Priority Research Areas:
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Teaching and Learning in Undergraduate and Graduate Academic Programs

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Leadership development program evaluation: A social network analysis approach

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When asked about the benefits of participating in agriculture and natural resource (ANR) leadership development programs, one of the most frequent responses is the network one can develop. However, despite the ubiquity of the perceived benefit there have been few empirical studies conducted to examine network development within ANR leadership development programs. With improved social network data capture and analysis techniques, contemporary ANR leadership development programs, and leadership educators more generally, are well-positioned to take advantage of these developments. The results of the current study indicate social network analysis is an appropriate tool for establishing evaluative measures of network emergence and development within ANR leadership development programs.

Introduction

When asked about the benefits of participating in agriculture and natural resource (ANR) leadership development programs, one of the most frequent responses is the network one can develop (e.g. Kelsey & Wall, 2003). However, despite the ubiquity of the perceived benefit there have been few empirical studies conducted to examine network development within ANR leadership development programs. From an educational perspective, ANR leadership development programs also represent non-traditional composite learning environments and typically include both formal and non-formal educational components (Kaufman, Rateau, Carter, & Strickland, 2012).

At the most fundamental level, leadership is about interactions between people. Northouse (2013) has defined leadership as, "a process whereby an individual influences a group of individuals to achieve a common goal" (p. 5). Leadership development programs therefore should naturally encourage and enable the development of these connections between participant learners. However, one of the critiques of leadership development programs more generally is a lack of rigor and accountability related to outcomes and impacts (Kellerman, 2012). Consequently, there seems to be a persistent challenge to quantify and empirically report what is more tacitly experienced by participant learners.

As social creatures (e.g. Ryan & Deci, 2000), humans and the interactions between oneself and others is a fundamental aspect of humanity (Bass, 2008). Social networks are a natural extension of this shared experience. ANR leadership development programs are generally composed of cohorts of individuals sharing common experiences and interacting throughout the program (Kaufman et al., 2012). Based on Bandura's Social Learning Theory (1977) it has been established part of the learning process is conditional on the shared learning experience amongst participants. From a social interaction perspective, the connections between individuals is paramount, "what happens to a group of actors is in part a function of the structure of connections among them" (Borgatti, Everett, & Johnson, 2018, p. 1).

With improved social network data capture and analysis techniques, contemporary ANR leadership development programs, and leadership educators more generally, are well-positioned to take advantage of these developments. With more sophisticated techniques available to measure, monitor, and evaluate social network, educators can be more responsive to the needs of

learners (McKeachie & Svinicki, 2013). Furthermore, social network data can provide additional evaluation data educators can use to quantify the ANR leadership development program experience and outcomes

Priority area five of the National Research Agenda: American Association for Agricultural Education 2016 – 2020 (Roberts, Harder, & Brashears, 2016) addresses efficient and effective agricultural education programs with a particular focus on, "What evaluation methods, models, and practices are effective in determining the impacts of educational programs in agriculture and natural resources?" (p. 43). The purpose of this research is to present an evaluation approach and methodology for capturing and reporting leadership development programming impacts and outcomes, specifically the emergence and composition of networks among program participants.

Conceptual Framework

The conceptual framework for this study was based on social capital (Coleman, 1988) and social networks (Borgatti, Mehra, Brass, & Labianca, 2009). The integration of the two theory bases is intended to provide both a theoretical basis for phenomenon to occur, in this case social capital preceding network emergence, and a theoretical framework in which to quantify the outcome, social networks.

Social Capital

As Coleman (1988) established, social capital plays a significant role in human capital development. An individual amasses network connections and assets, these assets are then available to employ when appropriate (Burt, 2009). Network assets, or social capital is thus comprised of both strong and weak connections throughout a network (Lin, 2008). Additionally, social capital is composed of norms within a network to facilitate mutual understanding and expectations (Woolcock & Narayana, 2000).

Fundamentally, social capital may be considered to be a measure of informal power among a heterogenous group, or network (Bass, 2008). Although an individual with a higher level of social capital may not hold a formal position of authority within a network, such an individual is generally viewed as holding a degree of influence and access to resources beyond those of their peers (Rogers, 2003). More specifically, "the concept of social capital refers to the ways in which people make use of their social networks in *getting ahead*." (Hsung, Lin, & Breiger, 2010, Location No. 319).

Within the literature, social capital has been examined extensively. Stemming from the seminal works of Coleman (1988) and Lin, Fu, and Hsung (2001), social capital remains a relevant theory base for inquiry and analysis. For example, Mollenhorst, Völker, and Flap (2008), examined the relationship between social contexts and building personal networks. According to the researchers the place where people meet their network members is important to the resulting relationship. Additionally, Erickson (2004) found within the context of a local community organization engaged in the sale of goods and services amongst the group that social capital accrued at the local level had a relationship with social capital at a higher order level.

Consequently, the existence of social capital locally within the organization was related to more social capital outside of the organization, in the community at large.

Social Networks

Although contemporary social network analysis is done within the context of methodological rigor, social networks should not be confused with a methodology. Instead social networks are a representation of social phenomenon grounded in theoretical concepts intended to explain the social world (Borgatti & Halgin, 2011). Humans, and social interactions amongst humans, are complex based on the multitude of variables that may influence such interactions. However, despite the acknowledged challenges associated with observing and quantifying interactions, social network analysis has been employed widely to capture and analyze the phenomenon (Borgatti et al., 2009).

For example, Johnson, Boster, and Palinkas (2003), analyzed small group development among individuals. From an organizational interaction perspective, Lamm and Lamm (2017) examined the nature of relationships between funding agencies as reported by Biological Science educators. Additionally, Scott, Jiang, Wildman, and Griffith (2017), analyzed the emergence and of leadership networks in teams as well as the effectiveness of such networks. As it relates to leadership and social networks, Chrobot-Mason, Gerbasi, and Cullen-Lester (2016) analyzed the relationship between organizational identity and leadership identification, finding "individuals who identify strongly with their organization and team are more likely to see others as sources of direction, alignment, and commitment" (p. 307).

Purpose & Research Objectives

The purpose of this study was to analyze social network characteristics of an ANR leadership development program. The study was driven by the following research objectives:
1. Describe the nature of existing relationships amongst class members.
2. Describe the nature of advice seeking within network.
3. Describe the nature of support seeking within network.
4. Describe the nature of industry decision influence within network.
5. Describe the nature of industry influence within network.

Methods

A social network research design was employed for this study, specifically a whole-network design. An online questionnaire was developed based on recommendations within the literature (Borgatti et al., 2018). The questionnaire was developed for the purposes of the research and reviewed by a panel of experts to ensure content and face validity.

The questionnaire was sent to all 30 of the leadership development program participants in September 2016, prior the first session of the program. The timing was intentional to establish a robust baseline network measure and to minimize the effects of in-person interactions which occur after the program began (Borgatti et al., 2018). There were 29 responses for a 97% response rate. Consistent with the recommendations within the literature (Bono & Anderson,

2005), respondents were first asked to indicate whether they knew each of the 29 other class participants. All results from the analysis replaced respondent names with an ID number placeholder to preserve anonymity (Borgatti et al., 2018).

Next, respondents were asked how likely they were to seek advice from each of their classmates. There were two items used to assess advice. First, "If you needed help, you would seek advice from this person." Second, "You would seek support from this person if you wanted to implement a new idea." The items were adapted from sources previously established within the literature (e.g. Bono & Anderson, 2005; Ibarra, 1993; Salk & Brannen, 2000). Individuals indicated their response on a five-point, Likert-type scale. Possible responses to each item included: 1 – *Strongly Disagree*, 2 – *Disagree*, 3 – *Neutral*, 4 – *Agree*, 5 – *Strongly Agree*. Consistent with recommendations within the literature (Borgatti et al., 2018) scores were then converted to a dichotomous scale to facilitate analysis. Scores of 4 or 5 were coded as 1 and all other scores were coded as 0.

