés. Since these differences are based on small numbers, changes to the mentoring selection should be made, but data should be collected on more pairs of mentors and protégés.

It should be noted that the small number of pairs in several of the style combinations created difficulty in data analysis. Therefore, it is recommended that a multiple year population be studied to increase the usable data.

Ultimately, as a result of this study and its findings, the following recommendations for further research are suggested: 1) explore what could make the mentoring experience more positive for mentors, 2) replicate the study with future years' mentors and protégés involved in the program to conduct a longitudinal trend type study, and finally, 3) expand the study to include a larger population, thus increasing the size of N.

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WHAT DO AGRICULTURAL EDUCATION STUDENTS WANT?
MEETING OUR STUDENTS' NEEDS THROUGH FACULTY ADVISING

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Abstract

Each and every year, students enroll in courses at post-secondary institutions across the country. Unfortunately, not all of those students complete the degree they intend to complete. In the field of agricultural education, this loss of students may contribute to the secondary teacher shortage currently faced in many states. When student satisfaction and student attrition have been studied, many researchers have indicated links between student persistence and meaningful interaction with faculty members. Academic advising, particularly when delivered by faculty members, provides one opportunity for such meaningful interaction. This study sought to explore this concept further, with agricultural education students at the University of Missouri. Overall, students indicated a high level of importance for many academic advising characteristics and reported a high level of satisfaction with faculty advisors' performance. Using the Borich needs assessment model, twelve academic advising characteristics were identified for potential enhancement. The three items with largest mean weighted discrepancy scores related to identifying employment opportunities after college, providing information about financial assistance and on campus employment.

Introduction/Theoretical Framework

Each autumn, thousands of students enroll in post-secondary institutions across the country for the purpose of receiving an education and earning a college degree. For a variety of reasons, not all of these students complete a degree. In fact, altogether too many students who begin college fail to earn a degree (Carey, 2004). Perhaps even more alarming, a substantial number of students do not continue their collegiate academic career past their freshman year. According to an ACT news release based on national data, nearly one-fourth of all undergraduate students do not return to their chosen college or university for a second year (ACT, 2005). In addition, only 60% of entering freshman at colleges or universities complete their bachelor's degree within six years (Carey).

Such attrition equates to substantial financial losses for post-secondary institutions (Lundquist, Spalding, & Landrum, 2002). According to Dyer, Lacey, and Osborne (1996) one institution reported an $11 million loss due to student attrition. Not only is there a financial loss as a result of lower student enrollment, many state legislatures and boards of higher education have begun to link retention and graduation rates to university budgets for performance-based funding (Carnevale, Johnson, & Edwards, 1998). In an era of decreasing enrollments, increasing operating costs, budget reductions and decreasing state revenues, it is essential that institutional leaders take steps to address the issue of attrition (Glennen, Farren & Vowell, 1996).

What does the issue of attrition mean to university agricultural education programs? Intuitively, student attrition may result in fewer students in agricultural education courses, a

reduced number of pre-service teachers, and ultimatelyfewer program graduates than needed for the employment opportunities that exist. Already, there is a shortage of qualified secondary agriculture teachers (Camp, Broyles, & Skelton, 2002). Many efforts are being made to address this shortage, including, but not limited to the well-known 10,000 by 2015 initiative, student loan repayment programs, and recruitment workshops aimed at encouraging future secondary teachers of agriculture held at state and national FFA conferences. However, none of these initiatives target students currently enrolled in post-secondary institutions.

What can, or should be done to address such attrition issues? Without a doubt, to adequately satisfy and thus retain students in institutions of higher education, proactive measures should be taken. Research has indicated a definite link between student involvement and student satisfaction (Tinto, 1985). Specifically, Astin (1984) and Pascarella (1985) suggested that regular, meaningful interaction with faculty members may impact student motivation and involvement. Frost (1991) expanded on the positive benefits of such involvement, stating that "involved students are more likely to be academically and socially integrated into a college community" (p. 2). Such integration is likely to increase students' success in college (Tinto, 1987).

Perhaps, one of the antecedents to student satisfaction and persistence is the development of meaningful interaction with faculty. Academic advising certainly provides such an opportunity. In some cases, academic advising may provide the only structured opportunity for a relationship between a student and an institutional representative (Frost, 1991). Mohr, Eiche, and Sedlacek (1998) found that seniors with meaningful relationships with faculty and advisors were more likely to earn a degree than those who were referred to student services.

Regardless of what role academic advisors serve, few faculty members receive formalized preparation to enhance their advising skills. Most, in fact, begin advising without any professional experience or preparation (Habley, 1997). According to the 1987 ACT survey, fewer than 30% of all institutions had a training program in place for academic advisors. Even more discouraging, approximately 70% of the institutions had no selection criteria identified for choosing academic advisors. In many cases, it seems as though serving as an advisor is simply viewed as another aspect of a faculty position. However, according to Gordon (1992), "advising skills must be learned and refined on an ongoing basis" (p. 67).

Extensive research has been conducted regarding academic advising to determine what type of advising works best, what students need and/or expect from advisors, what advisors and administrators think about the importance of advising. In addition, researchers have addressed the multiple roles and responsibilities fulfilled by academic advisors. Gordon (1992) identified seven skill areas in which advisors must be able to perform including information dissemination, teaching skills, counseling skills, mentoring skills, referral skills, monitoring and decision-making skills. Indeed, "advisors play many roles – expert, advocate, rubber stamp, judge, teacher, and friend" (Kramer & Gardner, 1983, p. 18) Cuseo (in press) synthesized these roles and responsibilities into four areas including Available/Accessible, Knowledgeable/Helpful, Personable/Approachable and Counselor/Mentor.

However the question remains, what is quality advising? What do students need, or desire, in an advisor-advisee relationship? Studies have revealed four major factors most often cited as important to students with regard to academic advising (Crockett, 1982; Frost, 1993; Gordon, Habley, & Associates, 2000; Ender, Winston, & Miller, 1982; Winston, Grites, Miller, & Ender, 1984). Though the descriptions may vary slightly from publication to publication, the four factors include accessibility, specific and accurate information, advice and counsel, and a personalized relationship (Crockett; Cuseo, in press).

How is the issue of academic advising to be addressed? How can quality academic advising be assured? According to Boers (2001), the only way to meet the expectations of students is if educators know the exact nature of the expectations. The same can be said for academic advising expectations. In order for academic advisors, faculty or others, to meet expectations of their advisees, they must first know advisees' expectations and seek to understand how the expectations are formed (Propp & Rhodes, 2006). Therefore, the primary problem addressed in this study was to determine to what extent agricultural education students' academic advising needs were being met by their faculty advisors.

Considering the importance of student-faculty contact to academic persistence, it is critical that faculty advising is recognized for its potential contribution to the social integration of students. Without a doubt, additional research needs to be conducted with regard to this issue. According to Gardiner (1998), "when we subject our work as educators to the same close examination we demand in our disciplines, we find a substantial body of evidence that clearly demonstrates a crisis of educational quality…" (p. 71). However, Gardiner continued, "…rather than a strong sense of urgency for change, we too often find complacency within our ranks" (p. 71).

Jim Collins' (2001) book, *Good to Great*, explains the dangers of such complacency, suggesting that good is the enemy of great. Specifically, Collins stated, "We don't have great schools, principally because we have good schools. We don't have great government, principally because we have good government. Few people attain great lives, in large part because it is so easy to settle for a good life" (p. 1). In order to provide great academic advising, additional efforts must be made to identify students' needs and improve current advising practices.

Conceptual Framework

There are few, if any, specific frameworks that apply directly to the process of academic advising. However, a large number of theoretical and conceptual frameworks have certain aspects or components within them that make them relevant to academic advising. The conceptual framework that served as the basis of this study was an adaptation of Terenzini and Reason's (2005) model for studying college impact. The model, created from research by Pascarella and Terenzini (1991, 2005) and Terenzini and Reason, was designed to address issues relating to student success and persistence in the first year of college. The framework takes into consideration a multitude of forces which help to shape students' first year of college and, ultimately, identifies three primary components of variables involved in the study of college impact. The three components include: pre-college characteristics and experience, the college experience, and outcomes. The initial framework has been slightly modified to meet the needs of

studying college student development and success from an agricultural perspective (see Figure 1).
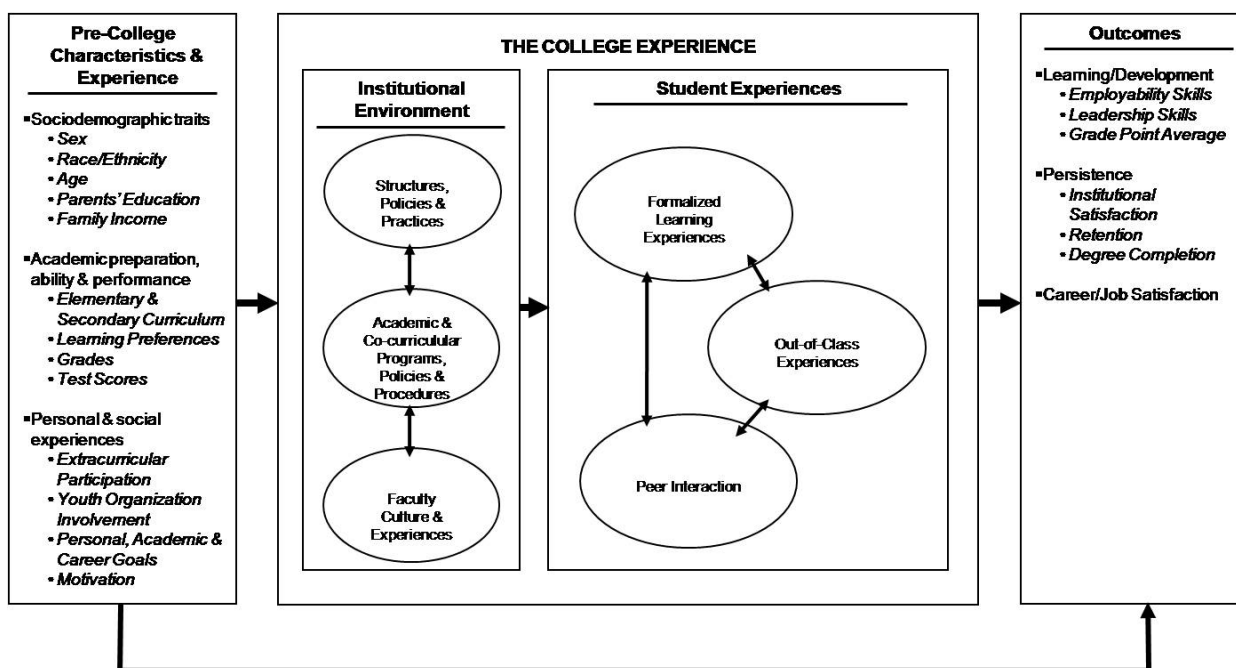

Figure 2. Conceptual model of influences on student learning and persistence.

Pre-college characteristics and experience component encompasses a variety of demographic variables as well as other relevant factors that may impact or influence their experiences in and after college. According to Terenzini and Reason (2005), "this portion of the framework is intended only to recognize that students' pre-college characteristics can have powerful influences on students' subsequent college experiences, learning, development, change and persistence" (p. 6).

The college experience component introduces two additional categories of factors: the institutional environment and student experiences. In the original model of Terenzini and Reason (2005), institutional environment was referred to as organizational context. In the modification of the model, this was modified to be more descriptive. According to Terenzini and Reason, institutional effects "are more a function of what institutions *do* rather than what they *are"* (p. 8). At times, such factors relating to institutional history and culture are overlooked in college impact literature. However, such "structures, practices, and policies…are more likely to influence student outcomes through the kinds of student experiences and values they promote or discourage" (Terenzini & Reason, p. 8). The institutional environment category consists of three factors: 1) structures, policies, and practices; 2) academic and co-curricular programs, policies, and procedures; and 3) faculty culture and experiences.

The structures, policies and practices factor includes such things as administrative structure, staff support, financial aid policies, collaboration among institutional employees, and

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communication of institutional mission (Terenzini & Reason, 2005). The second factor, academic and co-curricular programs, policies, and procedures, encompasses the formal academic and student affairs program policies and procedures of an institution (Terenzini & Reason). This factor includes such things as personnel policies, faculty workload, course limits, professional development for faculty and staff, utilization of teaching evaluations, and other programs and policies that further support the integration of students' academic and non-academic lives (Terenzini & Reason). Finally, the third factor, faculty culture and experiences, is based upon the philosophies and behaviors of faculty members toward teaching, research and service. According to Terenzini and Reason, faculty culture is reflected in a variety of ways, including how faculty interact with students (both formally and informally), how involved faculty are in activities and opportunities relating to teaching and learning, and the emphasis given to "promoting student encounters with diverse people, cultures and ideas in their classrooms" (p. 11). This is the area of the model in which academic advising, particularly faculty advising is located.

The student experiences component of the college experience consists of three factors including: 1) formalized learning experiences, 2) out-of-class experiences, and 3) peer interaction. Formalized learning experiences are defined as interaction with students and faculty members while completing coursework. Out-of-class experiences encompass a variety of college opportunities such as student organizations, study abroad opportunities and internships. Finally, peer interaction specifically occurs as a result of involvement with other students. This interaction may be as a result of personal networks, living situations (residence halls, learning communities) or sorority/fraternity organizations (Terenzini & Reason).

The outcomes included in the framework, including learning/development, persistence and career/job satisfaction all are impacted by the other components of the model (Terenzini & Reason). By no means are these the only outcomes that occur as a result of the combined pre-college characteristics and college experience; however, outcomes listed were the primary outcomes of interest.

Purpose/Objectives

This study sought to describe the academic advising tendencies of agricultural education undergraduate students at the University of Missouri. Additionally, this study assessed the importance of academic advising characteristics as perceived by agricultural education undergraduate students and examined faculty advisors' performance with regard to the academic advising characteristics. Five research objectives guided the study:

1. Describe the demographic characteristics of agricultural education undergraduates (sex, academic level).
2. Describe academic advising tendencies of agricultural education undergraduates (frequency of advising meetings, length of advising meetings, additional sources of advising information).
3. Describe the importance of academic advising characteristics as perceived by agricultural education undergraduates.

4. Describe faculty advisors' performance on academic advising characteristics as perceived by agricultural education undergraduates.
5. Prioritize the academic advising characteristics, according to agricultural education undergraduates, in need of enhancement by using a modified Borich needs assessment.

Methodology

This study utilized survey research methods. The target population consisted of a census of agricultural education undergraduate students enrolled at the University of Missouri during the spring 2008 semester (N = 71). The frame was obtained from the Academic Programs Office and was scrutinized for errors, omissions, and duplicates to address potential frame error and ensure accuracy.

One source was utilized for the collection of data. An online instrument, the Faculty Advising Instrument, was distributed via email to all currently enrolled students using Hosted Survey™, a web-hosted software application. The instrument consisted of two sections. Section I utilized a modified Borich needs assessment format to identify the level of importance and advisor performance for given characteristics, or behaviors, of a faculty advisor. Also included in Section I of the instrument were 11 items addressing academic advising tendencies. This section included such items as the primary method of communicating with the faculty advisor, how often they had met with their advisor and if that was sufficient, how long a typical meeting with their advisor lasted, and what other sources, if any, a student uses for academic information.

The instrument was reviewed by a panel of experts for face and construct validity. The panel consisted of 11 university faculty members representing higher education institutions from across the United States. Members were selected based upon faculty advising experience and expertise and/or extensive knowledge about faculty advising within colleges of agriculture. A pilot test was also conducted with recent graduates of the College prior to distributing the online instrument to students within the target population. Reliability coefficients for the four constructs included in Section I of the Faculty Advising Instrument were calculated using the pilot test data. The resulting Cronbach's alpha coefficients ranged from .82 to .94. Based on the resulting coefficients, the Section I of the Faculty Advising Instrument was deemed reliable. Section II of the Academic Advising Instrument asked subjects to provide demographic information. The demographic information requested included sex, academic level, whether or not the student's parents, siblings, or legal guardians graduated from college, and race/ethnicity.

A modified version of the Dillman (2007) *Tailored Design Method* was utilized to guide the data collection process. Typically, this method is employed for mailed instruments and includes five potential contacts including: first contact (a pre-notice letter), second contact (the instrument mail out), third contact (a postcard thank you/reminder), fourth contact (the first replacement instrument), and fifth contact (the invoking of special procedures) (Dillman). Since the instrument was delivered via the Web, the five contacts were slightly modified.

Miller and Smith (1983) stated, "data gathered from self-selected respondents may not represent the opinions of the entire sample or population" (p. 45). To address the issue of non-

response, several steps were taken. Multiple contacts were used, emails were personalized and a link to the instrument was included with reminder emails. According to Dillman (2007), each of those steps helps to increase response rate. In addition, efforts were made to ensure "respondent friendly questionnaire design" (Dillman, p. 81) that included simple layout and wording. To reduce the likelihood of important items being skipped by respondents, the online feature which required answer was utilized. If respondents skipped a question and tried to advance to the next section, a notification appeared in red text indicating some item was omitted. As a result, a 94% response rate resulted, with 67 of the 71 students completing the instrument.

Results/Findings

Research objective one sought to describe the demographic characteristics of agricultural education undergraduates. A total of 52 (77.61%) respondents were female, while the remaining 15 (22.39%) were male (see Table 1). The greatest percentage of respondents, 32.8% (22 of 67), were sophomores. Freshmen accounted for 11.9%, while juniors and seniors represented 28.4% and 26.9% respectively.

Table 2
Agricultural Education Students' Demographics (n = 67)

Characteristic	f	%
Sex		
Female	52	77.61
Male	15	22.39
Academic Level		
Freshman	8	11.94
Sophomore	22	32.84
Junior	19	28.36
Senior	18	26.86

The second research objective sought to describe academic advising tendencies of the students. Advising tendencies addressed included: students' primary method of communicating with their faculty advisor, frequency of advising meetings, length of advising meetings, and additional sources of advising information. In addition, students were asked whether or not they would recommend their faculty advisor to other students.

Nearly three-fourths of the respondents (70.2%) reported that their primary method of communicating with their faculty advisor was face to face. E-mail ranked second, with 29.9% of respondents indicating that was their primary method. None of the students selected telephone as their primary method of communicating with their faculty advisor.

When students were asked how many times they had met with their advisor within the past year, none reported having never met (see Table 2). Over 95% of students reported meeting with their advisor at least twice. As a follow up question, students were asked whether or not the number of meetings they indicated were sufficient for their advising needs. A total of 59 students (88.1%) reported that the number of meetings was sufficient, while two students (2.9%)

indicated the number of meetings was not sufficient. A number of students (8.9%) were undecided as to whether the number of meetings was sufficient or not.

Table 3
Frequency of Advising Meetings (n = 67)

Occurrence	*f*	%
Never	0	0.00
Once	3	4.48
Twice	13	19.40
Three Times	17	25.37
Four Times	10	14.93
Five or More Times	24	35.82
Total	67	100.00

Students were asked to indicate on average, how much time they typically spent meeting with their advisor. The most common responses to this item were 6 to 15 minutes (50.8%) and 16 to 30 minutes (35.8%) (see Table 3). None of the students reported that they had not met with their advisor, while nearly 6% indicated advising meetings averaged less than 5 minutes. With regard to recommending their advisor to other students, 57 (85.1%) indicated that they would. Five students responded that they would not recommend their advisor and five were undecided.

Table 4
Length of Advising Meetings (n =67)

Time	*f*	%
Have not met	0	0.00
5 minutes or less	4	5.97
6 to 15 minutes	34	50.75
16 to 30 minutes	24	35.82
More than 30 minutes	5	7.46
Total	67	100.00

Research objective three sought to describe the importance of academic advising characteristics as perceived by agricultural education undergraduate students. Students perceived each of the four advising constructs to be important characteristics of a faculty advisor (see Table 4). This is indicated by the mean scores exceeding 4.00 on the Likert scale. Specifically, students reported that the Availability/Accessibility and Personable/Approachable constructs were slightly more important.

Table 5
Perceived Importance of Advising Characteristics within Advising Constructs (n = 67)

Advising Construct	*M*	*SD*
Availability/Accessibility	4.59	.35
Personable/Approachable	4.51	.42
Counseling/Mentoring	4.29	.38
Knowledge/Helpfulness	4.15	.34

Research objective four sought to describe faculty advisors' performance on academic advising characteristics as perceived by agricultural education undergraduates. Similarly to the findings regarding perceived importance, students generally rated their faculty advisors' performance high as well (see Table 5). On three of the four constructs, faculty advisors' performance was rated as "good" or better based on the scale, with faculty performance on Availability/Accessibility and Personable/Approachable construct items nearing "excellent." Only one construct's mean was lower than 4.00, with advisors being rated as approaching "good" on Knowledge/Helpfulness.

Table 6
Faculty Advisors' Performance on Advising Characteristics within Advising Constructs (n = 67)

Advising Construct	*M*	*SD*
Availability/Accessibility	4.64	.50
Personable/Approachable	4.50	.62
Counseling/Mentoring	4.07	.82
Knowledge/Helpfulness	3.95	.71

Research objective five sought to prioritize the academic advising characteristics, according to students' perceptions, in need of improvement using a modified Borich needs assessment model. A Borich needs assessment model is designed to use discrepancy scores to simultaneously measure two constructs (Borich, 1980). For this particular objective, a discrepancy score was calculated for each of the 34 academic advising characteristics by subtracting the raw performance rating from the raw importance rating for each respondent. Once the discrepancy scores were calculated, a weighted discrepancy score was figured by multiplying each discrepancy score by its corresponding academic advising characteristic's mean importance rating. Finally, a mean weighted discrepancy score (MWDS) was calculated by totaling the weighted discrepancy scores for each academic advising characteristic and dividing the sum by the total number of respondents (*n* = 67) (see Table 6).

Table 7
Perceptions of Advising/Advisor Characteristics in Need of Enhancement (n = 67)

Category	Advising/Advisor Characteristic	MWDS
I	Assists in identifying potential areas of employment after college	4.12
	Provides information about obtaining financial assistance	3.88
	Helps obtain employment on campus	3.11
II	Encourages me to explore career areas of interest	2.99
	Suggests strategies to cope with academic challenges	2.38
	Provides information about educational opportunities beyond my degree	2.35
	Helps clarify life goals	2.34
	Communicates degree requirements	2.26
	Helps select courses that match my interests	2.24
	Knowledgeable about general education courses	2.23
	Helps me identify obstacles to overcome before reaching educational goals	2.22
	Assists in selecting/changing my undergraduate degree program	2.05
Table 7 (continued)		

Category	Advising/Advisor Characteristic	MWDS
III	Respects my decisions	1.95
	Familiar with my academic background	1.63
	Aware of my academic progress	1.49
	Provides information about using myZou	1.25
	Easy to talk with	1.05
	Stimulates my interest in an academic discipline	1.03
IV	Available when I need assistance	0.92
	Responds to my requests in a timely fashion	0.77
	Provides information regarding study skills	0.74
	Encourages academic success	0.72
	Expresses concern for my personal development	0.53
	Encourages me to assume an active role in planning my academic program	0.33
	Maintains an open line of communication	0.28
	Provides a caring, open atmosphere	0.28
	Suggests academic resources	0.25
	Provides sufficient time for advising appointments	-0.54
	Willing to discuss personal problems	-0.60
	Encourages involvement in co-curricular student activities	-0.63
	On time for advising appointments with me	-0.83
	Seems to enjoy advising	-0.94
	Provides an effective process for scheduling appointments	-1.27
	Acknowledges me in social settings	-1.58

To prioritize the academic advising characteristics and potentially identify those in need of enhancement by faculty advisors, the ranked items were evaluated and categorized into four categories based upon naturally occurring breaks ex post facto. Category I consisted of all MWDS greater than 3.00 and was considered a large discrepancy. Category II included nine items with MWDS ranging from 2.05 to 2.99. Six items were had MWDS ranging from 1.03 to 1.95; these items were placed into Category III. The remaining 16 items, with MWDS less than 1.00, were placed into Category IV.

Conclusions/Implications/Recommendations

With nearly a 95% response rate from the agricultural education students, it can be concluded that academic advising is an issue of importance to many. As indicated by the demographics of respondents, the majority of the students in this particular program are female. What implications could this have on their academic advising needs? Are faculty advisors adequately prepared to address academic, career, and personal issues of these students? Further studies, with increased sample sizes, should be conducted to analyze how the academic advising needs of female agricultural education students may vary from their male counterparts.

Agricultural education students indicated that they relied upon face-to-face meetings with their advisor as the primary method of communication, with email being the only other communication method identified. In this day and age, when so much communication is done via

email or telephone, could this suggest that the agricultural education faculty advisors serving this group of students are especially available and approachable? As a result of the face-to-face meetings, are students receiving more developmental advising and truly developing relationships with their advisors?

While over 95% of respondents had met with their advisor at least twice in the past year, approximately 75% had met at least three times. Such responses would indicate that at least three-fourths of agricultural education students are meeting with their faculty advisors more often than once per semester. This finding is quite encouraging given the fact that many studies have emphasized the importance of recognizing academic advising as moving beyond mere enrollment issues and course selection (Bland, 2004; Crookston, 1972; Winston et al., 1984). All but ten of the respondents indicated that the number of advising meetings they had with their advisor was sufficient in meeting their needs. Two students indicated the number of meetings was not sufficient, with eight undecided. What must be done to adequately meet the needs of all students?

When students were asked about the average length of academic advising meetings, the most frequent response provided was 6 to 15 minutes, with 16 to 30 minutes being selected by many students as well. Only four students indicated that their average meetings lasted 5 minutes or less, which may suggest that generally, when faculty advisors and agricultural education students meet, adequate time is allotted to discuss important issues and students do not feel rushed in and out. Perhaps this contributed to the overall satisfaction of students. Over 85% of the agricultural education students indicated that they would recommend their advisor to other students.

With regard to the importance rating for the four academic advising constructs, agricultural education students rated Availability/Accessibility and Personable/Approachable as the most important constructs, while Counseling/Mentoring and Knowledge/Helpfulness were rated as less important. Such findings reiterate the importance of making students feel welcome and conveying availability. These findings echo the findings of Crockett and Crawford (1989) and Hale, Graham, and Johnson (2008) which suggest students prefer a more developmental advisor as compared to a prescriptive advisor. These findings also suggest that students appreciate an open-door policy and friendly atmosphere.

When students rated the performance of their faculty advisors on the four academic advising constructs, agricultural education faculty advisors were rated as "good," approaching "excellent" on Availability/Accessibility and Personable/Approachable. Such results indicate that indeed, students' needs in these areas are being met. The two constructs, Counseling/Mentoring and Knowledge/Helpfulness rated as high "satisfactory" or "good." Within the Knowledge/Helpfulness construct, several individual items were rated quite high, although items relating to financial assistance, employment opportunities, and educational opportunities after college were rated lower. Could this indicate that faculty advisors are doing well encouraging academic success, providing technical degree program information and so on, but could improve in other, more general areas? Without a doubt, faculty advisors need to be able to provide such information to students. As Upcraft and Stephens (2000) noted, many students struggle to finance their education; advisors need to be able to provide direction and

guidance to aid students. Additionally, many students, particularly upperclassmen, seek guidance with post-college decisions (Gordon, 1992; Strommer, 1995). If students cannot obtain such guidance from their faculty advisor, where will they get the help they need?

Through the modified Borich needs assessment model, agricultural education students identified twelve academic advising characteristics with discrepancy scores exceeding 2.00. Such discrepancy scores indicate that faculty advising in agricultural education could potentially be enhanced if efforts were made to improve faculty performance in these areas. Specifically, the three academic advising items which yielded the highest discrepancy scores included: "assists in identifying potential areas of employment after college," "provides information about obtaining financial assistance," and "helps obtain employment on campus." Each of these three items could be viewed as topics outside the realm of faculty advising. However, as McCollum (1998) noted, "the overall challenge to the advisor is to meet the advisee's needs developmental needs, whether they are emotional, academic, or career oriented…" While advisors do not need to have the answers to all questions a student may have, they should be able to point the student in the right direction to obtain the information. To satisfy students, and thus retain them in an educational program, their needs must be met. Students will grow tired of an advisor who is unable to assist them in meeting their personal, academic and career goals (Kramer & Gardner, 1983).

From this study, recommendations for practical application and further research result. First, this study highlights some of the characteristics students seek in a faculty advisor. To meet students' needs, it is important to know them; now, faculty advisors of agricultural education students may have a better working knowledge regarding what their students want. Secondly, the results of the Borich needs assessment model identified several areas for agricultural education faculty advisor development. While students were generally pleased with the performance of their faculty advisors, it would be in the best interest of faculty advisors to focus on the items with large discrepancy scores. Perhaps, by improving advising in certain areas, a greater number of students would be retained in agricultural education programs and enter the field of agricultural education.

To learn more about students' academic advising needs and faculty performance, additional studies should be conducted with larger populations. Additionally, it would be interesting to study agricultural education students at different institutions to compare perceptions. Finally, additional research could be conducted to explore other factors that may contribute to academic advising satisfaction. The resulting knowledge would allow faculty advisors in agricultural education programs to continually meet the needs of their students.

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UNDERGRADUATE STUDENT MENTORING: WHAT DO STUDENTS THINK?

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Abstract

The purpose of this census study was to explore undergraduate student perceptions of mentoring in a College of Agriculture and Life Science (CALS). An analysis of the responses from 532 respondents found that students believe that faculty in CALS often practice the mentoring functions except for the direct assistance, which students believe sometimes occurs. Undergraduate students take a broad view of mentoring. They view it as an engaging and interactive process where an exchange of ideas takes place and where the focus generally includes, but is not limited to, professional and career development. Students consider faculty members who are supportive, aware of student needs, and show concern for students as mentors, which can occur in a variety of fashions and often during academic advising, informally after class, during office hours, during research and laboratory times, and as part of their involvement in clubs and organizations. Students do perceive faculty as mentors and seem to find themselves drawn to faculty mentors who have similar interests and career goals, are engaged with students outside of the classroom, and are willing to assist students in their personal and professional development. These findings have implications on faculty mentor training and formally organized mentoring programs.

Introduction

Mentoring is the process where a developmental relationship evolves between a more advanced or experienced person (a mentor) who provides career and/or personal support to another individual (a protégé) (Wolfe, 2006). The support can range from helping someone transition from childhood to adulthood or from student to professional.

The modern development of mentoring has occurred in waves and it wasn't until the 1970s and 1980s that the mentoring movement began to gain traction in education (Miller, 2002). The primary aim of student mentoring in higher education tends focus on three facets (Miller). They are academic, personal development, and career choice (Choa, 1997; Miller; Reinarz, 2000). A few of the primary goals of academic advising (Habley, 2000) are consistent with the aims of mentoring.

People come together in a mentoring relationship for a wide variety of reasons; however, in addition to mutual consent, the combination of rapport and clarity of goals directly influences the relationship (Meggison & Cutterbuck, 2005). Relationships with high clarity and high rapport generally have an open dialogue, shared expectations and openness to mutual benefit, while those relationships with low clarity and low rapport are generally only going through the motions. In the latter instance, little can be expected according to Meggison and Cutterbuck.

Mentoring has been a prominent part of the business and industry culture much longer than in education (Fagenson-Eland, 1989; Scandura, 1992; Orpen, 1995). In higher education,

mentoring is traditionally associated with faculty and graduate students (Merriam, Thomas, & Zeph, 1987; Anderson, Dey, Gray, & Thomas, 1995). At the undergraduate level, mentoring can occur as part of the academic advising process (Reinarz, 2000) and informally where faculty and graduate students serve as mentors to undergraduates (Priest & McPhee, 2000). Undergraduate mentoring studies have focused on the protégés' perceptions about their mentor or mentoring relationship (Anderson et al; Van Ast & Field, 2005). Stanley and Lincoln (2005) suggest that undergraduate faculty and administrators are often uncertain about how to foster effective mentoring relationships.

Theoretical Framework

Researchers like Levinson, Darrow, Klein, Levinson, and McKee (1978) and Kram (1980; 1983) have identified a wide range of mentoring functions a mentor should practice. Kram (1985) suggested that mentoring, when done correctly, has the potential to enhance the career development and psycho-social development of both individuals. According to Gold (1992), there is a need for personal and psycho-social development in mentoring. Emotional-physical needs include self-esteem, acceptance, and self-confidence. Personal-intellectual needs consist of intellectual stimulation, challenges, innovation, and creativity. Friendship, relationships, collegiality, and interaction are psycho-social needs that can be addressed during the mentoring process.

Kram (1985) went on to identify nine mentoring functions within the two broader categories of career and psycho-social development. Some researchers like Jacobi (1991) and Fowler and O'Gorman (2005) have criticized Kram's model for its irrelevance to education. In part, Jacobi argued that theoretical frameworks for mentoring that use Bandura's Social Learning Theory fail to address important aspects of mentoring like professional or emotional support. In duplicating Kram's work, Fowler and O'Gorman discovered that Kram's model lacks a component they called learning, a function that focuses on meta-skills, self reflection, and collaborative learning. These discussions have lead to questions as to whether Kram's model is acceptable for mentoring in education.

Brzoska, Jones, Mahaffy, Miller, and Mychals (1987) used Kram's (1985) career and psycho-social functions to develop a model for educational settings (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.