To examine influence within the network two questions were asked. First, "This person has a great deal of influence on the decisions that get made in your industry." Second, "This person has a great deal of influence on what happens in your industry." The items were adapted from sources previously established within the literature (e.g. Bono & Anderson, 2005; Brass & Burkhardt, 1993; Salk & Brannen, 2000). Participants responded to these questions for each classmate, using the same 5-point scale used for advice–likelihood. Consistent with recommendations within the literature (Borgatti et al., 2018) scores were then converted to a dichotomous scale. Scores of 4 or 5 were coded as 1 and all other scores were coded as 0.

The Ucinet 6 software package was used to visualize the network. Nodes represent participants and the lines connecting them indicate an individual (or multiple individuals) have a relationship. Node color is based on participant sex as reported by the participant. Blue indicates a male and pink indicates a female. Node size is determined by centrality within the network. Larger nodes indicate a more central location within the network. Line color is an indicator of whether the connection is reciprocal or one-way. Reciprocal relationships are displayed in red whereas one-way relationships are displayed in grey.

<center>**Results**</center>

Visualization of Existing Relationships amongst Class Members

Using the Ucinet 6 software package, the network of pre-existing known relationships amongst class members was visualized. A complete network map is provided in Figure 1. Within the group there were three individuals who did not have any pre-existing connections to other class members. Additionally, there was one pair of isolates only connected to each other, as well as four pendants, or individuals only connected to only one other person. Nevertheless, there were actors, ID2, ID1, ID15, ID10, ID19, ID7, and ID13 who had a high number of both reciprocal and unidimensional ties within the network.
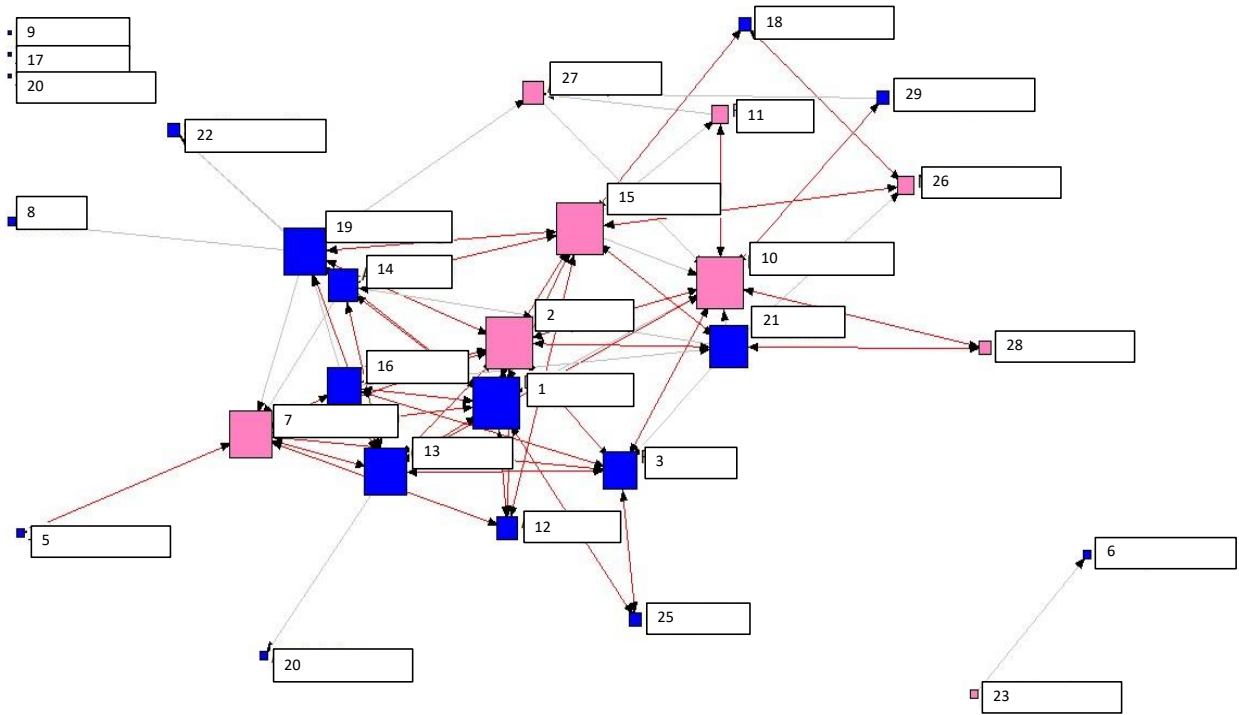
Figure 1. Map of existing relationships amongst class members.

Density of Existing Relationships in Network

Density of the network was analyzed, specifically, the number of ties observed in the network as a proportion of the total number of possible ties (Borgatti et al., 2018). A density value of .166 with an average degree of 4.66 was calculated. The result indicated across all possible connections between nodes, 16.6% of connections exist. Additionally, the mean number of connections per individual is 4.66 across the network.

Visualization of Advice Likelihood amongst Class Members

The visual representation of the advice seeking within the network is presented in Figure 2. The general characteristic of the network would indicate a centralized, core/periphery, pattern whereby there is a dense cluster of individuals located at the center of the network and the majority of the other individuals in the network distributed throughout the periphery of the network (Borgatti et al., 2018). Among the individuals clustered in the center of the network, ID4, ID9, ID22, and ID25 the nature of their centrality tends to be unidirectional, represented by grey lines, and not reciprocal, represented by red lines. Therefore, the centrality of these actors within the network is driven by their willingness to seek advice from many of their classmates. To the contrary actors ID2, ID10, and ID15 are more likely sources and recipients of advice within the network given the higher number of reciprocal ties. Actors ID1 and ID2 had the highest number of in-degree connections, or connections directed to them from others.
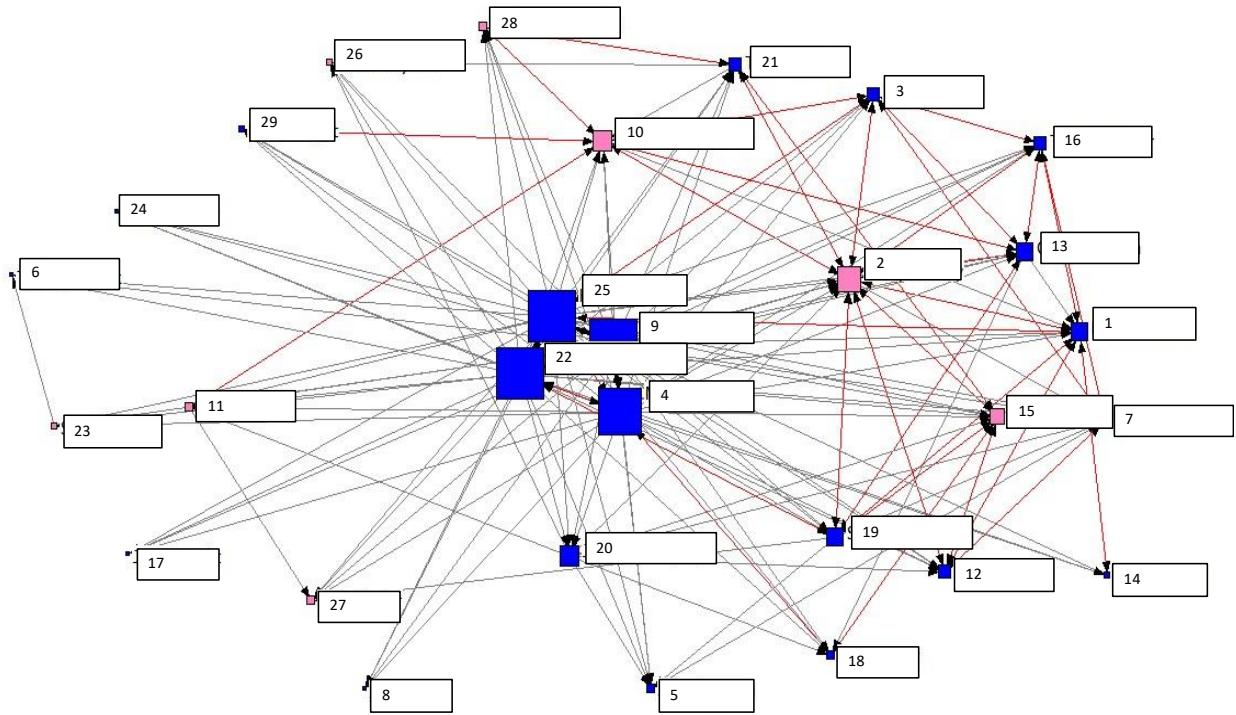
Figure 2. Map of advice seeking within network.

Density amongst Advice Likelihood Network

A density value of .238 with an average degree of 6.66 was calculated. The result indicated across all possible connections between nodes, 23.8% of connections exist. The mean number of connections per individual is 6.66 across the network.

Visualization of Support Likelihood amongst Class Members

The visual representation of the support seeking within the network is presented in Figure 3. The general characteristic of the network would indicate a centralized, or core/periphery, pattern whereby there is a dense cluster of individuals located at the center of the network and the majority of the other individuals in the network distributed throughout the periphery of the network (Borgatti et al., 2018). Individuals, ID4, ID9, ID22, ID25, and ID2 were clustered in the center of the network. Reciprocity of ties among actors was distributed among both central and peripheral actors.
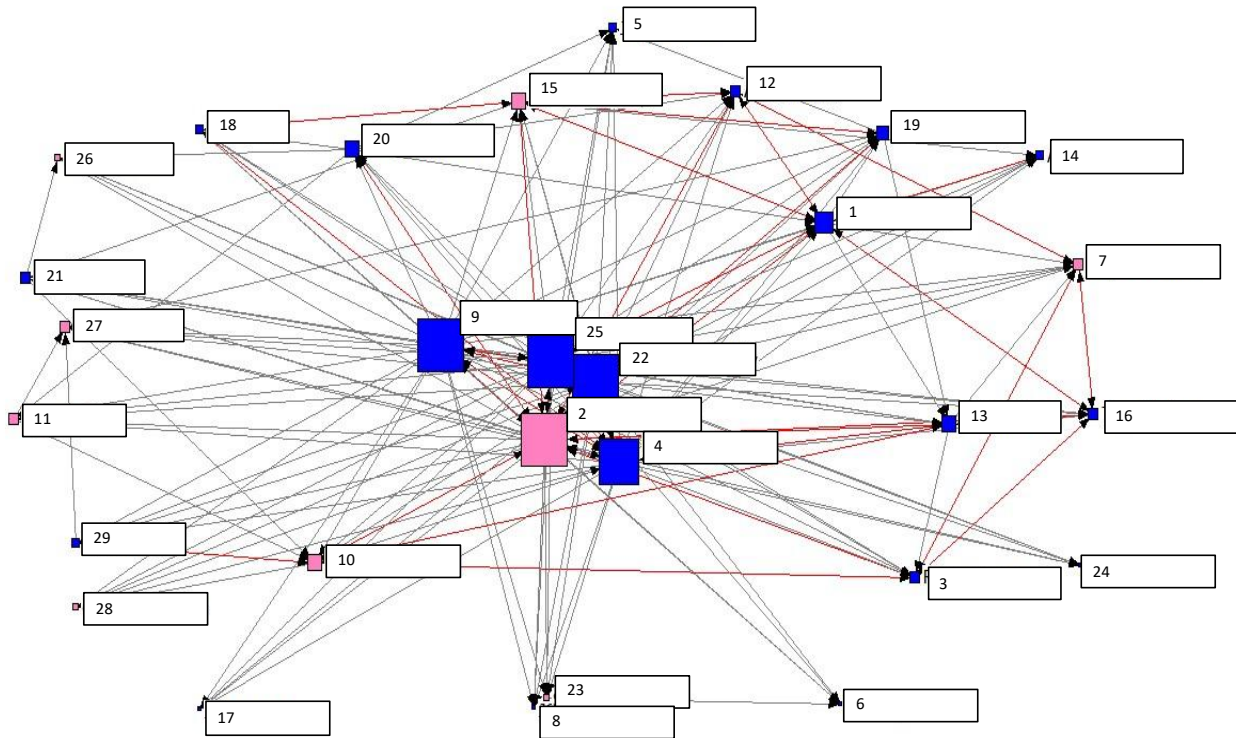
Figure 3. Map of support seeking within network.

Density amongst Support Likelihood Network

A density value of .249 with an average degree of 6.97 was calculated. The result indicated across all possible connections between nodes, 24.9% of connections exist. The mean number of connections per individual is 6.97 across the network.

Visualization of Industry Decision Influence amongst Class Members

The visual representation of the industry decision influence within the network is presented in Figure 4. The general characteristic of the network would indicate a decentralized pattern whereby there is there are limited central actors and connections between nodes in the network are limited (Borgatti et al., 2018). There were five individuals who were isolates. These individuals indicated none of the other classmates had a great deal of influence on the decisions made in their industry. Additionally, the remaining 24 classmates had the same response as it related to the five individuals influence on decisions made in their respective industries. Actor ID4 had the greatest number of connections among the network with the majority of ties being out-degree. Actor ID10 had the greatest number of in-degree connections.
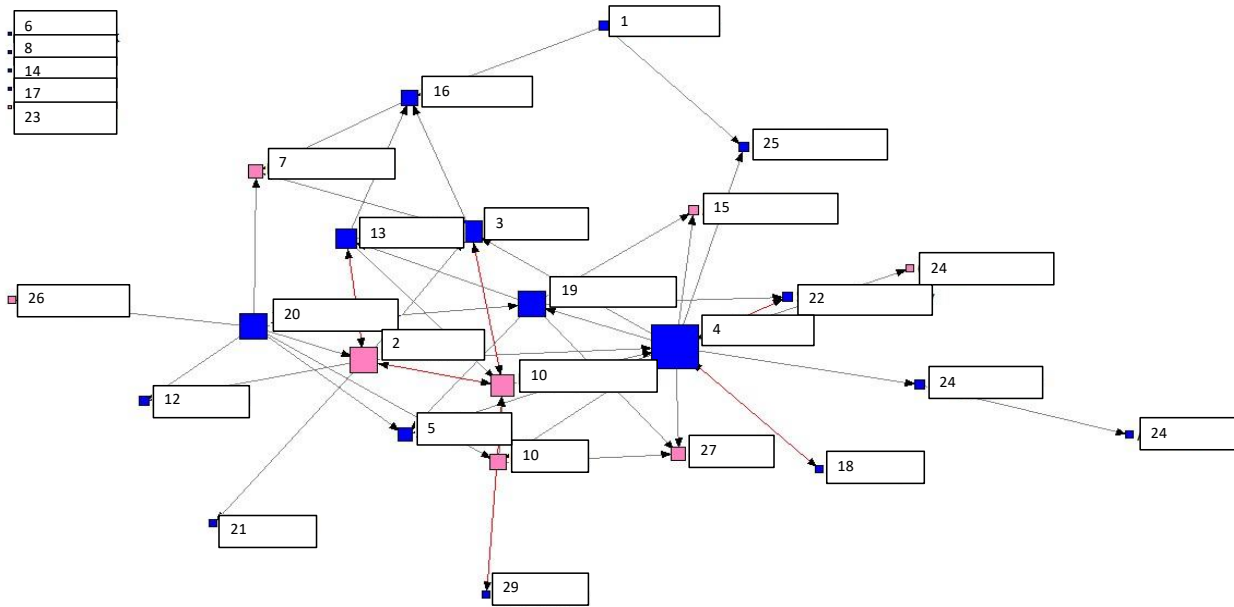
Figure 4. Map of industry decision influence within network.