Informal contact consists of those interactions or discussions that take place outside of scheduled mentoring sessions and are generally in the form of "checks ins" on the protégé to offer advice, encouragement, and most of all, to listen. (Brzoska et al.) The role modeling function exhibits professionalism, demonstrates realistic ways of problem solving, and exhibits enthusiasm, self-confidence, security, and competence. Direct assistance from mentors aids protégés in goal setting and achieving goals, organizing and managing materials or equipment, and suggests techniques and advises protégés on record keeping and reflecting as a means of making improvements. Mentors utilize demonstrations to show the protégé how to properly use strategies, techniques, or skills. Formal observation and feedback is a three-step process that

includes a pre-conference, observation of an activity, and a post-observation conference. The final function, professional development planning, includes teaching specific job skills, but also serves as a resource of information, opportunities, and networking required of the protégés as they explore potential careers or consider further education.
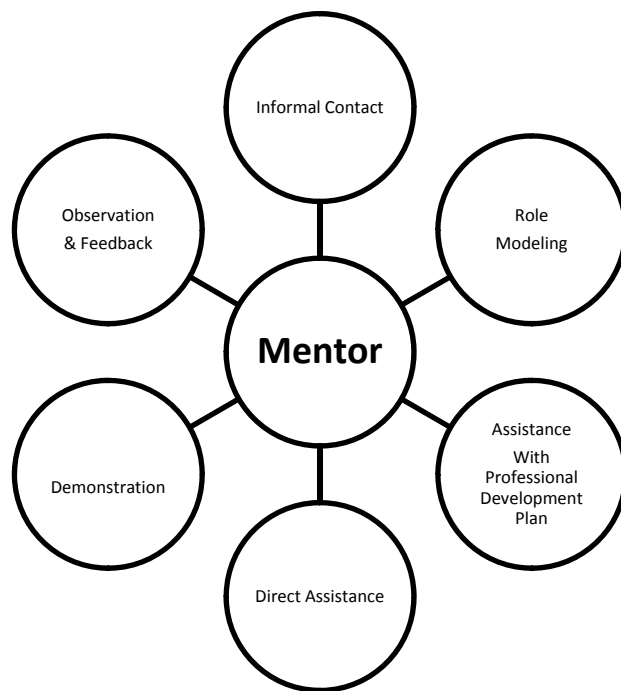

Figure 1. Mentor Functions Model. Brzoska, Jones, Mahaffy, Miller, and Mychals (1987)

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.

Mentoring is a complex process and function that requires time and communication and involves support, assistance, and guidance, but not evaluation of the protégé (Huling-Austin, 1992). There is a difference between mentoring and evaluating students (Huling-Austin; Neal, 1992). The terminology used between these two activities is different and the resulting relationship is also influenced. The purpose of evaluation in mentoring should focus on accountability, improvement, understanding, and knowledge and not the evaluation of the protégé by the mentor (Odell, 1992).

Often the focus of mentoring is on planned mentoring programs and research related to such programs. However, there is a range of natural mentoring relationships (Miller, 2002). Philip and Hendry (2000) identify one of these natural mentoring relationships as classic mentoring; a more experienced adult provides support, advice, and challenges to a student as part of a one-on-one relationship.

Higher education is a combination of formal and informal mentoring. Formal mentoring occurs as a result of an organization's commitment to programs that aid in individual professional development and follow a concrete framework (Choa, Walz, & Garner, 1992). Informal mentoring lacks organizational commitment and structure and occurs spontaneously (Ragins & Cotton, 1999). Faculty rapport with students significantly contributes to the undergraduate experience (Lagowski & Vick, 1995). Reinarz (2000) suggested faculty members who enjoy advising and mentoring often place a higher priority on the role and are more likely to give of their time and expertise. Mentors not only utilize personal and professional skills when mentoring, but also need appropriate training and incentives to maximize mentoring (Wolfe, 1992).

In 2006, Wolfe used a modified instrument originally developed by Noe (1988) to study the extent to which faculty members believe they utilize the mentoring functions established by Brzoska et al. (1987). Wolfe reported that faculty members believe they often practice all six mentoring functions. Currently, researchers know that (1) student-faculty relationships are often looked upon as a mentoring process, and (2) agricultural faculty in higher education often practice all six mentoring functions; however, from the students' perspective, do undergraduate students experience the mentoring process and functions?

Purpose and Objectives

The purpose of this study was to determine students' perceptions regarding mentoring functions at a Midwestern University College of Agriculture and Life Science (CALS). To accomplish the purpose of this descriptive census study, three objectives were established, which were to 1) describe demographic characteristics of the student participants, 2) determine undergraduate students' perceptions about mentoring, and 3) determine the extent to which mentoring functions are practiced by CALS faculty based on student experiences.

Methods

This study was designed as a descriptive census research study. The population for this study consisted of all undergraduate students (N = 2329) enrolled in CALS during the 2007 spring semester. Web-based surveys have become increasingly popular and are often successful on college campuses because colleges typically have universal e-mail access (Ary, Jacobs, & Razavieh, 2002), resulting in prompter returns, lower item non-response, and more complete answers to open-ended questions (Dillman, 2000). Therefore, a web-based survey design was deemed appropriate for the study.

A survey instrument developed by Wolfe (2006) served as the basis for this study. Wolfe studied mentoring from the faculty perspective in a College of Agriculture. For this study, wording was changed to reflect the undergraduate population involved. The instrument was divided into four sections. The first section focused on the students' perceptions of mentoring as they experienced it in the CALS. The second section focused on the extent to which students experienced mentoring practices based on the mentoring functions of Brzoska et al. (1987). The third section asked general mentoring questions and the fourth section focused on demographic

questions. Wolfe reported a post-hoc reliability coefficient for the survey instrument of .89 using Cronbach's alpha.

Students were contacted five times by email as recommended by Dillman (2000), which included a pre-notice letter, a letter containing the Universal Resource Locator (URL) for the web-based questionnaire, a thank-you/reminder, a follow-up letter with the URL for the questionnaire, and a final contact. SurveyMonkey (1999) was the web-based software used to develop and administer the questionnaire. Non-response error was controlled for by contacting a random sample of non-respondents via telephone. The questionnaire was administered and data were collected to determine if there were any differences between respondents and non-respondents when controlling for non-response error (Linder, Murphy, & Briers, 2001). Analysis confirmed that no statistically significant differences existed between respondents and non-respondents. The overall response rate was 31.34%. However, several respondents declined the invitation to participate and other respondents submitted incomplete responses. As a result, the useable return rate was 22.84% (n = 532).

Data were downloaded and imported into SPSS. Descriptive statistics were calculated and used to analyze the data. The demographic questions were analyzed and reported using frequencies and percentages. Student responses to the mentoring statements were analyzed using means and standard deviations.

Findings

The purpose of this exploratory study was to determine CALS undergraduate students' perceptions regarding mentoring functions. The study sought to identify specific mentoring functions and the perceptions that undergraduates have of mentoring within CALS. The findings are presented in three major sections relating to the study's objectives: 1) describe demographic characteristics of the student participants, 2) determine undergraduate students' perceptions about mentoring, and 3) determine the extent to which mentoring functions are practiced by CALS faculty based on student experiences.

Objective 1: Describe demographic characteristics of the student participants.

The average age of the respondents was 21 years old (SD = 3.4), with a range from 18 to 56 years old. The percentage of respondents between 18 and 24 years old was 94.7. The percentage of respondents between the age of 25 and 29 years old was 3.4. The percentage of respondents between the age of 31 and 56 years old was 1.7.

The average number of credits upon completion of the fall 2007 term indicated by respondents was 82.87 credits (SD = 41.3). Of the 484 respondents, 60.1% indicated that they completed course work at another institution prior to enrolling in CALS. The average number of transfer credits brought into CALS by those respondents was 29.28 credits (SD = 27.9). Students were asked to indicate their major. After examining departmental enrollments by major within CALS, it was deemed that the number of respondents for each major who completed the survey was representative of the college.

Undergraduates were surveyed to determine which student groups they associated with during their collegiate experience. Students were allowed to choose more than one group. The majority of students (61.6%) selected *Student Organizations/Clubs* as the group with which they were associated. The group with the least association with students was the category *Other*. Students were asked to specify when they selected this category. Those that responded indicated groups such as *Religious groups, Women in Science and Engineering, ROTC*, and the *Honors program*. Table 1 illustrates groups with which CALS students are associated.

Table 1.
Distribution of undergraduate student group representation

Group Association	N	Percentage
Student Organizations/Clubs	357	61.6 %
Learning Communities	241	41.6 %
Student Employee in the CALS	137	23.6 %
Internships for academic credit	102	17.6 %
Independent Study	59	10.2 %
Science with Practice	42	7.2 %
Other (please specify)	37	6.4 %

Students were asked to indicate if they interacted with faculty outside of class on at least a weekly basis. Of the 487 that responded, 63.2 percent said that they did not interact with faculty outside of class on at least a weekly basis. The 36.8 percent that responded yes described their interaction. The most common theme that arose from the open-response was that of clubs or student organizations related to their major field of study.

The percentage of respondents indicating their gender as female was 50.5. The percentage of respondents indicating their gender as male was 49.5. The majority of students (94.2%) indicated white or Caucasian as the population group that best described them. This was followed by Latino or Hispanic (2.2%), Asian or Pacific Islander (1.6%), African American or Black (0.8%), and American Indian (0.3%).

Objective 2: Determine perceptions about mentoring.

To accomplish this objective, respondents were asked to identify the extent to which they viewed each mentoring function item based on the following Likert-type scale: 1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

Of the 24 items that students were asked to identify the extent to which they agreed, *A mentor is an information source* received the strongest agreement (μ = 4.12, *SD* = 0.60) among the undergraduate students. *Mentoring is the same as academic advising* received the weakest agreement (μ = 2.50, *SD* = 0.90). Table 2 illustrates the mean responses of undergraduate students for all the mentoring function items.

Table 2.

Distribution of means and standard deviations of undergraduate's perceptions of mentoring statements

Statement	N	μ	SD
A mentor is an information source	572	4.12	0.60
Mentors play many roles	574	4.11	0.60
A mentor demonstrates strategies for accomplishing goals	572	4.02	0.60
Mentoring is a process involving an exchange of information	572	4.02	0.60
A mentor observes student performance	571	3.82	0.67
Mentors should be active not passive	577	3.81	0.73
A mentor assists the student in developing a sense of professional identify	573	3.80	0.61
Mentoring is career development assistance	572	3.74	0.68
Mentoring consists of frequent informal conferences	570	3.72	0.70
A mentor serves as an advocate for the student	571	3.70	0.69
Mentors demonstrate exemplary job skills	573	3.70	0.70
Mentoring is a skill that requires training	577	3.61	0.89
A mentor is a socialization process	570	3.60	0.76
Mentoring involves counseling a student	570	3.60	0.76
The best mentors are directive in the process	572	3.60	0.71
Mentors that are chosen are more effective than assigned mentors	575	3.50	0.84
Mentoring is a systematic process	578	3.40	0.77
Mentoring is a relationship between an older, more experienced person and a younger, inexperienced person	575	3.40	1.00
A mentor is a role-specific model in the discipline	571	3.40	0.79
Mentoring is a causal, laid back process of giving advice	576	3.30	0.93
Mentoring is based on friendship	574	3.30	0.84
The student should lead the mentoring process	575	3.10	0.83
Mentors have a greater intellectual status than students	574	2.90	0.91
Mentoring is the same as academic advising	574	2.50	0.90

Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

When students were asked to give their definition of undergraduate mentoring, three themes surfaced. The first theme was that the mentoring process involved an older, experienced person interacting with a younger, inexperienced person. Some examples were: *"An individual that has experienced a given path of choices." "Getting advice and help from someone who has more knowledge and experience than you in the area you are studying." "A mentor is someone who is available to guide an individual with less experience or knowledge to success."*

The second theme was that mentoring involves a transfer of information related to academic and non-academic areas via the processes of advising, helping, or guiding. Examples include: *"That undergraduate mentoring is a place where you can go to discuss problems of any type - classes, work, or family problems, and being given advice on what to do." "Mentors assist and guide, but they do not demand students do one thing or another." "A mentor would be more concerned about my home life and life outside of school." "Answering questions/providing advice."*

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The third theme was that mentoring works toward a goal or means to produce positive experiences. Examples include: *"Helping a student to develop into a productive and well-balanced individual by the time they graduate." "This person should get to know the undergraduate in order to build a positive and trusting relationship." "Being a positive role model." "To provide support and information necessary for efficient advancement through undergraduate coursework and into graduate school and/or the work world." Ready to help in advancement in all areas of life."*

Objective 3: Determine the extent to which mentoring functions are practiced by CALS faculty based on student experiences.

To accomplish this objective, respondents were asked to identify the extent to which they experienced mentoring being practiced by CALS faculty based on the following Likert-type scale: 1 = Never; 2 = Sometimes; 3 = Often; and 4 = Always. Students were asked to respond to 24 items regarding mentoring, based on their experiences working with CALS faculty. Of those items, 15 items had an average rating of "sometimes" and 9 items received a rating of "often." The mentoring function item, *Based on my experiences, CALS faculty display professionalism while on the job*, received the highest mean value ($\mu = 3.33$; $SD = 0.69$). Table 3 illustrates the average responses for the 24 items.

Table 3.
Distribution of means and standard deviations of the mentoring practices of CALS faculty

Function	N	μ	SD
Role Model Function Items			
Based on my experiences, CALS faculty...			
display professionalism while on the job.	484	3.33	0.70
demonstrate realistic ways of solving problems.	487	3.07	0.67
exhibit commitment to my educational/career growth and development.	486	3.04	0.75
model the work behavior they expect me to imitate.	487	3.00	0.71
believe I will strive to be like them if I obtain a similar career.	480	2.45	0.84
Demonstration Function Items			
Based on my experiences, CALS faculty...			
demonstrate effective listening skills in conversations with me.	485	3.02	0.72
encourage me to prepare for career advancement.	482	3.00	0.77
suggest specific strategies for accomplishing project goals.	482	2.74	0.73
share history of their career with me.	483	2.73	0.81
share ideas with me about my projects.	480	2.70	0.78

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

Table 3
Distribution of means and standard deviations of the mentoring practices of CALS faculty (continued)

Function	N	μ	SD
Observation and Feedback Function Items			
Based on my experiences, CALS faculty...			
convey feelings of respect for me as an individual.	484	3.06	0.80
encourage me to explore alternatives rather than just providing solutions.	484	2.78	0.73
provide suggestions concerning current problems I encounter.	482	2.75	0.71
encourage me to try new ways of behaving on the job.	477	2.41	0.83
Informal Contact Function Items			
Based on my experiences, CALS faculty...			
keep feelings and doubts I have shared with them in strict confidence.	480	3.18	0.84
are easy to approach when I have questions.	489	3.00	0.72
show interest in my activities outside of work (i.e., academics, extra curricular activities, etc.).	488	2.70	0.81
are available outside of working hours for help.	487	2.45	0.65
interact with me socially outside of work.	486	2.20	0.84
Direct Assistance Function Items			
Based on my experiences, CALS faculty...			
convey empathy for the concerns I have discussed with them.	481	2.60	0.75
share personal experiences as an alternative perspective to my problems.	483	2.52	0.78
help me meet new colleagues in the department.	483	2.44	0.82
give me responsibilities that increase personal contact with other individuals on and off campus.	482	2.40	0.81
encourage me to talk openly about anxiety and fears that detract from my work.	483	2.31	0.88

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

Students were asked if they considered any CALS faculty or staff member a mentor. Of the 490 students that responded, 55.3 percent considered any CALS faculty or staff member a mentor. Students were asked to explain why they considered this person a mentor. The explanations that were provided lead to the development of two themes. The first theme was an awareness of needs. Examples include: *"Dr. Tyler has encouraged me to pursue my goals and has offered insights as to alternative options when deciding on my future career." "This person is concerned with my life besides classes." "Discussion about life happenings."*

The second theme was that similar interests were shared by the individuals. Examples include: *"He shares past experiences in the real world, which is very interesting." "This individual shares the same interests outside of academics with me and the same beliefs towards that subject and often engages in discussions both on my future within that field and the field as a whole." "They have actively taken an interest in what I do."*

Conclusions and Recommendations

Undergraduate students in CALS take a broad view of mentoring. They perceive mentors as individuals who play many roles, serve as resource persons, and model the strategies they suggest. Undergraduates view mentoring as an active and interactive process where an exchange of ideas can take place. Students suggest that the focus of mentoring includes, but is not limited to, professional and career development, which aligns with previous research findings (Gold, 1992; Kram, 1985; Levinson et al., 1978). Students do not perceive mentoring to be a directive or systematic process that must occur with mentors who have a greater intellectual status than the protégé. They also perceive that mentoring is not necessarily the same as friendship and academic advising.

In responding to the five statements for each mentor function and based upon their experiences, students reported that faculty often practice role modeling, demonstrating, observing and providing feedback, and providing informal contact. Direct assistance was only provided sometimes according to undergraduate responses. These findings are similar to the Wolfe's (2006) findings when she studied faculty perceptions of mentoring. Except for the direct assistance function, both faculty and undergraduate students believe faculty-student mentoring functions occur often.