Density amongst Industry Decision Influence Network

A density value of .060 with an average degree of 1.69 was calculated. The result indicated across all possible connections between nodes, 6.0% of connections exist. The mean number of connections per individual is 1.69 across the network.

Visualization of Industry Influence amongst Class Members

The visual representation of the industry influence within the network is presented in Figure 5. The general characteristic of the network would indicate a decentralized pattern with a clique structure, whereby there is there are limited central actors; however, there are subgroups identifiable based on key actors in bridge roles (Borgatti et al., 2018). There were five individuals who were isolates. These individuals indicated none of the other classmates had a great deal of influence on what happens in their industry. Additionally, the remaining 24 classmates had the same response as it related to the five individuals' industry influence. Related to actors within the network, ID4, ID10, ID19, and ID13 were in bridge roles whereby they served to connect cliques within the network. Actor ID4 had the greatest number of connections among the network with the majority of ties being out-degree. Actor ID10 had the greatest number of in-degree connections.
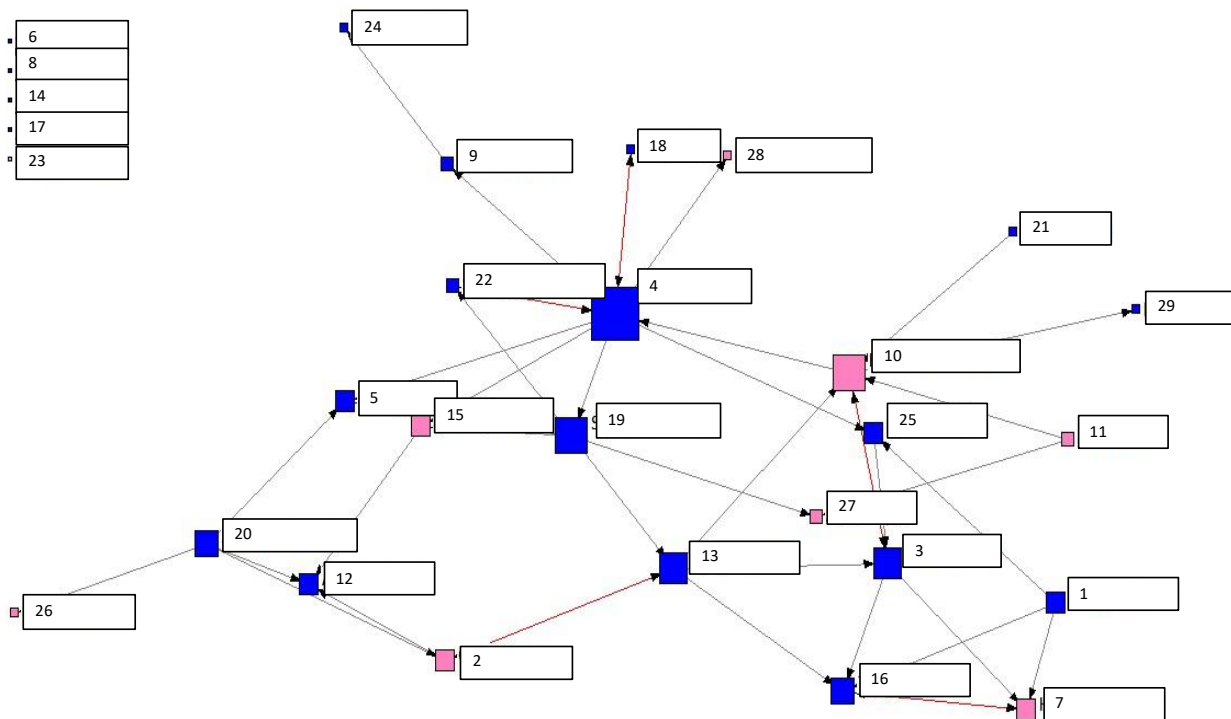
Figure 5. Map of industry influence within network.

Density amongst Industry Influence Network

A density value of .052 with an average degree of 1.45 was calculated. The result indicated across all possible connections between nodes, 5.2% of connections exist. The mean number of connections per individual is 1.45 across the network.

Conclusions, Implications, and Recommendations

Based on recommendations within the literature (e.g. Lamm, Carter, & Lamm, 2016), the current study was intended to provide a quantitative value as it relates to networks within ANR leadership development programs. Analyzing a single class of individuals at the start of a leadership development program provides an initial value to provide insights to the program director as they work with the class over the course of the program. Additionally, the results of the evaluation should provide a baseline, and evaluative model for other programs and social network analyses. As an emerging analytical technique social network analysis lacks an extensive literature base, particularly as it relates to ANR audiences and educational settings. Consequently, there are few established thresholds to inform what constitutes network considerations such as cohesion and density (Borgatti et al., 2018).

The analyses conducted were based on recommendations within the literature, specifically: identifying existing relationships among class members, identifying advice seeking within the network, identifying support seeking within the network, identifying individual influence on decisions within respective class member industries, and identifying individual influence on what happens within respective class member industries (Bono & Anderson, 2005).

The results of the analysis indicate for the analyzed class there is a mixture of existing relationships among participants. Specifically, there are unidimensional ties, reciprocal ties, central actors, periphery actors, pendants, and isolates. This result implies the current class has individuals who have known each other previously, as well as individuals who have not met anyone. Additionally, although there were several pre-existing relationships within the class, the network was not completely saturated, therefore there is an opportunity for the class to gain contacts and exposure within the agricultural and natural resource industry through program participation. A recommendation would be for the program leadership to purposively look for opportunities to integrate any isolates or pendants into the larger group.

Analysis of advice seeking within the class indicated there was a were a cluster of four individuals who were at the core of the network. Upon further analysis the directionality of ties within the advice network were noteworthy, especially in regard to non-reciprocated connections. Specifically, within social network analysis network centrality is calculated based on both in-degree (the number of people who would take advice from the individual) and out-degree (the number of people the individual would take advice from) connections. For example, if an individual had an in-degree of three and an out-degree of 25 their network centrality would be based on 28 total connections. If a second individual had an in-degree of 15 and out-degree of two, their network centrality would be based on 17 total connections. Therefore, the first individual would appear as more central to the network than the second; however, the second individual would be more valuable to the network based on the much larger number of people who would seek advice from them (Borgatti et al., 2018).

The results of the advice seeking analysis imply the program director should not consider ID25, ID9, ID22, and ID4 as class leaders based on their network centrality based on a high ratio of out-degree to in-degree connections. Instead these individuals are likely the most open to other ideas and insights, and humbler in their leadership and learning styles (Lamm, Carter, Stedman, & Lamm, 2014). However, ID1 and ID2 in the network had the highest number of in-degree connections, therefore these actors may be considered as opinion leaders within the group. A further implication from these findings is the program leadership may be able to use ID1 and ID2 as opinion leaders and disseminators of information within the network (Lazarsfeld, Berelson, & Gaudet, 1948).

Consistent with advice seeking within the network, support seeking had a similar structure. A group of five individuals were clustered in the center of the network with the remaining class distributed at the periphery of the network. The same actors, ID25, ID9, ID22, and ID4 were central in both advice seeking and support seeking networks. An additional actor, ID2 was also central in the supporting seeking network. A noteworthy different is the reciprocal nature of ID2 connections, specifically, this individual was not only willing to seek support from class members, but was also seen as a source of support for class members. This result is not unexpected given the position and number of connections ID2 was observed to have within the existing relationships analysis. An implication from this finding would be ID2 has the potential to take on a caretaking type role within the informal dynamics of the group. Seen as a source of support the individual may be well-positioned to liaise between class members, as well as between the class as a whole and program leadership.

Analyzing industry decision influence resulted in a less dense and less cohesive network. The results are expected given the diversity of ANR industries leadership development programs generally recruit from (Lamm, Lamm, & Carter, 2014). However, the results may also be valuable for the program leadership as specific experiences and educational interventions are planned. For example, if a goal for the program is to expose participants to a wide variety of ANR industries it may be more important to focus on the industries represented by isolates in the network. Specifically, ID6, ID8, ID14, ID17, and ID23 are not connected to the network indicating their industries are unique and not influenced by other actors in the class. Therefore, providing exposure to these industries may be beneficial for the participants. To the contrary if a goal for the program is the focus on a limited number of industries with the highest concentration of existing exposure it may be more appropriate to focus on the industries represented by more central actors in the network. Actor ID4 had the highest number of total connections, and ID10 had the highest number of in-degree connections. The industries represented by these individuals may be more appropriate if a more focused, tactical, and in-depth approach is preferred.

Shifting focus from industry decision influence to influence on what happens within industries a similar, but unique network pattern emerged. Unlike previous network visualizations, general influence had a clique formation indicated sub-groups within the class. This structure is informative as it should indicate to the program leadership there are likely specific industries represented within the class and there are actors who serve as bridges between the industries. Actors who serve in bridge roles are unique as they connect two, otherwise isolated cliques. Based on this information a recommendation for the program leadership would be to encourage actors ID4, ID10, ID19, and ID13 to actively contribute to peer learning conversations and share their unique insights (McKeachie & Svinicki, 2013). Active group conversation facilitation may stimulate conversations and perspectives that might not otherwise emerge.

Although there are contributions to both the literature base from a methodological and foundational result perspective, as well as practical implications for the evaluated ANR leadership development program there are limitations that should be addressed. First, interpretations of the results should be done within the context in which the data were collected. The data are only applicable to the program analyzed, trends, and generalizations should not be inferred beyond the class evaluated. Secondly, without existing thresholds to compare to, results and effect sizes should not be inferred. For example, a pre-existing observed network density of 16.6% cannot be interpreted as either dense or not dense. It should only be considered as a quantitative representation at a point in time.

Based on the results of the study and the noted limitations there are recommendations for future research. First, a recommendation would be for additional studies to replicate the analyses within similar environments, particularly ANR leadership development programs. As more results are available in the literature more pragmatic interpretation of results will be made possible. An additional recommendation is for the use of social network analysis to be conducted more widely throughout the agricultural education discipline. As an analytical technique social network analysis can serve to illuminate the otherwise obscured nature of relationships among learners in both formal and non-formal environments (Borgatti et al., 2018). An additional

recommendation would be to analyze the diffusion of information from leadership development program participants into their networks or influence. Additional analysis of this nature would help quantify and measure the extent the value of information sharing and impacts associated with leadership development programs. As additional empirical data are collected related to social networks and information sharing, a recommendation would be to extend beyond binary measures of information sharing and to capture types and fidelity of activities and interactions. The more robust the data, the more actionable and informative the results can be for program directors. From a practical perspective a recommendation would be to collect social network data at both the beginning and end of ANR leadership development programs. Analysis of the difference in network composition and density following a program may serve as a valuable, quantitative, measure of impact and program efficacy. Such analysis will help to extend the results of this study and further inform "evaluation methods, models, and practices [that] are effective in determining the impacts of educational programs in agriculture and natural resources" (Roberts et al., 2016, p.43).

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A Qualitative Analysis of the Challenges and Threats facing Cooperative Extension at the County Level

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A Qualitative Analysis of the Challenges and Threats facing Cooperative Extension at the County Level

The Cooperative Extension Service faced many challenges and threats over its history. Persistent internal challenges affecting Extension are communication with stakeholders, high employee turnover, and a marketing deficit. Common external threats included reduced funding, increases in non-traditional audiences, and inadequate facilities. Guided by a needs assessment framework, this study sought to identify the challenges and threats facing the [State] Cooperative Extension Service at the county level. Using a basic qualitative research design, the final reports from the 2016 county program reviews were used as the primary source of data. Results were consistent with the literature and showed persistent challenges facing Extension were staff limitations, marketing and communication ineffectiveness, limited program coverage, inadequate volunteer recruitment, and lack of funding. Threats found were unresponsiveness to changing audiences and inadequate facilities. It is recommended that Extension's strategic plan focus on priority areas while emphasizing the urgency needed to close identified gaps in marketing and communication, staff development and retention, and program quality, delivery, and coverage. Steps are needed to improve its performance by efficiently allocating resources to serve a diverse clientele, strengthen agents' programmatic areas, and build strong partnerships with relevant organizations.

Keywords: Extension, county review, needs assessment, challenges, threats

Introduction

Cooperative Extension faces many internal challenges in planning and delivering educational programs to diverse audiences (Harder, Lamm, & Strong, 2009). Some of these challenges are its inability to maintain a contemporary image to stakeholders, and a high rate of employee burnout leading to high turnover. Major external threats arise due to reduced funding due to increased competition and shrinking budgetary allocations through the Federal formula funding model (Harder et al., 2009). There are several grand challenges at the national level Extension must overcome to meet its overriding mission of providing research-based solutions to local communities (Henning, Buchholz, Steele, & Ramaswamy, 2014). Henning et al. discussed the need for Extension to find innovative approaches to addressing issues of climate change, diminishing natural resources, and evolving food safety practices. In addition, Henning et al. highlighted the increased expectations of a rapidly growing urban clientele and changing population demographic for Extension to tailor its programs to serve non-traditional audiences. Such challenges demand a philosophical shift in Extension programming, and require greater emphasis on community partnerships, adoption and command of innovative technologies, and appropriate professional development programs targeted at agents and volunteers.

While grand challenges are looming over Extension's future success and relevance, there are internal challenges and external threats to Extension at the county level. These include county-level challenges such as Extension's antiquated image among stakeholders; a high rate of employee turnover, stress and frustration, and; difficulties in overcoming many barriers to technology adoption (Harder et al., 2009). The Extension Committee on Organization and Policy (ECOP) identified agent retention as a major challenge to Extension (Safrit & Owen, 2010).

Financial challenges in Extension resulted in greater workload for employees, which led to greater employee stress and burnout (Feldhues & Tanner, 2017). As a result, Feldhues and Tanner found staff turnover increased as per capita funding decreased. Further, agents' inability to recognize and manage volunteers was related to being overburdened with other tasks (McCall & Culp, 2013). High employee turnover coupled with challenges in attracting volunteers negatively impacts the quality and quantity of programming efforts.