Students consider those faculty members who are supportive, aware of student needs, and show concern for students as mentors. These types of mentoring can occur in a variety of fashions and could occur during academic advising, informally after class, during office hours, during research and laboratory times, and as part of their involvement in clubs and organizations. Students do perceive faculty as mentors and seem to find themselves drawn to faculty mentors who have similar interests and career goals, are engaged with students outside of the classroom, and are willing to assist students in their personal and professional development. The undergraduate student's definition of mentoring has very similar attributes and wording compared to the one provided by Wolfe (2006).

Mentoring in higher education is a combination of formal and informal mentoring and is influenced greatly by relationship building. And, although there is value in formalizing the mentoring process, undergraduate students do not seem to get caught up in the structure and processes associated with mentoring. Students seem more concerned with the outcomes of the relationship with the mentor. Chao, Walz, and Gardner (1992) discovered similar results.

Although the undergraduate students didn't use the same terminology, the two common denominators in meeting the needs and expectations of undergraduate mentoring were career and psycho-social development (see Gold, 1992; Kram, 1985; Levinson et al., 1978). These two categories of mentoring would provide a sound foundation from which to develop mentor training for faculty.

It is recommended that faculty be offered mentoring training. The six functions (Broska et al., 1987) would provide an appropriate structure for faculty development related to mentoring. Faculty members' understanding of the mentoring functions and the mentoring expectations of undergraduates may go a long way in enhancing the student experience and, in particular,

personal growth and career success. Institutions should be cautious of over-formalizing the mentoring process at the undergraduate level. The findings of this study and others (Chao et al., 1992; Ragin & Cotton, 1999) would provide a rationale for equipping the faculty with the tools and knowledge associated with mentoring in a conducive manner in which informal mentoring can successfully occur.

Formal mentoring programs in the college should be cautious of being too restrictive and formalized. Students report that the non-formal approach, or at least the appearance of a less formal structure, is beneficial. Programs may want to be cautious of randomly assigning mentors and protégés. Chao, et al. (1992) suggested that the two parties would have a higher probability of success if they were attracted to one another rather than randomly assigned.

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TEACHERS AS PLANNERS OF PROFESSIONAL DEVELOPMENT CONFERENCES: UTILIZING PROFESSIONAL EXPERTISE TO SELECT CONFERENCE COMPONENTS

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Abstract

Teachers began participating in their own professional education experiences more than seventy years ago; however, recent literature reveals a continued struggle to define and include teachers as participants in the planning of their continued professional education programs. The current research studies in agricultural education provide limited guidance regarding teacher participation in planning for those individuals in the profession who are responsible for the design of continued professional education programs. The specific purpose of this paper is to report how the teachers who participated in the professional development conference planning practices in one state utilized their professional experience to provide leadership in selecting the conference components.

Introduction/Theoretical Framework

There is a sizable amount of theoretical and empirical literature resulting from the study of continuing professional education, staff development, and inservice programs across professions. Within this literature, particular emphasis has focused on the format or model of the educational programs for professionals as well as the process of planning programs. Within each of these areas one common element of discussion is the role of the learners as participants in the program as well as their participation in the planning work. For example, in his analyses of the history of in-service teacher education Richey (1957) provided an historical description of the shifting expectations of teachers as participants. According to Richey early in-service education programs were intended to address the educational and social deficiencies of the teachers who typically lacked extensive formal education. It was not until the 1930s that educational leaders considered the ability of teachers to contribute to their own learning and appreciated the value of using a staff development approach to school improvement where teachers, supervisors, and others worked together to create education programs within schools to address particular problems (Richey, 1957). Richey explained "the aim of the co-operative effort was the solution of the problem; an important concomitant was the growth of teachers and supervisors in understanding and in the ability to attach and solve problems" (p. 61). This work illustrated that teachers began participating in their own professional education experiences more than seventy years ago; however, recent literature reveals a continued struggle to define and include teachers as participants in the planning of their continued professional education programs.

In their examination of program planning models in adult and continuing education Sork and Caffarella (1989) explained that the planning models were useful "tool(s) used to help understand and to bring order to a complex decision-making process" (p. 234) faced by planning practitioners across professions. Since 1950 numerous models have been proposed and evaluated in adult education. Sork and Buskey (1986) summarized a review of 93 books and other publications of program planning models published between 1950 and 1983; more recently

Boone, Safrit, and Jones (2002) conducted another review of the literature and identified an additional five models published since 1983. In addition to the literature reviews of adult education models, Pennington and Green (1976) investigated the program planning activities within six professions while Sork and Caffarella (1989) provided an analysis of the planning components found in the adult education literature. The reviews in the adult education literature proposed that fundamentally there was little difference in the planning models with respect to the core planning steps that originated in Tyler's (1949) foundational work in curriculum planning. Until recently the planning theories have been limited to those traditional planning processes which included needs assessment, objective development, program design and implementation, and evaluation and accountability (Boone et al., 2002).

Adult educators have suggested that there seems to be more to the process of planning than was reflected in the models. Sork and Caffarella (1989) observed that the current planning theory did not account for the context of the planning activities that "largely determine how planning is done" (p. 243) and that the literature on program planning "consists mostly of descriptions of how planning should be done rather than descriptions of how planning is done" (p. 233). Based on these findings, Sork and Caffarella proposed that program planning theory was "increasingly irrelevant to practice" (p. 243). Sork (2000) cautioned that to "overemphasize the technical domain of planning err either by not acknowledging the sociopolitical and ethical domains or by presenting one set of techniques and implying that it can be universally applied" (p. 177). Instead, "the technically-capable planner develops a rich repertoire of techniques and has the sensibility to select those that best fit the circumstances" (p. 177). Cervero and Wilson's (2006) planning theory has called for adult educators to recognize "planning practice as a social activity of negotiating interest in relationships of power" (p. 5) where the technical planning procedures for conducting needs assessments, creating program designs, and developing program evaluations are still evident in some format but are reframed with a focus on the people and settings of the educational program (Cervero & Wilson, 1996). While all of the major programs planning models have included some aspect of learner participation, over the last sixty years there has been only a sporadic and infrequent effort to examine the participation of learners in the planning work (Beal, Blount, Powers, & Johnson, 1966; Brunner, Wilder, Kirchner, & Newberry Jr., 1959; Cole & Glass, 1977; Fox, 1981; Jones, 1973; McLoughlin, 1971).

The current research studies in agricultural education provide limited guidance for those individuals in the profession who are responsible for the design of continued professional education programs. The area of research that appears to dominate the literature in agricultural education is the assessment of teachers' perceived in-service program topic interests. Since 1980 fifteen articles have been published (Barrick, Ladewig, & Hedges, 1983; Birkenholz & Harbstreit, 1987; Claycomb & Petty, 1983; Dormody & Torres, 2002; Duncan, Ricketts, Peake, & Uesseler, 2006; Edwards & Briers, 1999; Elbert & Baggett, 2003; Garton & Chung, 1996, 1997; Joerger, 2002; Kotrlik, Redmann, Harrison, & Handley, 2000; Layfield & Dobbins, 2002; Newman & Johnson, 1994; Roberts & Dyer, 2004; Ruhland & Bremer, 2002) that identify the self-reported technical and pedagogical content topic needs of both beginning and experienced secondary agriculture teachers. The current needs assessment studies in the agricultural education literature have indicated that the profession has continued to utilize the technical update model however, the continuing professional education practices within the profession have begun to include an examination of the competencies needed for the professional practice

of secondary agricultural educators. For example, the most recent needs assessment study by Duncan et al. (2006) justifies the needs assessment work as a means of "improving university agricultural teacher education curricula and statewide continuing education programs" by "assessing the needs of current practitioners of the 'agriculture teaching' craft" to assist "providers of agricultural education preparation" in their efforts to "re-evaluate the content they distribute to pre-service and current agriculture teachers" (p. 24). This study specifically investigated teachers' perceptions of the importance of specific competencies for success in their work as well as the teachers' perception of their own mastery of each competency.

Other areas of research have included a limited number of in-service program evaluations (Brookes & Williams, 2001; Edwards & Briers, 2002; Eisenman, Hill, Bailey, & Dickison, 2003; Gamon & Burton, 1987; Nesbitt & Mundt, 1993; Trede, Russell, & Miller, 1985), several investigative discussions surrounding the responsibilities of planning and conducting in-service programs (Anderson, Barrick, & Hughes, 1992; Pals & Crawford, 1980) and an inquiry into where agriculture teachers acquire their professional competencies (Findlay, 1992). While this area of study indicated an effort to conduct research relevant to concerns regarding the practice of secondary agricultural education, an examination of the literature revealed that none of the reported agricultural education studies of continuing professional education provide theoretically based planning models that may be useful guides to those individuals charged with leading professional development program planning efforts for their respective communities of teachers.

Studies of professional development in agricultural education suggest that current practices in New York State are consistent with those in other parts of the country where professional development programs are limited to stand alone conferences intended to provide content updates to practitioners (Duncan et al., 2006; Edwards & Briers, 1999; Garton & Chung, 1996, 1997; Joerger, 2002; Layfield & Dobbins, 2002; Mundt & Connors, 1999). While these studies provided professional development program planners with lists of content topics, they neglected to explain how the results of the needs assessments were used in the program planning work, who determined which of the needs would be addressed by the program, or how the program was expected to influence the teachers' practices. The omission of a discussion of the planning activities is not surprising since the agricultural education profession's traditions assume that the planning will be conducted by university faculty or state level leaders. For example, the prominence of state education staff and university faculty as leaders in professional development planning is evident in a study of the Idaho agricultural education community where Anderson, Barrick, and Hughes (Anderson et al., 1992) found that "secondary administrators, vocational teachers, vocational teacher educators and state staff perceive that vocational teacher educators have major or primary coordination and delivery responsibilities for all components of a state-wide comprehensive professional development program" (p. 46). In a more recent work Joerger, Spindler, and Nelson (2004) emphasized the significance of teachers in continuing professional education planning by recommending that, "teachers should be encouraged to use their own findings to plan a personal professional development plan by year" (p. 27) but still assumed that state education department staff and university faculty would continue to serve as the program planners for any structured state-level programs.

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Purpose

The results provided here were apart of a larger study. The purpose of the overall study was to examine learner participation in the planning of continuing professional education. The site and audience for investigating learner involvement was the planning of an annual continuing professional education program for New York State teachers of agricultural education. While the literature has continued to identify learners as an integral to program planning (Cervero & Wilson, 2006; Little, 1993) as a means of empowering adult learners to address their educational needs in the context of their practice (Cochran-Smith & Lytle, 1999), there appears to be a lack of empirical examinations of how learners participate in the mutual relationships of responsibility for the planning work. The specific purpose of this paper is to report how the teachers who participated in the professional development conference planning practices in one state utilized their professional experience to provide leadership in selecting the conference components.

Methods

This was a descriptive single-case study (Yin, 2003) of eight agricultural education teachers who participated in their professional association executive board (Table 1). This Board was responsible for planning an annual state-wide continuing professional education program. Each of the individual teachers in the case served as a unit of analysis. A panel of continuing professional education professionals appointed by the U.S. Department of Education has recommended case studies be conducted within the different professions to examine how the individual professions "approach continuing professional education for their members" (Hunt, 1992, p. 8). While this specific case did not propose to represent the character of all agricultural education continuing professional education practices across the country, it was intended to examine teacher participation in one continuing professional education planning group which included collaborative partnerships among multiple agencies that provided continuing professional education programs for the members of the state agricultural education profession. The case-study allowed the researcher to examine the "contextual conditions" (Yin, 2003, p. 13) within the planning group and the influence those conditions had on the participation of the teachers. The case study called for "multiple sources of evidence" (Yin, 2003, p. 14) which was gathered through 19 in-depth interviews with each teacher, participant observations of six planning meetings, and the analysis of relevant documents in an effort to provide a triangulation of evidence in the data analysis. A critical component of the case study design was the development of the *a priori* propositions based on the research questions and the related literature. These propositions were used to guide both the data collection and analysis processes (Yin, 2003).

Table 1: Teachers in the planning group

Teacher Pseudonym	NYAAE Role	Years of teaching experience	Years of exp on Board	Encouraged to participate in planning by another teacher	Participate in professional development planning in local school
Andrew	President	29	7	X	X

Mary	President Elect	20	1		X
Stephanie	Secretary	21	15		
Christine	Treasurer	14	3	X	X
Theresa	Past President	8	6		
Elizabeth	Regional Representative	6	2	X	
Jean	Regional Representative	7	1	X	X
Thomas	Regional Representative	7	2		X

Prior to observing the first planning meeting of the Board and then throughout the duration of the case study, the researcher collected documents and archived records related to the activities of the Board and planning committee. Materials that were collected included documents from the state agricultural education website, previous conference planning materials and evaluations, archived staff records from earlier planning meetings for previous conferences, archived meeting minutes for the Board, as well as the annual agricultural education program reports. Formal observations (Yin, 2003) were conducted during each of the planning meetings, during conference calls, and by the inclusion of the researcher in all email exchanges that took place in between the formal group meetings. Throughout the study the researcher maintained a role of participant observer (Spradley, 1980), allowing the planning group members to know that they are being observed. The meeting observations were audio-recorded while the conference calls were recorded by hand for later transcription, coding and analysis. All email and written communications were also coded and analyzed. The researcher recorded field notes during all observations and composed research memos (Spradley, 1980) to capture her reflections and reactions to the events she experienced.

A primary data source in this descriptive case study was a series of in-depth interviews with the teacher members of the Board. The interviews were designed to surface deep, authentic experiences, and to provide respondents the space to offer their opinions and reflective insights (Gubrium & Holstein, 2001) into their work in the continued professional education program planning . As members of the agricultural education planning group and as experienced teachers, these respondents were able to assist the researcher in understanding the process they experienced during the planning of the continuing professional education program. The first round of interviews involved each of the eight teachers on the Board and was conducted over the four weeks following the Board meeting, based on the teachers' schedule. Each of these individual interviews focused on the participants' past experiences as members of the planning group for previous continuing professional education programs as well as their perceptions of the communications and interactions they experience as part of the planning group for the current annual summer conference. The interviews in round one were conducted in two parts. Each of the part one interviews in round one was approximately 40 – 65 minutes in length. The second part of the round one interview for each teacher was scheduled long enough after the first part to allow time for the participant to receive and review a copy of the first transcript to review it for accuracy and additions. A second round of interviews was conducted with the three teachers in the planning group who had five or more years of experience in the planning process. These

teachers with more experience were able to share perspectives of the planning process that reflected changes in the work over time.

As a part of the early data analysis the researcher transcribed each of the 19 interviews as well as the recordings of each of the six meeting observations which created a total of 515 pages of data in transcriptions. The transcriptions were completed using Windows Media Payer© and Express Scribe© transcription software.   In addition to the transcriptions, the collection of documents examined in the study totaled in excess of 241 pages. The researcher used the Atlis ti© software package to store, manage, code into categories, and aid in the analysis of the transcripts and related documents.   Upon completion of the transcriptions, the researcher reviewed the data and began initial coding informed by the literature outlined in the propositions, the words of the participants, and the researcher's interpretation of the investigation (Constas, 1992). The categories developed in the analysis of the initial transcriptions and documents were reviewed by the researcher sporadically through the coding process to "differentiate one category/theme from another and to identify properties and dimensions specific to that category/theme" (Corbin & Strauss, 2008, p. 73).   Those categories that demonstrated similarities with others were integrated into one category that represented the existing set of quotes and excerpts from the originals (Glaser & Strauss, 1967/1995). Once all of the transcripts and documents were coded the researcher examined each associated quote and excerpt within each category to ensure that the quotes and excerpts were consistent with the others. Those that were miscoded were reviewed within their original document or transcript and recoded. After the categories and associated quotes and excerpts were reviewed for their accuracy, the categories were integrated again into category themes. The researcher provided the teachers in the case study copies of the category theme lists for their review and feedback during the focus group session conducted at the conclusion of the data collection process to ensure that categories and codes were "credible to the persons who provided the information which the set is presumed to assimilate" (Patton, 2002, p. 466).   As a result of the teachers' feedback during the focus group session, the researcher reviewed the categories and made small revisions to the categories. Specifically, the teachers believed that it was important to clarify in the findings the substantial influence of the collaboration between organizations and the resources that were available for the continuing professional education program as a result of the collaborations.

The specific analysis process followed the constant comparative method in which "joint coding and analysis" (Glaser & Strauss, 1967/1995, p. 103) was conducted where "each incident" was "compared with other incidents for similarities and differences.…to identify properties and dimensions" (Corbin & Strauss, 2008, p. 73) that were specific to each category as they were developed. The researcher attended to the analysis of the data throughout the data collection process as recommended in the literature (Glaser & Strauss, 1967/1995; Patton, 2002). Early insights and observation were used to develop a number of the categories.