External threats to county-level Extension in Florida were funding reductions, an increase in non-traditional audiences and the lack of programming to meet such audiences, and insufficient facilities such as office space (Harder et al., 2009). Extension clients from Florida were mostly white, non-Hispanic, and had at least some college education (Galindo-Gonzalez & Israel, 2010). Still, Hoag (2005) indicated Extension's survival depended on its ability to reach new audiences and address evolving societal problems. With threats to funding, and the need to increase program coverage among a changing clientele, Extension is "being pressured to do more with less" (Ahmed & Morse, 2010, p. 1).

Major challenges and threats to Extension were revealed in county reviews during 2008 to 2010. Extension faced challenges related to a marketing deficit and technology barriers in county reviews of 2008, 2009, and 2010 (Mazurkewicz & Harder, 2011). This points to a deficiency in Extension's ability to communicate value to all stakeholders, and a lack of command of modern technologies to improve Extension programming. As such, there is a need for Extension to provide "systematic and convincing evidence of program value" (Stup, 2003, p. 1). The public value of Extension must be communicated effectively to stakeholders to ensure continued funding from public sources (Baughman, Boyd, & Franz, 2012; Franz, Arnold, & Baughman, 2014). Another challenge prevalent in 2009 and 2010 was the lack of program coverage for non-traditional audiences and lack of a representative advisory council. In addition, Mazurkewicz and Harder (2011) noted consistent threats during the same period were the downturn of the economy, changing demographics, and inadequate facilities.

Noticeably, challenges and threats identified by Mazurkewicz and Harder (2011) at the county level directly relate to the grand challenges facing Cooperative Extension at a national level as discussed by Henning et al. (2014). County-level reviews are an important evaluation tool in assessing Extension's efforts and capacity to serve clientele. Interventions at the county level are needed to drive efforts needed to addressing grand challenges faced by Extension. However, literature on challenges and threats to county-level Extension is limited and, in most cases, outdated. This study provides a timely assessment of challenges and threats facing Extension. It allows some insight into county-level needs and serves as a basis for designing interventions to improve county-level programming. A needs assessment can reveal the challenges and threats affecting Extension's performance and provide a basis to identify opportunities to improve Extension. Therefore, this study uses a needs assessment framework to examine the challenges and threats to county-level Extension programming in Florida.

Theoretical Framework

Extension must seek to accomplish its aims and objectives with limited financial and non-financial resources. Budgetary allocations are distributed to specific programs, activities,

and tasks according to performance objectives. Performance-based budget allocations in Extension are stipulated through the Government Performance and Results Act (GPRA) of 1993 and the Agricultural Research, Extension, and Education Reform Act (AREERA) of 1998 (Ladewig, 1999). According to Witkin and Altschuld (1995), a needs assessment is the most effective way to decide on resource allocation in organizational planning. A need is a discrepancy between an actual state (what is) and a desired state (what should be) (Witkin & Altschuld, 1995). The actual state is defined as the present output or current progress of an organization. For example, the actual state of Extension in any given year might be described in terms of clientele's satisfaction with Extension programs, program coverage in urban areas, and number of programs facilitated by an agent. In contrast, the desired state is often expressed as pre-defined organizational objectives, such as the mission and corresponding priorities of Extension. Therefore, a need is the difference between current and desired results (Kaufman, 1988).

Boyle (1981) described the presence of a need as tension causing a disequilibrium in Lewin's (1951) field theory of motivation. Disequilibrium results in an urge to return to an otherwise natural state of equilibrium (Weiner, 1972). Individuals take steps to close the gap between current and desired states, thereby satisfying the need. Extension is expected to utilize resources to minimize or eliminate discrepancies between the actual and desired state of performance. Therefore, a needs assessment is "a systematic set of priorities undertaken for the purpose of setting priorities and making decisions about program or organizational improvement and allocation of resources" (Witkin & Altschuld, 1995, p. 4). From Figure 1, a needs assessment identifies the disequilibrium within an organization. Action is taken at the individual and organization level to restore equilibrium. A failure to respond at both levels leads to continued disequilibrium and can manifest as undesirable outcomes such as unachievable expectations. Action taken based on the needs assessment allows a return to equilibrium.

Desired Response

Undesired Response

No action = Continued disequilibrium

Disequilibrium → Needs Assessment (expressed and analyzed needs identified)

Individual Response — *Action* → Restoration of Equilibrium

Organization Response — *Action* → Increased Efficiency, Synergy, & Morale

No action = Employees become disenfranchised

Unachievable Expectations, Benchmarking, Scapegoats

Figure 1. A needs resolution process. From "An Analysis of the Priority Needs of Cooperative Extension at the County Level," by Harder et al. (2009), *Journal of Agricultural Education, 50*(3), p. 13. Reprinted with permission.

Continuous monitoring is necessary to identify organizational needs (Boyle, 1981). The University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) county program review is a formative evaluation conducted annually with the aim of improving program delivery (Jacob, Israel, & Summerhill, 1998). The review considers program quality and delivery and incorporates an examination of administrative performance. The review results guide strategic planning of extension programming (Jacob et al., 1998). As a formative evaluation, the review aims to improve Extension services by identifying needs and providing feedback using a SWOT analysis approach (McLean, 2006). Therefore, needs identified are categorized as challenges or threats; challenges are internal factors and threats are external factors. Utilizing a county program review process will provide Extension administrators with information on county-level needs and may offer solutions to these problems to improve the quality of Extension programming according to the overall mission of UF/IFAS Extension.

Purpose

The purpose of this study was to assess gaps within county-level Extension and identify opportunities for improving the quality of Extension programming at the county level for UF/IFAS Extension. The objectives were to assess the needs of Extension at a county level and categorize these needs into internal challenges and external threats that were or had the potential to negatively impact Extension programming.

Methods/Procedures

A basic qualitative research design (Merriam & Tisdell, 2016) was used for this study. The basic qualitative design is commonly used in education research to examine recurring patterns and themes emerging from participant data. The primary goal is to describe and interpret participants' experiences with a phenomenon (Merriam & Tisdell, 2016). The study was determined to be exempt by the Institutional Review Board. The final written reports from county program reviews conducted in 2016 ($N = 5$) were used as the primary sources of data. The reports were each developed by separate four-person review teams, consisting of one county agent, one District Extension Director, one Extension program leader, and one state Extension specialist, all of whom were employed by UF/IFAS Extension. County staff, agents, stakeholders, and county government officials were interviewed over two or three days, depending upon the size of the county. Information gathered during the interviews, as well as background information about the county Extension provided to the review team prior to the review, was used by the review teams to describe in the reports what they observed to be strengths, challenges, opportunities, and threats associated with the programming offered by a county Extension office.

Five counties were purposively selected to undergo county reviews in Florida. One county within each of the five Extension districts was selected by the District Extension Director to participate in the country program reviews of 2016. The five counties selected in 2016 employed between two and five agents. The smallest county had a population of 27,360 while the largest county housed a population of 315,187 (U.S. Census Bureau, 2014). Selected counties were predominantly white, ranging from 69.4% to 90.8%. Considerable variance was observed for the percentages of people reporting Hispanic ethnicity (4.2% - 43.4%). The most common racial minority was black or African American, ranging from 6.1% to 23.0%. Per capita income ranged from $17,179 to $31,141. Extension programs offered to the residents of the reviewed counties commonly included 4-H, agriculture, horticulture, and family and consumer sciences, but there were also natural resources programs and sea grant programs in some counties.