Results

The teachers explained that their influence on the program primarily came from their ability to use their range of teaching experiences and content backgrounds during the review of the teacher feedback from previous conference surveys. Specifically Andrew explained, "I come with almost 30 years of experience. I remember things that didn't work as well as things that did

work in professional development. I also tend to maybe view some topics as, in a different way than others might" because of my years of experience. Mary agreed reflecting that:

> Teachers [who] currently are in leadership roles have a lot of history…they know what works and what doesn't work. Or they know what we have done in the past. Maybe it is time to do that workshop again because it has been a while since we have done it.…We have to sift through…piles of surveys and piles of ideas and the history that we have, the teachers on the [Board] have a lot of history…and can provide feedback as well. It is easier because the staff that we have now, have quite a bit of history as well but in the future you don't know so I think it is important that we bring these teachers in to make sure our staff is going in the right direction.

The teachers articulated their understanding of the 'right direction' as an effort to select workshop topics that could be shared in a way that allowed the topics to be integrated into courses teachers were already teaching to enhance or compliment the current curriculum instead of expecting teachers to develop additional courses around the new material presented in a workshop. To Thomas this experience included "bad experiences with previous workshops and conferences." He went on to further clarify that these experiences were:

> Not just my own. There are others in my region that I have talked with, you know, on a one-to-one basis that have said 'to be honest with you, the Ellicottville conference, there were just issues there that we did not like it - don't do it again.' Just an informal, one-on-one 'don't do it again.' That presents a challenge.

According to Stephanie this experience was a critical aspect of the program planning work:

> We know what we need. It is like, we know what's good. I mean, from 8 o'clock to 3 o'clock in the afternoon we know what we are doing and we know what is going to fit. I had a teacher say a few years ago, I go to these conferences and all we are doing is, we are adding stuff, we are adding stuff. Well, how many things can you add over the course.…how much can you add without taking something out? What I think we are doing now is saying that you don't have to take things out, but here is just a better way of doing it. So I think since we are the ones making the decisions, we know that you are not going to take things out but let's see what we currently do and do it a little better or tweak it a little. I think that is different if you have teachers taking a look at these lists, somebody who is not involved at the teacher level can regulate anything by saying, 'Wow, here is a great thing that sounds really cool.' But then you get it and it is not practical because you have got to cut out a whole class or part of a class that is working because it doesn't fit.

This was reinforced by Thomas' observation that "we are also in the classrooms; we are also working with the students. The staff isn't working with the students every day." As they explained their contributions to the planning work, Andrew emphasized that they were not only

using their own classroom experiences but those of the teachers they represented "from the limited conversations we might have with others" such as those Thomas referred to earlier.

Based on the observations in this study, the teachers began their efforts to develop the list of workshops that would be offered in the next continuing professional education conference at the November 17, 2007 meeting. As they developed the list, they identified seven teachers whom they wanted to invite to present a workshop on a topic the planning committee thought was in the teachers' area of expertise. Stephanie explained why the group felt it was important to seek out teachers as workshop facilitators:

> If you have teachers teaching teachers, coming up with the ideas … I am more likely to implement it than if somebody from someplace says oh, this is what you really need to be doing. I am not going to implement it as much as if it was something that I am buying into because somebody else is using it, and they have a great program, and I really respect this other teacher.

Christine agreed, explaining that teachers could become facilitators several different ways, "they could recommend themselves or someone could recommend them to share a specific lesson so it gave them a chance to shine, I guess, or share innovations that they have done themselves in the classroom." Andrew emphasized that "our high school teachers are great about sharing. A lot of teachers won't do that." He went on:

> We had to start looking at how do we provide these [workshops] and that is when we started saying that there are teachers out there that are doing these things already, don't reinvent the wheel, just find the teachers that are doing this things already and let them teach the teachers. So in recent years more workshops [have been] taught by classroom teachers to other classroom teachers. We still have things coming from [the university] or something from the national FFA which are needed too.

According to Theresa:

> We see on our surveys so far is that teachers like to learn from teachers. They don't necessarily want the professionals to come in and people in the industry to come in because I think they get the impression that they are selling the product….Some states may not feel that way but from what I have learned now, the teachers in New York really don't want a sales person coming in. It really creates some animosity and negativity in the workshops.

In addition to simply teaching the workshops, a number of the teachers asked to facilitate lessons also prepared kits of materials for each of the participants. As an example, Theresa spoke about an animal science workshop in which the teacher presenter prepared:

> Buckets that she made up with the labs specifically laid out and everything is right there. You know how to do it. And then there is also a list, if you need more of the supply, use this. Sometimes we need to buy more materials, but at least this

gives us the physical materials so that when we go home we know where to buy
it.

Most recently teacher presenters had reported back to the Board that they were happy that teachers contacted them after the conference for additional information and assistance. One presenter for a tree grafting workshop shared with Theresa that "people [were] sending him emails about grafting, could he send them things, could he help them….and he was so excited that people were excited about what he was teaching." Mary concurred, "the more teacher participation the better. We have so many good teachers across the state doing good stuff that we need to share more of that….stuff with each other." As a former presenter herself Jean explained that:

> I think the only limitation is, I did a floral demonstration in a workshop one time
> and if you want to go to something else or see something else [you were unable to
> participate in other workshops in that same time slot]. But we are pretty good
> about getting material to each other so … that is the only limitation I could see.

While the planning committee was excited about the opportunity to have teachers teaching teachers Andrew cautioned:

> I think there has to be a mix. It can't be all just teachers presenting this 'is what I
> am doing in my class'. We have got to bring in a few experts from the field or
> some business people or some college people. But having a good mix, I think, if I
> were to go to a three-day conference and all it was, was the experts from Cornell
> there I might get real tired of it. But if I hear a Cornell person for a couple of
> hours and then I've got a friend of mine that teaches something at his own high
> school and then we bring somebody in from business and you get a mix and you
> get to hear from different people and different views even on the same topic. I
> think people stick with it and they are willing to try and look at what different
> people have to say about some of this [topic]. So we can actually end up having
> several workshops on the same general topic but because they come from
> different points of view you kind of get a more overall view of a topic and as a
> result you get a fair and balanced overview that maybe isn't always tilted in just
> one direction.

To balance out the different types of presenters this year, the Board shifted the conference location to an area near the land-grant univeristy's Agriculture Experiment Station so that teachers would have the opportunity to work with the university researchers. Andrew pointed out "the teachers that I have talked to about it at this point seem excited about the fact that they are going to have some different opportunities yet we are still going to have some of the other types of workshops." According to the preliminary list of workshops that were planned at the Agriculture Experiment Station, the group intended to offer seven workshops that would be presented by the university researchers and program staff. While the incorporation of the research faculty into the mix of presenters seems to be an acceptable approach this year there is still a strong opinion in the planning committee that industry representatives are not desirable presenters. As the planning committee began to develop an initial list of potential workshops

during the meeting in Las Vegas, they appeared to be very aware of the need to balance the different types of presenters throughout the program.

Along with the heavy emphasis on screening workshops to ensure they were relevant to teachers in their practice, this committee of teacher planners repeatedly reinforced the importance of the 'take home piece' that they tried to insure was embedded in each workshop. As Thomas explained, the take home piece could be "an educational piece that they can use in their classroom" or it may be "a different model of how to get across a lesson or how to communicate with a student. Something that the educator can use at their school, use on a personal level." Theresa agreed:

> Some of the best workshops that we have at the ag teachers conference are done by ag teachers because their presentation or their workshop is stuff that works for them in their class, in their school, so it is practical. It is hands-on stuff we can take back to our own classes….We actually hand out stuff to the workshop participants so that they are getting the materials, the handouts, the questions, the tests; but they are also the materials to build the stuff or tests.

Creating the expectation for a 'take home piece' in each workshop reinforced the planning committee's concern that they continued to maintain the partnership with the Ag Tech Prep project that provides the funding necessary for the purchase of the workshop materials. Not only did these materials allow teachers to immediately take back the new ideas and projects to their classrooms without a financial burden on their programs, the teachers saw the resources as a means of demonstrating how they contributed back to their schools. Mary explained her perspective on this contribution:

> When you bring hundreds of dollars back to your school it is huge….We have programs that are elective programs so we have to prove our worth in our schools, and we have to prove our worth with public relations. When we do good things we have to let our school and community know….I am looking at our hydroponics, that was a direct, that project is a direct result of one of our conferences I don't remember how many years ago….I know for a fact when I started my first school I had no materials to start out with and a pathetically tiny budget and I taught with handouts and didn't even have textbooks. So I look back to where I was and where I am now, and the materials I have now are things that I brought back from conferences. Granted, at this school my budget is a lot bigger, but I brought stuff back from conferences that I used, everything from textbooks, pre-made kits, it is incredible the stuff I use. The materials, the outlines, the handouts, teachers that don't go have no idea what they miss. That is kind of sad because they don't understand what a big deal it is and how much they are missing….We've even, our sub-district is going to put our windmills together that we got, it can be a traveling kit so between us we have six or eight of them and each school can use them, package them back up and another school can use them. We can actually take that and make it like a class project so that you don't have to purchase all of the stuff. You have all of the materials for projects.

However potentially important the resources are to the program or beneficial to the school, the teachers appeared to struggle to identify those workshops and resources that really would assist teachers in their local practice. This effort to provide materials had been challenging since these items need to include "more things that you can take home and actually use in the classroom rather than stuff that you are going to stick on a shelf and never use again" (Jean). Since local programs and teaching practices were so different, the teachers were always concerned about how useful different materials would prove to be once they are taken home.

Teachers on the Board believed that they used their experience in their practice to recognize potential workshop topics that were not specifically on the list of survey results. According to Stephanie:

> There are some topics that never show up on a teacher survey but will still have a lot of value…I think we had a great workshop a couple of years ago on literacy. You'll never see that [on a survey], teachers will not say they need a workshop on reading. But that is something that [the university faculty] on the executive Board came up and said this is a valuable workshop, and then it goes and starts to be discussed and it gets to be put on the workshop agenda. So I think there are some things that you are looking at what the teachers want and you are also looking at what we need too because you can't just have all of the fun stuff. I mean sometimes you have to go beyond what you already know because you don't know what you don't know.

The teachers recognized that the diversity of the group, with college representatives and staff, added important perspectives to the planning that could compliment or build upon the perspectives of the experienced teacher as they worked collaboratively to accomplish the planning work. Not only did teachers on the Board and planning committee believe they contributed to the content and format of the continuing professional education program, they believed that their participation decreased the amount of negative teacher comments about the conference program. Stephanie explained, "it is teachers developing a conference for teachers and it really doesn't give you a whole lot of room to complain because as a teacher you have an opportunity to be on the Board and be a part of the planning process." Jean emphasized that in contrast if the continuation professional education program was "brought down to one person making decisions people would squabble about something saying this isn't what we really wanted but with all of us teachers there also…no one can say we didn't get heard. We have representation." When asked to explain her understanding of her role as a regional representative on the board Elizabeth explained:

> Ideally I should poll or get in touch with all of the teachers in my region and get some input from them and supply that input back to the committee so that my job as a representative of a bigger group, that I could take their input and actually give it instead of just being my own person representing the whole group.

While Elizabeth only attended one meeting she did represent other teachers when she participated in the October Board meeting discussion about changing the conference date and the potential conflict with state tests and other duties teachers could have during the finals week.

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The teachers on the Board and in the planning committee strongly emphasized the value they placed on their classroom experience as a resource they drew upon to analyze the feedback from teachers regarding their continuing professional education needs. Members of the Board understood this experience as a critical tool that they brought to the planning work. The teachers explained how they used their experience to help identify teachers who could potentially provide workshops relevant to the needs of teachers who would participate in the conference. Furthermore, the teachers applied their classroom experience to the planning activities as they helped identify the potential take-home pieces that they wanted included in the conference workshops. Finally, the teachers believed that their classroom experience helped them to identify innovative teaching practices or content topics from external sources (national conferences or university research) that other teachers would find valuable to their teaching practice. As a result of the planning committee's work, the 2008 continuing professional education program for New York State agricultural education teachers included 19 workshops or tours (Table 2) conducted by secondary teachers, industry representatives, and university faculty or program staff.

Table 2: 2008 Continuing Professional Education Conference Workshops

2008 Workshop Title	Source of Recommendation or Teacher Request for the topic	Presenter
Creating Organics that Work! So what really is organic farming, after all?	Web Based Survey 2006 Agribusiness Topic	Agribusiness Representatives
Unlimited Potential by Starting Your Own Vineyard – Grape Growing: "New York Style"	Web Based Survey 2006 Horticulture	Secondary Agricultural Education Teacher
Learning Global Perspectives in the Ag Classroom	2007 Conference Feedback International Agriculture	Secondary Agricultural Education Teacher
NYS Wine and Culinary Center Food Science Experience	2007 Conference Feedback Food Science	Agribusiness Representatives
Teaching NYSERDA Energy Smart	Web Based Survey 2006 Alternative Energy	NYS Government Program Staff
Investigating Antibiotic Resistance in Animals	Web Based Survey 2006 Animal Science	Secondary Agricultural Education Teacher
Versatile Agricultural Career Pathways in NYS	Web Based Survey 2006 Academic Rigor & Relevance	NYS Career Pathways Program Staff
Activities in Animal Behavior and Respiration	Web Based Survey 2006 Animal Science	Agribusiness Representative
Through the Water, Thinking Like a Lake	Web Based Survey 2006 Environmental Science	Agribusiness Representative
Experiences for Engaging Leadership in the Classroom	Web Based Survey 2006 Integrating FFA and Leadership Development into the Classroom	Secondary Agricultural Education Teacher
Ag Tech Park – Cookies, Cookie Dough, Cherry Juice…Who Knew?	Web Based Survey 2006 Agribusiness Topic	University Research Representative

Name that Pathogen	Web Based Survey 2006 Biotechnology	University Research Representative
Seed Police: Yes, we exist and we're always watching	*Not a specific request*	University Research Representative
The Chemistry of Aromas	*Not a specific request*	University Research Representative
Do you want to play plant doctor? Taking a hands-on approach to Plant Disease Diagnostics	Web Based Survey Plant Science	University Research Representative
Let there be Jelly	Web Based Survey Agribusiness Topic	University
The Age of Insects	*Not a specific request*	University
Agriculture….Meet Technology Infotonics Industry Tour	Web Based Survey Agribusiness Tour	Agribusiness Representative
Wards Biological facilities tour	Web Based Survey Agribusiness Tour & Request to Visit Wards Facility	Agribusiness Representative

Conclusions/Recommendations/Implications

What appeared to be unique about the Board that served as the agricultural education planning group in this study was the apparent shift of the planning work to a context in which the teachers not only had access to the work at the planning table but were working in collaborative partnerships (Queeney, 1997) with other organizations to accomplish the work. In these collaborative partnerships they had a "substantive role in making decisions about educational programs at the planning table" (Cervero & Wilson, 2006, p. 3) where they essentially controlled the planning work yet partnered with the state staff to carry out the details of the work.

While the teachers on the Board embraced their power and influence on the decisions of the program planning work, they also clearly valued the diversity of the perspectives provided by the other planners on the Board and in the planning committee. Andrew's comment that "the teachers involved in the process have more ownership in it" is a critical because it reflected the relationship the teachers saw they had on the development of the conference objectives and program activities. The Cervero and Wilson (2006) planning theory accounts for the ever changing relationships among people and groups at the planning table and therefore emphasized the need for planners to recognize who was at the planning table, what agendas they bring with them to the planning work, and how they exert their relationships of power to enact their agendas in the continuing professional education program plan.

Two major influences the teachers hoped the continuing professional education program would have on the profession were to help with the retention of new agricultural education teachers and improve the communication and therefore the relationships among members of the agriculture teaching profession. The teachers hoped that if new teachers and pre-service teachers experienced the team activities in the new conference format and had the chance to work with these groups of experienced teachers during the conference that they would be more likely to call upon the experienced teachers when they needed assistance in their own practice. The

development of these long-term interactions with other teachers shifts the continuing professional education program away from being strictly a technical update model to include aspects of Nowlen's performance model (1988) that accounts for the teachers "cultural influences" (p. 73) in their local agricultural education program, school district, and community as well as the teacher's "individual characteristics" (p. 73). While this does not appear to be well developed as a formal piece of the continuing professional education program, it may be a piece that develops as the group continues to work with their new program format.

As a result of this study, it is recommended that additional case studies be conducted to examine how teachers in other states participate in the planning work for their continuing professional education experiences. Specifically, where teachers participate in the planning work it will be important to examine how their participation has influenced the conference programs and how those conference programs in turn influence the professional practices of local agricultural education teachers. Finally, researchers needs to be conducted to determine if continuing professional development programs that are planned with teachers have an influence on the retention of new and experienced teachers.

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PARTICIPATION OF AGRICULTURAL EDUCATION TEACHERS IN THE PLANNING OF PROFESSIONAL DEVELOPMENT CONFERENCES: INFLUENCES OF TEACHERS ON THE CONFERENCE FORMAT

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Abstract

While The National Council for Agricultural Education expects to utilize theoretical and empirical studies to propose new and innovative continuing professional development practices, only a handful of these studies have been reported in the recent agricultural education literature. Furthermore, the typical continuing professional development program planning practices reported in the agricultural education literature are in contrast to contemporary planning theories of adult and continuing education literature. Therefore, this paper reports a portion of the findings from one case study of teacher participation in the planning of a summer conference and the influence of their participation on the changes in the conference content and format.

Introduction/Theoretical Framework

In general, public school teachers in the United States are required to hold appropriate certification or licensure (Hernandez, Ward, & Stickland, 2006; Johnson, Birkeland, & Peske, 2005) in order to secure a long-term teaching position. Public school teachers in New York State are required to participate in 175 hours of professional development every five years to maintain their professional teaching certification (New York State Education Department, n.d.). As part of this state policy teachers have the option to participate in regional or state-wide programs specifically designed for their respective subject areas (Peiter, 2005). Since at least 1965 there has been a well documented record of the continuous shortage of certified teachers entering and persisting in the secondary agricultural education profession (Camp, Broyles, & Skelton, 2002; Kantrovich, 2007). In an attempt to alleviate this national teacher shortage, agricultural education leaders have devoted significant efforts to the continuing professional education needs of new teaching professionals. However, *The National Council for Agricultural Education* has proposed that additional innovative continuing professional education programs need to be designed and implemented as a means of retaining current teachers (Loudenslager, 2006).

While *The National Council for Agricultural Education* expects to utilize theoretical and empirical studies to propose new and innovative continuing professional development practices, only a handful of these studies have been reported in the recent agricultural education literature (Anderson, Barrick, & Hughes, 1992; Pals & Crawford, 1980). This shortage of relevant literature suggests an immediate need to conduct and report studies focused on agricultural education continuing professional development planning practices. This effort would be consistent with the recommendations from the committee of continuing professional education professionals appointed by the U.S. Department of Education that recommended case studies be conducted within the different professions to examine how the individual professions "approach continuing professional education for their members" (Hunt, 1992, p. 8). While this specific case does not propose to represent the character of all agricultural education continuing

professional education planning practices across the country, its intent is to examine one case in which teachers are active participant planners in a collaborative partnership between multiple agencies that are providing continuing professional education programs for the members of one state's agricultural education profession. In an effort to contribute to the national dialogue about agriculture teacher continuing professional education, this study examined the current planning practices of the secondary agricultural education professional development program planning group in New York State.

According to the Cervero and Wilson's (2006) contemporary planning theory for adult and continuing education, planning is a "social activity whereby people construct educational programs by negotiating personal, organizational, and social interest in contexts marked by socially structured relations of power" (p. 24). Based on this theory, educational program planners need to have an understanding of who participates in the planning process and how those participants engage in the planning practices where people make decisions with others in social and organizational contexts where it is "practically and ethically essential to ask who benefits and in what ways" (p. 26) from the continuing professional education program. Cervero and Wilson maintained that these planning practices occur at "multiple physical and metaphorical planning tables" (2006, p. 18) that exist not only during the traditional preparation of a program but continue to operate as participants influence how a program is facilitated while it is unfolding. Lerner participation in their educational experiences has been emphasized in continuing professional education and adult education literature for decades (Houle, 1980; Knowles, 1970, 1980; Lindeman, 1926/1989; Schön, 1983; Sork & Buskey, 1986). Unfortunately the effects or influences of learner participation in planning on the learners and the educational programs have not been closely examined through empirical studies documented within the continuing professional education and adult education literature.

The Cervero and Wilson framework is in contrast to the typical continuing professional development program planning practices reported in the agricultural education literature. In that literature the planning process has been described as university driven technical content updates (Duncan, Ricketts, Peake, & Uesseler, 2006) where university researchers stated, "as students, teachers, schools, curricula, legislation, and times change, providers of teacher education preparation must also re-evaluate the content they distribute to pre-service and current agriculture teachers" (p. 24). During this case study, the participants described that a few years ago these systems of continuing professional education program planning was common practice. However, during the last twenty years there has been a significant change in who has been responsible for planning and conducting the annual continuing professional education conference for secondary agricultural education teachers in New York State. According to Stephanie (please note: pseudonyms are used throughout the paper):

> I remember going to the conferences and filling out the forms about what do you want to see next and all of that stuff and then the next year it was just there. As far as who does the planning, I mean we, we did things like where is it going to be, conference locations but not the workshops. I think the workshops just happened through the State Education Department or whoever put them together. It wasn't really us.

This description of previous conference experiences was consistent with the planning practices described in the current agricultural education literature (Duncan et al., 2006). The changes in

planning participation in this group of teachers were explained as Mary reflected on the changes in who had responsibility for planning conferences:

> Today we have our officers but we have state staff that can kind of lead us as well. I think our teamwork today is so good. Our state staff goes around the state, and they see what schools offer, what schools do really well, what programs are working, and I think that is valuable. I know what is happening in my program; I don't know what is happening across the state, so it is neat that we have state staff that can identify certain teachers or certain programs that are really working. Our state [association] leadership has also been to the national agriculture teacher conferences and they bring back ideas from those conferences for workshop ideas. It is a big difference. I feel really good about what we offer now at our agriculture teacher conferences. I don't want to lose outreach staff and then have the responsibility go back on us like conference planning for instance - that is huge. People don't realize….if they were not involved then they don't know the difference we have today. They have no clue. Our conferences today are incredible….If Tech Prep funding did dry up, if we didn't have the Ag Ed Outreach staff, we would be back to where we were back then.

This planning history has had a strong influence on how teachers have become involved in the planning work and how the leadership and responsibilities are distributed among teachers, state staff members, and other stakeholder groups.

Systematic efforts toward structured continuing education programming began to develop in the 1960s as a means of assisting professionals in their efforts to increase their knowledge of new technologies and information within their professional fields of study and maintain certification or licensure (Cervero, 1988, 2000; Houle, 1980; Queeney, 2000). The literature associated with continued professional education planning in agricultural education during the last two decades has focused almost exclusively on the identification of technical content topic needs of new and experienced teachers reported through census surveys (Anderson et al., 1992; Barrick, Ladewig, & Hedges, 1983; Birkenholz & Harbstreit, 1987; Claycomb & Petty, 1983; Dormody & Torres, 2002; Duncan et al., 2006; Edwards & Briers, 1999; Elbert & Baggett, 2003; Garton & Chung, 1996, 1997; Joerger, 2002; Kotrlik, Redmann, Harrison, & Handley, 2000; Layfield & Dobbins, 2002; Newman & Johnson, 1994; Roberts & Dyer, 2004; Ruhland & Bremer, 2002). This concentration of research has neglected to report the broader concepts of continuing professional education and educational program planning for adults that could include examinations of the theoretical frameworks and program models important to the agricultural education profession. A limited amount of research has been published in the agricultural education literature regarding which groups or organizations have been involved in providing continuing professional educational programs in the profession (Anderson et al., 1992; Pals & Crawford, 1980). While these studies sought to identify the individuals or organizations that participated in and were responsible for planning continuing professional education programs, only the Pals and Crawford study (1980) included teachers in the list of potential program planners. Pals and Crawford did find that teachers, administrators, state staff, and university faculty agreed that teachers should be involved in the "planning, presenting, and evaluation of in-service education activities" (p. 30). However, neither of these studies of the groups responsible for planning continuing professional education programs included an examination of how the

teachers were involved in the planning process, or how this process influenced the development of the education programs.

Purpose

The results provided here were apart of a larger case study. The purpose of the study was to examine learner participation in the planning of continuing professional education. The site and audience for investigating learner involvement was the planning of an annual continuing professional education program for New York State teachers of agricultural education. While the literature has continued to identify learners as an integral to program planning (Cervero & Wilson, 2006; Little, 1993) as a means of empowering adult learners to address their educational needs in the context of their practice (Cochran-Smith & Lytle, 1999), there appears to be a lack of empirical examinations of how learner participation may influence the development and implementation of continuing professional education program designed for groups of learners (Houle, 1972) and therefore why learner participation is an integral aspect of program planning in adult education.

Methods/Procedures

The case selected as the context of the study was the group of eight teachers who served on the State Association of Agricultural Educators' Executive Board and the planning committee responsible for preparing the 2008 state agricultural education teacher summer professional inservice conference. The teachers who serve as the executive officers come from the secondary agricultural education professional community listed in the State Secondary Agricultural Education Teacher Directory (New York Agricultural Education Outreach, 2006).   This community was 75 % male and 96 % white. Ninety-two percent of the agricultural educators taught in rural communities. This purposeful sample (Patton, 2002) was chosen because it was expected to be an "information rich" (Patton, 2002, p. 231) group that deviated from those individuals identified as the planners in the agricultural education continuing professional education program planning literature (Anderson et al., 1992; Duncan et al., 2006; Pals & Crawford, 1980) where university faculty and state staff were reported to conduct the planning work. All of the teachers were asked to participate in the interviews and the focus group. The teachers were also asked to be observed as part of the planning meetings and related planning activities which included email exchanged and conference calls.   In addition to the eight agriculture teachers this Board also included seven state leaders and other stakeholders, including state staff members. The researcher used multiple means of data collection associated with case studies including: 1.) formal in-depth interviews with each teacher, 2.) observation of the Board and committee meetings, and 3.) qualitative document analysis (Yin, 2003) as well as the facilitation of a 4.) single focus group that provided a member check (Patton, 2002) of the draft themes developed in the preliminary data analysis. The data collection process began on October 13, 2007 with the initial fall Board meeting of the entire group of stakeholders and concluded with the planning committee meeting on January 26, 2008 in which the group discussed the final list of workshop topics that would be included in the continuing professional education program.

On October 1, 2007 initial contact was made with the president of the agriculture teachers' association, state staff, and the two university faculty who served on the Board. Each of these

individuals was given copies of the letters for the round one and two interviews, the meeting observations, and the preliminary focus group protocol. All of the individuals except the association president were also given copies of the draft interview guides for their review. Finally, a general overview of the study and the individual data collection techniques were provided to the entire Board at their first meeting. The interview guides for both the round one and round two interviews were pilot tested with the most recent past president of the agriculture teachers' association. This individual had recently left the Board at the conclusion of his tenure as an officer. The pilot test of the interview protocols occurred one week before the first round one interview and was one hour and thirty minutes in length. At the conclusion of the pilot interview the researcher conducted a brief, 30 minute interview with the past-president regarding his experience in the pilot interview with the recent past president. The interview guides were modified based on the feedback from the interviewee and the clarifications to the interview items that were requested by the interviewee and noted by the researcher during the pilot interview.

As a part of the early data analysis the researcher transcribed each of the 19 interviews as well as the recordings of each of the six meeting observations which created a total of 515 pages of data in transcriptions. The transcriptions were completed using Windows Media Payer© and Express Scribe© transcription software. In addition to the transcriptions, the collection of documents examined in the study totaled in excess of 241 pages. The researcher used the Atlis ti© software package to store, manage, code into categories, and aid in the analysis of the transcripts and related documents. Upon completion of the transcriptions, the researcher reviewed the data and began initial coding informed by the literature outlined in the *a priori* propositions, the words of the participants, and the researcher's interpretation of the investigation (Constas, 1992). The categories developed in the analysis of the initial transcriptions and documents were reviewed by the researcher sporadically through the coding process to "differentiate one category/theme from another and to identify properties and dimensions specific to that category/theme" (Corbin & Strauss, 2008, p. 73). Those categories that demonstrated similarities with others were integrated into one category that represented the existing set of quotes and excerpts from the originals (Glaser & Strauss, 1967/1995). Once all of the transcripts and documents were coded the researcher examined each associated quote and excerpt within each category to ensure that the quotes and excerpts were consistent with the others. Those that were miscoded were reviewed within their original document or transcript and recoded. After the categories and associated quotes and excerpts were reviewed for their accuracy, the categories were integrated again into category themes. The researcher provided the teachers in the case study copies of the lists of category themes for their review and feedback during the focus group session conducted at the conclusion of the data collection process to ensure that categories and codes were "credible to the persons who provided the information which the set is presumed to assimilate" (Patton, 2002, p. 466). As a result of the teachers' feedback during the focus group session, the researcher reviewed the categories and made small revisions. Specifically, the teachers believed that it was important to clarify in the findings the substantial influence of the collaboration between organizations and the resources that were available for the continuing professional education program as a result of the collaborations. Finally, the category themes were reduced (Glaser & Strauss, 1967/1995) to create the overall themes.

The researcher in this project benefited from maintaining what Young (2004) referred to as both insider and outsider status within the continuing professional education program planning group involved in this study. The insider status was reflected in the researcher's seven years of classroom teaching experience and ten years of experience as an administrator of an extension program in a university's Department of Education. Since the researcher has now left this administrative position to assume a graduate assistantship, she created some distance between herself and the classroom teachers in the study, and therefore shifted to an outsider relationship with this group. The challenge for the researcher was to maintain the "values and perspectives that are associated with insiderness while being conscientious about and appreciative of what being on the outside means for advancing conversations with people" (Young, 2004, p. 201).

While the role of observer situated the researcher as taking the "role of other" (Woods, 1996, p. 61) within the research context, caution was taken by the researcher to be aware of the risk of losing perspective because of relationships and close associations with the participants of the study. Utilizing a journal (Spradley, 1980) assisted this researcher in recording and later reflecting on her personal experiences that would influence the interpretation of the observation data associated with particular events. Tedlock (as cited in Suzuki, Muninder, Mattis, & Quizon, 2005) described this as observing the participation of the participant observer. Specifically the journal provided the researcher with a space in which to record her ideas about the participant interviews and actions shortly after they were observed. These ideas were helpful later in the coding and analysis work. The journal was also used to note points where the researcher was concerned about how her previous relationships with the teachers may have influenced the meetings she observed.

Results/Findings

Individuals on the Board and planning committee did not always have a positive opinion about the conference workshops and program format. As the group members shared their reflections on their early participation in the conference, five of the teachers stated that as new teachers attending the conference they had felt isolated or disconnected from the other participants. For example, Mary explained "my first…conference was in a hotel in [the central part of the state]. I was in the hotel by myself because I did not know anybody else, and you made your own hotel reservations." The teachers agreed that this feeling of isolation amplified their positions as new teachers, and at times they found it also limited their opportunity to interact with experienced teachers and develop a network of peers that they could use as a support in their local teaching practice. As Theresa reflected on her first conference she remembered:

> I really enjoyed the conference but I enjoyed the camaraderie of the conference a
> lot more than I enjoyed the workshops. If you asked me what specific workshops
> I went to, I could not tell you one. I could remember going on the ROPES course
> with the other teachers, and I remember going canoeing and kayaking with the
> other teachers, but to me it was important to have that group interaction. That
> was what made me comfortable at the end of my first year.

The teachers shared that these early conference experiences had a strong influence on their current planning work. As Theresa explained, "when we sat down as a group and we thought about ways that people could interact, that was my big push. We needed to have interaction."

They did not want new teachers who attended today's conferences to feel isolated and alone. They want them to feel like they are part of a larger profession in which they could rely on others to help them out when they need it.

In addition to the concerns about individual isolation at the conference, the teachers explained that during previous conferences there had been too much top-down directed sessions, specifically "a couple of years ago we were getting too much [university] interaction, too much of the university" (Theresa). According to the 2005 conference program Theresa was referring to, ten of the 15 total workshops were presented or facilitated by university faculty or staff. The teachers felt "they were being sold the university" information "instead of being educated about agriculture in general" and according to Theresa the teachers freely shared these concerns with the Board and planning committee. These concerns lead to the planning committee's efforts to find teachers who were willing serve as facilitators for a majority of the workshop sessions. "That was what we were trying to work on having teachers teach teachers because that is what they seemed to really want" (Theresa). Thomas expressed that a similar concern motivated him to become a part of the Board and planning committee:

> The reason I got involved with it was as a teacher or as an educator is the understanding that we go to an inservice, we see a lot of times new data coming at us…it is all in a lecture and in the agriculture field we obviously cannot do that all of the time. We have hands on. Don't put them in a little room, close the blinds and throw on a PowerPoint from a professor that tells us something that a lot of us knew….Everybody is sleeping. Don't do that again….I think that there are enough of us on this committee that have had experience with bad conferences and good conferences. We know what works for good conferences. I am saying that for New York agriculture teachers, the model that we're looking for is traditionally hands on, they want something positive. They want something out of this.

As the teachers on the Board shared these concerns and their experiences at previous conferences, they explained how these concerns lead them to rethink their beliefs about their roles in the planning process and their understanding of the purpose of the conference.