The data was categorically divided by the researchers using constant comparative analysis (Merriam & Tisdell, 2016). This method entails comparing notes on an incident with another incident in the same data set. Eventually, constant comparisons between different interview notes lead to tentative categories or themes (Merriam & Tisdell, 2016). One section of data was carefully compared with other sections in order to identify any recurring themes and sub-themes related to challenges and threats impacting Extension programming. An internal debriefing was conducted following the initial analysis to discuss the findings and develop the final interpretation of the data (Anzul, Ely, Freidman, Garner, & McCormack-Steinmetz, 2003).

Ensuring the trustworthiness of the data was of concern. Member checking was conducted in accordance with recommendations made by Lincoln and Guba (1985); the review teams provided an initial oral report of their findings to each county office at the end of each review. Any clarification needed from the county level was obtained at that time. Further, the written reports were examined for accuracy by each county's Extension director as well as the Senior Associate Dean for UF/IFAS Extension. Multiple investigators served on each review team and independently contributed to the development of the reports, resulting in what Merriam and Tisdell (2016) described as "*investigator* [*sic*] triangulation" (p. 245). The data itself

reflected information from a variety of interviewed sources during the review, as explained earlier.

Reporting the potential for researcher bias is important when discussing trustworthiness (Merriam & Tisdell, 2016). One member of our team, Harder, has extensive experience with UF/IFAS Extension, particularly with directing the county program reviews. She has directed the county program reviews since 2008. Prior to her experience with UF/IFAS Extension, Harder was a 4-H agent in Colorado, an experience that has shaped her professional perspective. The potential for Harder's past experiences to influence the analysis of the data used for this study existed, therefore the initial data analysis was conducted by a second team member, Zelaya, with familiarity with the reviews in her role as a graduate assistant working for UF/IFAS Extension but without the same degree of engagement. The third researcher, Narine, contributed a solid foundation in program development and evaluation but had no prior experience with UF/IFAS Extension to potentially bias his interpretations.

As a qualitative study, this research is not intended to be generalized beyond the five counties that were reviewed. However, thick description (Lincoln & Guba, 1985) was used when describing the counties and county offices reviewed to aid the reader in determining transferability to other Extension settings. Similarly, the integration of quotes in the findings helps the reader to understand the context.

Results/Findings

The following challenges and threats were identified from the five county program review reports. Coding was used when including direct quotes from the reports.

Challenges

Staff limitations impact programming. Challenges associated with staffing limitations were present in all county program reviews. Most challenges related to staffing presented in the county reviews were due to limited agent positions in specific program areas. In one report, the removal of a staff position led to "a large nursery industry presence in the county [being] underserved" (R1). One county was without a Horticulture Agent, which led to difficulties when "the office receives a large number of homeowner horticulture questions" (R3). Difficulties also arose by having a County Extension Director (CED) "spread over multiple counties" (R4) which made it "difficult to do much work within the assigned program area." Increased amounts of walk-in clientele created a "time management issue" (R4) within one county; the report cited the need to include the administrative assistant in resolving this particular difficulty. Additionally, support staff in one county desired to have more responsibility but were "underutilized" (R4).

Volunteer practices. The county program reviews revealed a gap in volunteer communication and recruiting practices. Volunteers in one county were trained by multiple agents in the past, leading to inconsistent volunteer practices (R1). New policies recently introduced into 4-H led to a need for agents to educate "the volunteers about the positive benefits of the new 4-H membership fee" (R1). Educating volunteers on the new membership fee was a challenge faced by two counties within the county program reviews (R1, R3). The recruitment of

volunteers was also an identified challenge within some reports; one report recommended agents "recruit volunteers within other Extension program areas beyond 4-H" (R4). Additionally, another county report identified potential volunteers in the county's growing elderly population (R5).

Policies regarding facility use were also seen as challenges when working with volunteers. The county operating policies in one county required that "a staff member must be present when a volunteer is using the office after hours" (R4). In order to comply with the policy, staff members had to be present in the office after hours. The review report suggested "volunteers be strongly encouraged in this instance to find alternate meeting locations for volunteer coordinated evening programs" (R4).

Lack of adequate resources. Throughout the county program reviews, the lack of resources was seen as a challenge facing every county. The resources cited within the reviews included funding, facilities, and transportation. As programs develop and expand within counties, funding becomes a challenge (R1, R3, R4). In one county, funding was needed to expand the reach of program marketing (R1). In another county, funding was needed to "identify a solution to the new photo ID requirements for volunteer background" (R3). One county report identified a need to find funding for a program that had "0% county funding support" (R5). While programming needs were a concern for county staff, "funding for professional development travel and professional association membership" (R1) were perceived as barriers to early career growth in faculty (R1, R5).

Physical resources were also lacking. Lack of space for storage and future growth (R2, R3), unreliable Internet bandwidth (R1), and aging infrastructure of facilities (R1) were among the challenges cited by reviewers. Concern was also expressed about the public's perception that the distance of the county office location was not convenient (R5).

Difficulties in external and internal communication. Communication practices with stakeholders outside the county offices were sources of challenges cited within county reviews. Reviewers cited a need to increase "public relations and marketing efforts" (R2) in order to reach more clientele and diverse audiences in one county. Marketing efforts mentioned within the county reviews included updating the "website by linking partnerships, adding newsletters" (R3) and other articles to improve resource availability for the community. The need for developing consistent strategies was expressed by one county (R5). Challenges in marketing efforts also included the need to "disseminate information to clientele" (R1). In one county, concerns over the "time it takes to develop marketing plans, implement, and evaluate them" (R5) impacted current marketing strategies. Throughout the county reviews, the communication practices utilized externally were a central focus.

While external communication practices were central to the county program reviews, internal communication practices were also cited as challenges within counties in this study. Agents in one county failed to share "program minutes for each advisory group" (R3) with the County Extension Director and "Overall Advisory minutes" (R3) with the District Extension Director. In a second county, the communication path between county government and the Extension office was regularly disregarded (R4). Finally, the internal and external

communication practices in a third county were "impacting the morale of faculty, staff, and volunteers" (R5).

Threats

Environmental concerns. Local environmental issues are current threats for counties in this study. The presence of citrus greening has "put many farms in crisis mode" (R1) and the possibility of the crisis extending into the surrounding communities has caused concern. Additionally, the "high probability of urban expansion over the long-term" (R1) was also cited as a potential threat to county programming; the county for which this was reported is one of Florida's historically productive agricultural areas. The threat of extreme weather was a concern for one county (R5) due to the "distractions" they cause in "the delivery of educational programs."

Specific programming needs. Subsets of the populations reached by county offices are increasing and are creating needs for future programming. In one county, "about 90% of call-ins are hobby farmers" (R4). Despite the growing number of hobby farmers in that county, county program reviewers did not report specific programming aimed at the hobby farmer population. Additionally, the number of small niche farmers was increasing in the same county and questions about how this population was being served emerged (R4). Concern also existed over the "perceived duplication of services by other county units and agencies" (R5).

Potential staff attrition. Staff attrition was a cited concern for two counties (R1, R3) within this study. "Future career possibilities of early-career faculty" (R3) were identified as possible threats to the cohesive continuation of future programming.

Conclusions/Recommendations/Implications

Results of the 2016 annual county review indicated several persistent problems, many of which were consistent to those discussed by Feldhues and Tanner (2017), Galindo-Gonzalez and Israel (2010), Harder et al. (2009), Henning et al. (2014), Mazurkewicz and Harder (2011), and Safrit and Owen (2010). Challenges such as staff limitations, marketing and communication ineffectiveness, program coverage, volunteer recruitment, and lack of funding were present in previously conducted reviews in Florida. Similarly, identified threats from 2016 replicated findings from previous year's reviews including unresponsiveness to changing audiences and inadequate facilities.