As the experienced teachers on the Board told of how they really became involved in the conference planning, they each shared their story about a specific informal and unofficial meeting that was held two years earlier on a summer evening in Lynn's basement family room. A group of six teachers from the Board all happened to be at the agricultural education state FFA camp with their students, and they decided to meet together to visit about the conference that had taken place the previous month. Theresa told of how the conversation unfolded:

> We were all officers at the time and we all go to camp the same week so what a better time to sit down and start planning the conference than when the kids are off doing a dance or whatever. We were all there and none of us live that close to [the state FFA camp] so it was easier to do it then. It was the middle of July and we figured, sitting down in the basement of her [Lynn's] house, we would just come up with some ideas, what we can do better. That is when we started going back over those feedback lists that she had. With that feedback list she kind of went through it step by step. We got to watch some video of the conference, and we could see the interaction between people. We could see what they enjoyed,

and what they didn't enjoy. That year there was a lot of negatives about the conference. Teachers don't have any problem telling their opinion on things….If they didn't like what was going on one, we are not going to get them to the conference, and they are not going to be excited about it, and too, as a group, [the Board] is not doing their job of educating the teachers. So we did a total 360 from that conference. It was, the term stuffy is coming into my head, but that is not what I think it really is, it was much more professional and business-like. Business-like would be the better term there. We went to the group interaction conference the following year and people loved it. The other problem we have is that just in human nature, we are cliquish, and when you are not forced to go outside of your box and work with other people, you don't get to know them. When we started on the next conference…one of the big pushes we had was to really have teachers work together. There was some animosity on the state level from people. By chance, Lynn's favorite show was *Survivor* so I don't remember but I think a commercial came on for *Survivor* and she freaked out, 'I love *Survivor*.' We started talking that we could have *Survivor Oswegatchie*. It was not a conference based idea at that point; it was a 'wouldn't that be great to do at camp' sort of thing. It kind of morphed from there. We were talking about conference and somebody, it might have been [another former committee member], made the comment about, 'well why couldn't we do something *Survivor Oswegatchie* for ag teachers?' We started talking about that and what it would entail and one of the comments that were on the comments cards was that they did not feel there was enough group interaction….One of us made a comment that we really needed to do group interaction. If we were doing this why couldn't we work in teams, why couldn't we have a great race for *Survivor*, why couldn't we do *Survivor* kinds of activities like eating strange foods, working on your own. It just kind of developed from there, and that was how it started. Then one of the university faculty members got very interested in it, and he picked it up a little bit later on when he was doing his tribal council activity. By that point we had already developed the activities that we were going to have, and they weren't like my first year of camp where it was going to be four hours of free time here and two hours of free time here, and you can go off in a group and do this. That was not what we wanted. The reason we did not want that was because if you didn't know people, it didn't help you. We really wanted people to work together and to be forced to work together and that is what the survivor theme did. They had to sit down with their team and make a flag. They had to sit down with their team and come up with who was going to do this part of the great race. That is what we really wanted. I can't thank the Oswegatchie enough either because (their staff) did a tremendous amount of planning.

Thomas provided more insight into the planning committee's concerns and motivations as he explained:

There are a lot of young teachers in our state and there are quite a few experienced teachers in our state and then there is the middle of the road that have been teaching for 5 -15 years and it seems to be that these teachers would kind of separate. At workshops they would all just talk at a table, they would look around the room, and they would not know too many [other people] or they would know

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them but really not know them. We as a committee thought about this and thought about how many young teachers there are, and how do we get them involved to talk with experienced teachers as kind of a mini-mentoring session...We randomly selected teachers, there was not hand picking of any, we just put all the names on a computer excel sheet and hit sort and boom, we took those names and broke them out into teams. Then we had to get the workshops geared so that they had to work together.

As a result of the basement meeting the annual conference program was redesigned to encourage teachers to work together in their teams during specific activities. According to the 2006 conference program materials there were five sessions, nine hours in total, devoted to activities in which the teachers had to work with their teams to accomplish a team challenge. In 2007 the program included four sessions that totaled seven hours. These teams were sorted to include student teachers, new teachers, experienced teachers, university faculty, and state staff. During the 2006 conference, the teams were provided with color-coordinated bandanas that were designed and silk screened by students in Theresa's agriculture program; while teams at the 2007 conference were given t-shirts in their team color. Teams were awarded points for their success in specific events and members of the winning team in 2006 were awarded digital cameras to utilize in their local agriculture programs (2006 Conference CD-Rom). In 2007 the winning team members were each given an iPod to integrate into their classroom instruction (2007 evaluation results).

The new program model included specific changes that encouraged teacher interaction and time in the program to share ideas during the workshops and other sessions. These changes included scheduling three workshop sessions two times each to allow for a small group learning environment and space for individuals to participate in the hands on activities that were imbedded in each session (2006 & 2007 Conference Registration Forms). Each team of teachers was lead by an Board member. During the conference registration, pictures were taken of each team member to help people learn each other's names. The pictures, labeled with the person's name and school, were grouped by teams and posted on a wall in a common area near where the meals were served. This area also included a large score board where the event results were posted (2006 Program CD-Rom). Theresa explained how she helped create the photo display:

> It was my idea to have the Polaroid camera and take pictures of everyone so that
> we could have a wall. So I went on line and I bought all of the stuff so that they
> could make the big display board and have that stuff there.

The final component of the conference, the Tribal Council, called for teachers to share teaching ideas within their teams and within the larger conference group. Throughout the planning, an effort was made to connect the components of the conference with pieces of the theme and to the team events. Theresa said, "The only drawback to the fact of it was that some people thought it was a little too competitive. We had that comment three times on our feedback sheets, out of 90 responses."

Members of the Board shared that they were excited about the new program model and the opportunities it provided for teachers to work together, learn from each other, and build relationships. However, individuals on the planning committee, including Thomas, had been nervous about how their peers would respond to the new program plan:

> What made me nervous was, what was the end result going to be? Are these
> teachers going to come in and say no, we refuse to be part of the teams? No, we
> drove five and a half or six hours to get here, now you want us to do this, this, and
> this?

As a result of their concerns he emphasized that "we as a committee, we really worked hard ahead of time to get the message out in a positive manner that this is a fun thing." The planning committee recognized that the new format needed to be sold to the other teachers, and it had to be sold by the teachers on the NYAAE Board.

Based on the feedback at the conclusion of the conference, teachers appreciated the new format. As a result of the success with the new program model, the planning committee in this study focused on ensuring that the facilities for the next conference supported the critical components of the model and that the program reflected the interactive features the teachers had appreciated in the previous conferences.   However, because of the move to a hotel facility, the planning committee chose to suspend the team activities for the 2008 conference. The planning committee's focus on meeting these needs within the current program was reflected in Thomas' concerns during the October planning meeting:

> Put yourself in the shoes of either a new teacher or a teacher who hasn't been at
> conference in lets say, 10 years, and we get them talked into going to this
> conference. Which one would be the image that they are going to remember that
> is going to give them the positive experience to say: hey, I want to go again?

The successful 2006 and 2007 conferences were considered heavily in planning the 2008 conference. In an interview after a planning meeting, Thomas clarified what he was looking for as he helped select the 2008 conference facility:

> I am looking for: are they happy with the rooms, are they happy with the hotel,
> are they happy with the meeting space, or are we cramming 50 people into a ten
> by ten room, and somebody is trying to give us a presentation? I am interested in
> knowing is there a relaxing time at night where teachers can get away from their
> teams for a few minutes and visit with their friends….If we do not present that
> type of meeting facility we will not have people coming back to this conference.
> This conference will die.

The planning committee spent a significant amount of time during their meetings considering their hotel options for the conference location. The initial discussion began during the October meeting and continued into November with two additional conference calls. Throughout this discussion teachers emphasized the concerns illustrated in Thomas' comments.

The planning committee considered their experiences from the 2006 and 2007 conferences as they decided on the 2008 conference facilities and their need for space for workshop sessions with hands-on activities. In previous years teacher feedback about the conference workshops had included concerns that there were not enough hands-on technical workshop sessions to meet their needs and interests.   In particular teachers were interested in technical updates that demonstrated how the new information could be integrated into existing courses or developed into new courses. Andrew shared how challenging this expectation could be:

> If we suddenly went to a PowerPoint or dog and pony show we would probably
> get drawn and quartered and hung out in the square. Ag teachers don't sit so we
> constantly have to come up with workshops that will keep teachers active and that

can sometimes be a challenge.   In some of the areas to find workshops that meet the needs in some of the areas is an adventure as well.

The other teachers were not the only ones who wanted to experience interactive workshops, Theresa admitted, "I hate sitting in workshops that are not hands-on. It's just a very negative, well I am bored."   Her appreciation for hands-on experiences during instructional sessions reflected in her participation in the planning meetings. For example, in the November planning committee she offered a critique of one possible educational session at the Cornell University Agriculture Field station by suggesting, "I have been on that tour, and it is not very hands-on, but they might be able to make it hands on." Later in the meeting Theresa suggested a teacher with a background in grape production could do a workshop on viticulture where:

> Even if it is learning about trimming back grape vines and that kind of stuff.   We did grafting this year, we could do pruning of plants and more of the upkeep and growth. I mean we do grafting last year, but a big thing with viticulture is grafting so we could look at how they graft and why they grow the way they do and root stock and that kind of stuff.

She was a very active participant in the discussions about workshop topics and possible presenters.   In particular, she was critical of the workshops offered at the national NAAE conference in Las Vegas, and she was cautious about which of those sessions could be applicable to the state program.

As the planning committee reviewed the feedback from the recent teacher discussions during the previous summer agricultural events, they recognized that some teachers had expressed concerns with the technical update format of the conference. Specifically comments from the teacher discussions referred to by the NYAAE Board as the *fireside chats* included:

- concerns about the shotgun approach to workshop topics,
- observations that the take home content was too light for some teachers,
- concerns about how much of the material was used in individual programs, and
- the concern that if the topics were all one subject the number of teachers who participate will not increase.

Mary's response was, "as busy as we are and as much as I like conference it would be a struggle to have more than one a year….So we jam pack and have an awesome conference and try to get as many agriculture teachers there as possible. I think that is really beneficial."   During the meeting observations, the overwhelming perspective was that the majority of the teachers wanted hands-on technical updates that they could immediately integrate into their instruction.

With the changes in leadership and responsibility for planning the annual continuing professional education conference for agricultural education in this state have come changes in the conference program. As the teachers in this study shared, at times the program has offered little relevant resources or educational experiences for their teaching practice. However, over the last several years the development of a collaborative planning committee that includes secondary and postsecondary agricultural education professionals as well as state staff members and other leaders in agricultural education appears to have created an opportunity for teachers to have a positive influence on the program design which is supported by the staff and resources necessary for a positive educational experience for participating teachers. The new model offers multiple

workshop options in each session, presentations by teachers teaching teachers, and an emphasis on hands-on learning activities that may be transferable to a local agriculture program.

Conclusions/Recommendations/Implications

As the experienced teachers described their perceptions of the planning practices of the 1980s they explained that they believed the secondary agricultural education teachers had very little influence on the conference planning activities or the program content. Instead, they understood that the State Education Department held control of the decisions regarding the continuing professional education program design and content. In contrast to this earlier planning work, the teachers who participate in the current planning structure perceive that they have a substantial influence (Cervero & Wilson, 2006) on the program planning work and the current program design.

As the teachers told their stories about the impromptu basement meeting held at Lynn's house in the summer of 2005, they explained how the group created a new format and program emphasis as a result of the collective brainstorming of Lynn and the six teachers. The teachers described that they exhibited substantial influence (Cervero & Wilson, 2006) on the program as they proposed and adopted new ideas to create the team focused format for teacher participation which they hoped would encourage greater communication between teachers in the teams and other individuals in agricultural education profession. At the same time the new plan called for a reduction in the amount of workshops provided by university faculty. This change in the educational objectives to focus on teacher designed educational experiences demonstrated a shift in the epistemological understanding that informed the planning practice. Finally, the current planning practices exhibited by the teachers and state staff included a conscious awareness of the importance of the political and social as well as the educational objectives of the program, as Cervero and Wilson (2006) described, the teachers attempted to plan with both eyes open.

These changes in the program resulted from the groups' intentional efforts to move away from deliberately planning only for the educational objectives, to planning deliberately for the social and political objectives of the program as well. The social objectives became evident as the teachers at the basement meeting agreed that they needed to change the program format to require teacher participants to work in teams during portions of the activities. In this case the teachers appeared deliberately to take advantage of a social phenomenon in which "education does not stand outside the unequal relations of power that more generally structure social life; rather, educational programs not only are structured by these relations, but also play a role in reproducing or changing them" (Cervero & Wilson, 2006, p. 19). The program was therefore deliberately designed to use the social structure and relationships designed into the program to try to address issues of negative relationships between members of the greater professional community that the teachers saw were having a negative influence on the relationships between agricultural education professionals.

After the basement meeting the new program format resulted in a shift away from the university driven, model of knowledge production in exchange for a continuing professional education program designed to emphasis and value teacher developed knowledge shared by teachers as workshop facilitators as well as teacher to teacher exchanges of best teaching

practices within the activities in the conference program. This format promoted an exchange of practitioner constructed knowledge as a means of addressing problems in practice that drew upon the teachers' practitioner repertoires (Cervero, 1988; Schön, 1983) therefore embracing an epistemology of practice (Schön, 1983) whereby the knowledge developed by teachers as a part of their everyday "reflection-in-action" (p. 49) is exchanged between practitioners during the workshop experiences.

Based on the findings from this case study, it is recommended that additional research be conducted within agricultural education to examine the planning practices of other planning groups through the lens of adult education program planning theory. There appears to be some concern within this group of learners that the technical update model may not really be addressing the needs of the agricultural education teachers. In practice agricultural education continuing professional education program planners may need to examine the other program models that appear both in the research literature and professional journals. Upon closer examination of the models through the lens of the teachers' educational requests and concerns expressed on surveys, the planners may find that other models may be helpful in supporting or supplementing the already popular technical update program.

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EVALUATION OF INFORMATION TRANSFER BETWEEN EXTENSION AGENTS AND DAIRY PRODUCERS IN PENNSYLVANIA

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The purpose of this study was to determine how information from Extension Agents was being disseminated to dairy producers in Pennsylvania in areas of program advertisement and teaching methods. It also sought to determine if Extension Agents are reaching special populations of producers (e.g. Amish, Hispanic, disabled) in their areas. A descriptive research design was used to collect the data for this study. The target population was all dairy producers in Pennsylvania and the Extension Agents that serve these producers. The study found that Extension Agents and dairy producers agree on advertisement methods but are in disagreement on teaching methods. Furthermore, the types of programs offered by Extension Agents differ from the types desired by dairy producers. Extension Agents report they are adjusting programs to accommodate Amish producers, but not necessarily Hispanic or disabled producers.

Introduction

Pennsylvania is the fifth largest milk producer in the United States (National Agricultural Statistic Service, 2008) with 9,146 farms that produce milk and dairy products (2002 Census of Agriculture). Dairy production is impacted by various factors including nutrition, herd health and milking management. In an information rich society there are many people that the producer can turn to for answers to questions they have regarding certain areas of production. Resource people may include the veterinarian, the feed sales person or a trusted neighbor. One source that has been available to producers for a number of years is the County Extension Agent.

In 1914 the Cooperative Extension Service (CES) was established by the Smith-Lever Act (Seevers, Graham & Conklin, 2007). The mission of the CES, established in 1914, is "…To aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same." (Smith-Lever Act, 1990, sec. 1).

Extension Agents in Pennsylvania are available to assist people with agriculture related problems including dairy production. As technology increases in the world Extension Agents will continue to adapt how they advertise and implement programs. Neehouse (2005) found that West Virginia Extension Agent's third highest preference for information dissemination was via the Internet. "Implications suggest that extension should avoid moving too rapidly into newer, impersonal forms of communications to meet informational needs of it's agricultural audiences," (Richardson & Mustian, 1988, p 1). As the Extension Agent looks towards the future, they cannot overlook the clientele who for whatever reason have shunned technological advances.

The population of dairy producers in Pennsylvania is very diverse. The 2002 Census of Agriculture indicates that the average age of a Pennsylvania farmer was 53.1 years old. There

were 349 farms in Pennsylvania that had Spanish, Hispanic or Latino operators which represents 3.82% of all dairy farms. In addition to the Spanish there is a large population of Amish in Pennsylvania. The Amish (2007) stated that, "The oldest, richest and third largest group [of Amish] is the settlement centering in Lancaster County" (p. 1).

Michigan State University found that only 10% of farmers surveyed obtained information from the Internet (which was up from the 1.4% in 1996) (Suvedi & Campo, 2000). Of the 349 Spanish, Hispanic or Latino farms only 89 were using computers for business and only one-third of these 89 reported having Internet access (2002 Census of Agriculture, 2002). According to available literature on the Amish, "…most elements from mainstream society—such as electricity throughout their homes, TV, computers and modern tractors—are considered to be tempting elements from an "outside world" that could lead them away from their close knit community…" (The Amish and Technology, 2008, para. 1)

With the diverse farm populations in Pennsylvania how are Extension Agents connecting with each of the producers? Do Extension Agents communicate with and offer programs for their various clienteles that meets the needs and preferences of the dairy producers? Understanding clientele preferences for information transfer will assist Pennsylvania Extension Agents to develop better communication methods, thereby increasing program attendance as well as the adoption of innovative practices.

Theoretical Framework

The Cooperative Extension Service (CES) is one of the largest organizations to educate adults in the world (Seevers, Graham, & Conklin, 2007). There are many adults served by the CES, including dairy producers. The National Languages and Literacy Institute of Australia (1999) found that adults seek educational opportunities for many reasons. Some of these reasons include: to achieve goals, to make up for lack of previous education, for their own development or to do better at a job.

Advertisement for Programs

The first thing that must happen in order for a CES program to be a success is for the clientele to become aware of the CES. Warner (1996) found that only 45 percent of the 1,048 people in a 1995 survey were aware of the Cooperative Extension Service. This was up five percent from 1982 and, "every farm resident in the 1995 sample was aware of Extension." Furthermore, Rexroad (2002) found that most people became aware of programs first by participating in other extension programs (23%) followed by referrals by friends (18.9%) and newspaper articles (13.5%). One of the least popular ways people became aware of the programs were through the Extension Internet site (1.4%).

There are three steps involved in developing an Extension program: planning, design and implementation and evaluation (Seevers et al, 2007). The planning process should include how a program will be marketed. Nehiley (2001) developed a four step plan to marketing Extension programs. The plan is to (1) conduct an audience inventory, (2) define your goals and specify your objectives, (3) decide on the nature of your message and (4) decide on the appropriate

media. The Extension Agent needs to, "Use the media that works with that targeted subgroup of the population." (Step Four: Decide on Appropriate Media, para. 1).

Iddings and Apps (1990) focused on how producers felt about computers and found that many farmers believe, "You can't teach an old dog new tricks." and "I'm too old to learn." (Age, para. 1) This shows the need to implement methods of advertisement that do not just involve using the latest technologies.

Neehouse (2005) found that most of the Extension Agents in West Virginia prefer writing in newspapers to disseminate information, followed by using a bulletin or newsletter. The third most preferred method by which Extension Agents disseminate information was using the Internet.

Teaching Methods Utilized During Programs

New practices are taught with the hopes that participants will apply what they have learned. Peters (1998) found that there were four important factors that lead to the adoption of a practice which included mutual trust, credibility of information, actual farm demonstrations and amount of communication. In order for something to be adopted the Extension Agent must contribute to these factors.

Gamon, Harrold and Creswell (1994) looked at rates of acceptance of new practices. They found, "there were no significant differences between the farmers who attended and those who did not [attend programs]. Also, there were no significant differences for level of information and adoption practices before and after the conferences" (Gamon, Harrold & Creswell, 1994, p. 41). Getting the producer to the program does not guarantee an accepted practice. This is why it is crucial to use producer preferred teaching methods.

Chizari, Mostafa & Linder (1998) found that Extension Agents perceived result demonstrations, method demonstrations, and formal group meetings as the most effective extension education teaching methods. On the contrary, Richardson and Mustian (1988) found that 90.7% of dairy producers in North Carolina considered the use of newsletters important, followed by farm visits (83.3%) and meetings (79.6%). In addition, "Information delivery techniques such as teleconferencing, video tapes, audio cassettes, cable television, and home study courses were rated quite low" (Richardson & Mustian, 1988, p. 1).

According to Riesenberg & Gor (1989), desired teaching methods vary because of the age of the farmer, size of the farm and educational status of the farmer. It was found that young farmers, as well as college educated farmers, prefer to use computers to learn. Farmers with large acreage benefit most from publications. Brown (2003) found that, "Age, educational level, and motivation influence each student's learning so that what was once preferred may no longer be the student's current preferred learning style." This emphasizes the need to research who will be attending the programs so that the most effective delivery methods can be utilized to improve adoption.

Studies relating to the research questions posed for this study vary in age. Research on dairy producer's preferences on delivery methods has been conducted over several years, while the research that relates to how Extension Agents prefer to disseminate information has been conducted more recently. No studies were found directly related to dairy producers and programs.

Purpose/Objectives

The purpose of this study was to determine if information from Extension Agents is reaching the dairy producers through appropriate advertising of programs as well as the dissemination of information during programs. In addition what are Extension Agents doing to reach special populations (e.g. Amish, Hispanic, disabled) of dairy producers in their county?

The primary objective of this study was to compare the services Extension Agents are providing within a county with the services producers of the county would like to have. The research focused on areas of advertising for programs, information transfer during programs, and program offerings. The following questions were addressed in this study:

1. How do Extension Agents in Pennsylvania advertise their extension programs?
2. How do dairy producers in Pennsylvania prefer to learn about extension programs in Pennsylvania?
3. What methods do Pennsylvania Extension Agents use to teach their programs?
4. What teaching methods do Pennsylvania dairy producers prefer to be used during programs?
5. Are Pennsylvania Extension Agents connecting with dairy producers in their county through advertising and information transfer during programs as well as types of programs offered?
6. Are Pennsylvania Extension Agents targeting programs to the special populations (e.g. Amish, Hispanic, disabled) in their county and how are they making adjustments to accommodate them in their programs?

Methods

Research Design

Descriptive research, in the form a survey of intangibles, was used to evaluate the above mentioned questions. "Surveys permit the researcher to summarize the characteristics of different groups or to measure their attitudes and opinions toward some issue," (Ary, Jacobs, Razavieh & Sorensen, 2006 p 31). By using a mailed questionnaire, a sample of the target population was able to be reached regardless of location.

There are five errors which exist with survey research that need to be controlled. To avoid frame error official lists of DHIA producers in Pennsylvania were used. To avoid sample error a random sample of all dairy producers from the annual report was taken and the Extension Agents were purposely chosen based on the location of the producers selected.

Selection error was avoided by going through the annual report to make sure each producer appeared only once and that agents that worked in more than one county were sent only one survey. Measurement error was controlled by making sure that the instrument was valid and reliable.

The potential for non-response error was identified by comparing the early respondents to the late respondents. For dairy producers Pearson Chi-Square was used to determine if there were differences in three variables. The variables included how many dairy extension programs were attended per year, how many head of dairy cattle were owned by the producers and the age range of the producers. Chi-Square resulted in no significance in each of the three variables so generalizations for this segment of the study could be made back to the entire population of dairy producers. For Extension Agents it was assumed that the first six questions in the instrument were a good representation of knowledge of dairy programs. Early and late respondents were compared on the first six questions finding no significance. The findings of this study could be generalized back to the entire population.

Population

The target population for this research study was all dairy producers and dairy Extension Agents in Pennsylvania. The accessible population of dairy producers was the producers listed in the 2005-2006 Lancaster DHIA Annual Report (N = 1000). The total number of dairy producers included in the sample population (n = 278) was determined by using the Krejcie and Morgan Table (1970). The accessible population of dairy Extension Agents were all agents responsible for dairy programming who serve in the counties where the selected producers resided (N = 31). Following the two mailings, four surveys (three producers and one agent) were returned as undeliverable.

Instrumentation

Two different and separate surveys were sent to dairy producers and dairy Extension Agents in Pennsylvania. The survey type used was a survey of intangibles. This type was used because attitudes were to be determined from a sample of the population. It consisted of Likert-type questions with six responses available. The responses included strongly agree, moderately agree, agree, disagree, moderately disagree and strongly disagree. Neutral was omitted so that producers and agents had to give an opinion on each topic. This type of question was chosen because it is a way to determine attitudes on a subject (Ary et al., 2006).

The dairy producer survey consisted of questions evaluating their attitudes toward their Extension Agent, their preferred advertising methods for programs, their preferred teaching methods for programs and their preferred type of programs. The Extension Agent survey consisted of questions evaluating their attitudes toward how they serve their county, how they advertise for programs, the teaching methods they utilize during programs and what programs they offer. In addition to the Likert-type questions, the instrument included ranking, single response questions and demographic type questions.

Validity of the Instrument. The instrument was presented to faculty members in Agricultural and Extension Education and Extension Youth Agriculture Specialist at West Virginia University and a Dairy Specialist at Pennsylvania State University. The faculty determined that the instrument had face and content validity.

Reliability of the Instrument. The reliability of the instrument was established using the entire data set and the Statistical Package for Social Sciences' (SPSS). The Likert-type items were tested for reliability using the split-half statistic coefficient. The unequal-length Spearman-Brown value was found to be .9742 for the Extension Agent instrument and .8456 for the dairy producer instrument making reliability of the instrument exemplary (J.P Robinson, P.R. Shaver, & L.S. Wrightsman, 1991).

Data Collection

Dillman's (2007) tailored design method was used to collect data. A packet that contained a cover letter explaining the purpose of the study, the instrument, a pre-paid self addressed envelope and a small token of appreciation was sent to each participant, this was followed by a second mailing to all non-respondents two weeks later. Two weeks after the second mailing, a follow up post card was sent to all dairy producers who had not responded and an email was sent to all Extension agents that had not responded asking them to please complete and return the survey.

The accessible sample population for this study consisted of 275 Pennsylvania dairy producers randomly selected from the Lancaster County Dairy Herd Improvement Association's 2005-2006 Annual Report and the 30 Extension Agents who serve these producers. Of the 30 agent surveys 25 were returned (80.6%). Of the 275 dairy producer surveys 114 were returned (41.5%).

Data Analysis

Each respondent was given a code in order to track non-respondents. The code and key were later destroyed to keep individual responses confidential. Data were first entered into an Excel spreadsheet with comments to open ended questions being entered in their entirety. SPSS was then used to analyze the data. Frequency tables were developed for all of the data on both instruments. The dairy producers and Extension Agents were then compared using the t-test for Equality of Means.

Findings

The top methods of advertisement were determined for both Extension Agents and dairy producers in Pennsylvania by adding the strongly and moderately agree percentages of the Likert-type questions. The top three methods identified by Extension Agents were mail, pamphlets, and flyers. The least popular method of advertisement by agents was the television, followed by exhibits and radio. The top three methods preferred by dairy producers were also found to be mail, pamphlets, and flyers. The least popular methods were the use of television and Internet (see Table 1).

Table 1
Advertisement Methods Used by Extension Agents Versus Preferred by Dairy Producers[1]

Extension Agents		Dairy Producers	
Method	%	Method	%
Mail	75.0	Mail	56.9
Pamphlets	75.0	Pamphlets	49.0
Flyers	75.0	Flyers	47.5
Word of Mouth	55.0	Farm Visits	39.7
Newspaper	50.0	Newspaper	39.0
Email	26.4	Word of Mouth	21.6
Farm Visits	25.0	Radio	21.5
Internet	25.0	Exhibits	17.5
Exhibits	5.3	Email	13.0
Radio	5.3	Internet	9.4
Television	0.0	Television	9.4

[1]*Respondents* who moderately or strongly agree they prefer each method of advertisement

The top teaching methods were determined for Extension Agents and dairy producers in Pennsylvania. This was found by adding the strongly and moderately agree percentages from the Likert-type questions. The top three teaching methods utilized by Extension Agents were demonstrations, fact sheets and lectures. The least popular method for agents was using books. Dairy producers preferred demonstrations, videos/DVDs, and fact sheets. The least popular method for producers was use of the Internet (see Table 2).

The top program topics offered by Extension Agents and the top program topics preferred by dairy producers were determined. The top three programs offered by Extension Agents were forage production, heifer management, financial management programs and barn construction. Dairy nutrition was the program least likely to be offered by Extension agents. The top three program topics preferred by Dairy producers were reproduction, herd health, and forage production programs. Barn construction was rated as the least preferred topic by dairy producers. (see Table 3).

Table 2
Teaching Methods Used by Extension Agents Versus Preferred by Dairy Producers[1]

Extension Agents		Dairy Producers	
Method	%	Method	%
Demonstrations	45.0	Demonstrations	61.7
Fact Sheets	45.0	Videos/DVDs	43.7
Lectures	33.0	Facts Sheets	37.5
Group Work	30.0	Group Work	33.0
Videos /DVD's	30.0	Lectures	29.6
Pamphlets	18.0	Computer Software	28.6
Computer Software	13.0	Books	27.0
Internet	12.0	Pamphlets	26.7

Audio Cassettes/CD's	5.3	Audio Cassettes/CD's	15.7
Books	5.0	Internet	11.9

[1]*Respondents* who moderately or strongly agree they prefer each teaching method.

Table 3

Comparison of Dairy Programs Offered by Agents Versus Preferred by Dairy Producers[1]

Extension Agents		Dairy Producers	
Program	%	Program	%
Forage Production	40.0	Reproduction	71.6
Heifer Management	31.6	Herd Health	71.5
Financial Management	31.6	Forage Production	67.0
Barn Construction	31.6	Milking Management	61.4
Nutrient Management	30.0	Dairy Nutrition	60.5
Herd Health	30.0	Heifer Management	59.6
Milking Management	26.4	Financial Management	52.3
Reproduction	26.3	Nutrient Management	48.1
Record Keeping	21.0	Record Keeping	42.6
Dairy Quality Assurance	10.5	Dairy Quality Assurance	41.6
Dairy Nutrition	7.3	Barn Construction	36.1

[1]*Respondents* who moderately or strongly agree they prefer each program topic.

It was determined if Extension Agents are reaching out to the special populations (Amish, Hispanic or Handicapped) of producers within their counties. Extension Agents in Pennsylvania expressed that Amish, Hispanic and Disabled producers reside in their counties. In addition to these populations agents also noted having Mennonite producers in their counties (see Table 4). Only one agent noted that Amish producers do not attend his/her programs. All other agents expressed that Amish, Hispanic and disabled producers attend their programs as well as the general public (see Table 4).

Most Extension Agents felt that they made efforts to advertise their programs to reach Amish and disabled producers. In addition to these producers, efforts were made to advertise to Mennonite producers as well as the general public. Most Extension Agents do not make efforts to advertise to the Hispanic producers (see Table 4). Most Extension Agents adjust their programs to accommodate Amish producers. In addition to Amish producers agents accommodate their programs for Mennonite producers. Most agents do not adjust their programs to accommodate Hispanic or disabled producers (see Table 4).

Table 4

Amish, Hispanic, and Disabled Populations within the Extension Agents' Counties

	No		Yes	
	n	*%*	*n*	*%*

Producers that reside in Extension Agent's county:

Amish	10.0	41.7	14.0	58.3
Hispanic	19.0	79.2	5.0	20.8
Disabled	11.0	45.8	13.0	54.2
Other	18.0	75.0	6.0	25.0
Producers that do attend dairy programs:				
Amish	23.0	95.8	1.0	4.2
Hispanic	24.0	100.0	0.0	0.0
Disabled	24.0	100.0	0.0	0.0
Other	1.0	100.0	0.0	0.0
Efforts are made to advertise programs to the following populations:				
Amish	9.0	37.5	15.0	62.5
Hispanic	15.0	62.5	9.0	37.5
Disabled	10.0	41.7	14.0	58.3
Other	18.0	75.0	6.0	25.0
Programs are adjusted to accommodate the following populations:				
Amish	10.0	41.7	14.0	58.3
Hispanic	19.0	79.2	5.0	20.8
Disabled	14.0	58.3	10.0	41.7
Other	21.0	87.5	3.0	12.5

Conclusions

Based on the results of this study, the following conclusions were made
1. Extension Agents and dairy producers in Pennsylvania agree on methods of advertisement for programs.
2. Extension Agents and dairy producers both prefer demonstrations as their top teaching method.
3. Extension Agents and dairy producers were in disagreement when it came to types of programs offered and desired
4. Extension Agents in Pennsylvania offer all programs that dairy producers desire but not as consistently as the producers would like.
5. Amish, Hispanic and disabled producers live in all counties noted in this study as well as Mennonite producers.
6. Few Amish, Hispanic and disabled producers attend Extension programs.
7. Extension Agents make efforts to advertise to Amish and disabled as well as Mennonite and general producers in their counties.
8. Extension Agents do not make special efforts to advertise to the Hispanic producers in their counties.
9. Extension Agents adjust their programs to accommodate Amish producers as well as Mennonite producers.
10. Extension Agents do not adjust their programs to accommodate Hispanic or disabled producers in their counties.

Recommendations

The researchers make the following recommendations based on the results of this study:

1. Extension Agents in Pennsylvania should advertise for dairy programs using mail, pamphlets and flyers.
2. Extension Agents in Pennsylvania should use demonstrations as a teaching method during programs.
3. Extension Agents in Pennsylvania should conduct needs assessments to determine what types of dairy programs are most desired by the clientele in their county.
4. Extension Agents in Pennsylvania should explore the best means to advertise to Amish, disabled and Mennonite producers.
5. Extension Agents in Pennsylvania should consider means to advertise to and accommodate the 349 Hispanic producers in the state.
6. Extension Agents should continue to make adjustments to their programs to accommodate Amish and Mennonite producers in areas of large Amish and Mennonite populations.
7. Extension Agents should adjust their programs to accommodate the disabled producers in Pennsylvania.
8. This study should be replicated involving all Extension Agents and dairy producers in Pennsylvania.
9. This study should be replicated to include Extension Agents and dairy producers regionally or nationally.
10. Research should be conducted with Extension Agents and other producers groups.

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