The results highlighted some growing areas of concern, pointing to several operational deficiencies in Extension. A lack of agents in program areas such as horticulture had a negative impact on program coverage and volume of clientele served. Further, administrative inefficiencies existed due to limited support staff. The challenge of limited support staff was exacerbated by problems encountered in training volunteers, coupled with the low number of volunteers. Based on the results, there is a need to hire administrative staff, hire program staff, and improve volunteer management at the county level. A lack of response may result in continued disequilibrium in the counties examined, negatively impacting performance (Boyle,

1981). The needs assessment provides a rationale to allocate resources according to organizational priorities (Witkin & Altschuld, 1995).

The reduction in funding has been a persistent theme in the county program reviews. Consistent reduction in funding hinders Extension's ability to hire new staff in important program areas, which leads to increased workloads of employees (Feldhues & Tanner, 2017). In turn, employees are stressed, which negatively impacts staff retention rates. Further, an increased workload can lead to employee burnout. These factors may affect the quality of Extension programming and limit the ability of agents to expand programming to reach new audiences, such as non-traditional clientele. Funding constraints directly affects program coverage (Ahmed & Morse, 2010). New funding models (e.g. funding arrangements with municipalities, increased program fees, or more grant-funded projects) and/or alternative staffing models (e.g. increasing the number of project-based, time-limited positions versus permanent-status track positions) should be explored to determine their potential to increase Extension's financial resources. At the local level, agents need to be empowered (and willing) to let go of programs and activities that cannot be sustained when positions go unfilled.

Another key challenge was deficiencies in internal and external communications. Extension's inability to communicate the value of Extension to its stakeholders was identified as a persistent issue plaguing Extension and is consistent with the literature (Baughman, Boyd, & Franz, 2012; Franz, Arnold, & Baughman, 2014; Mazurkewicz & Harder, 2011). However, results also indicated there was also ineffectiveness of the communication channels between CEDs and advisory groups. According to Elving (2005), ineffective communication channels can result in a slower response and adaptation to internal and external changes in the environment. This may limit Extension's capacity to meet stakeholders' evolving needs. There is a need to improve internal communication channels to ensure effective and efficient communication between CEDs and advisory groups. UF/IFAS Extension needs to provide professional development for CEDs on how to effectively work with advisory groups; however, the state specialist position that previously provided this type of expertise is currently vacant and it is unknown if or when it will be filled. CEDs will need to look for external training in order to develop this skillset, possibly through their professional associations.

With respect to threats, issues identified by Henning et al. (2014) such as extreme weather, changing demographics, and urbanization were present in the review reports. However, a specific threat identified was the duplication of services, creating the potential for inefficiencies in the allocation of Extension resources. Program activities should be assessed against program priorities to ensure effective programming coverage. This requires greater coordination of efforts at a local and regional level to ensure fewer redundancies in program planning. This will allow resources to be allocated in a way that best supports Extension's ability to be uniquely impactful in each county.

Serious issues affecting the effectiveness and efficiency of Extension at the county level were identified as a result of the county program reviews. These findings indicate the importance of continuous monitoring through periodic needs assessments and other formative evaluation tools (Boyle, 1981). UF/IFAS Extension's strategic plan should focus on priority areas while emphasizing the urgency needed to close identified gaps in marketing and communication; staff

development and retention; and program quality, delivery, and coverage. Even in an era of decreased funding, Extension must take the necessary steps to improve its performance by efficiently allocating resources to serve a diverse clientele, strengthen agents' programmatic areas, and building partnerships with relevant organizations.

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Motivational Factors that Influenced Learner Participation in Supervised Agricultural Experience Programs

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Research Type: Qualitative
Research Priority Area: School-based Agricultural Education

Motivational Factors that Influenced Learner Participation in Supervised Agricultural Experience Programs

Supervised Agricultural Experience (SAE) programs are an integral component of school-based agricultural education. However, student participation in SAE has continually decreased since the mid-1980s. Therefore, it was necessary to better understand factors that motivate students to participate in SAE programs. This led to the purpose of this qualitative study, which was to examine motivational factors that influence student participation in SAE. The researchers used the constant comparative analysis method to identify specific motivational factors that influenced SAE participation. The researchers found that participants were motivated by their family's culture and traditions. Moreover, the student's participation in the National FFA Organization (FFA), interaction with other FFA members, and recognition through SAE awards structure through FFA motivated students to engage in SAE. Further, the participants in this study were motivated by their personal satisfaction, interest, desire, and goals. The researchers also concluded that the agriculture teacher plays an important role in motivating students through conducting SAE supervision, building lasting relationships with students, and requiring student participation in SAE. Therefore, the researchers recommended that agriculture teachers continue to require every student to conduct an SAE and utilize all available resources to engage students in SAE.

Introduction and Literature Review

The development and implementation of Stimson's (1919) home-project created a lasting impact on school-based agricultural education (SBAE) (Moore, 1988). Stimson (1919) believed learning must take place outside the classroom and must incorporate learning beyond observation of skills and tasks. Currently, in agricultural education, educators refer to the home project as a Supervised Agricultural Experience (SAE) programs (Phipps, Osborne, Dyer, & Ball, 2008). SAE has been an aspect unique to agricultural education and a way to create student context, conceptualization, and motivation toward a career in the agricultural industry (Phipps et al., 2008). However, SAE participation by students has been on a decline for decades (Barrick, Hughes, Baker, 1991; Dyer & Osborne, 1995; Kotrlik, Parton, & Leile, 1986; Miller, 1980; Newcomb et al., 2004; Retallick, 2010). Student motivation, changing demographics, student focus, and a lack of supervision have all been identified as factors for the decline in student participation (Barrick et al., 1991; Bird, Martin, & Simonsen, 2013; Dyer & Osborne, 1995; Retallick, 2010; Roberts & Harlin, 2007; Wilson & Moore, 2007).

In recent years, The National Council for Agricultural Education undertook an initiative to rejuvenate SAE in agricultural education programs nationwide (The Council, 2019). To effectively rejuvenate SAE, The Council convened a committee of teachers, state staff, and teacher educators to develop an updated definition of SAE and guiding principles for SAE program instruction/implementation (Barrick et al., 2011). Even with decreased participation, SAE has remained a vital component of the agricultural education program and model (Barrick et al., 2011; Phipps et al., 2008; The Council, 2019)

While the reasoning for student participation in SAE continues to be investigated, consideration and investigation into motivational factors of students that complete SAE

programs were worthy of investigation. Retallick (2010) reported the following five factors influence student participation in SAE programs: "(a) changing student demographics and societal attitudes, (b) mechanics and structure of schools, (c) resource availability, (d) image, and (e) agricultural education system" (p. 66). Investigation into motivational factors for participation, sustainment, and completion was worthy of investigation and may lead to identifying the reasons other students choose not to participate.

Researchers have reported throughout the literature base that SAE participation has a positive influence on student achievement, motivation, and future aspirations. Arrington and Cheek (1990) found a positive relationship existed between SAE scope and student achievement. Further, Lewis, Rayfield, and Moore (2012) found SAE impacted student performance and career aspirations. Similarly, SAE has been found to influence student intent and attitude toward teaching agriculture (Lawver & Torres, 2012).

Bird, Martin, & Simonsen (2013) reported that SAE historically was initially motivated through the utilization of extrinsic factors. The researchers purported that intrinsic motivators should be used to motivate student participation in SAE, following a student's first year of participation. The researchers stated that the two most common intrinsic factors used to motive students were student-owned programs and student interest in the SAE topic area. Further, researchers have reported that the National FFA Awards and Degree programs serve as extrinsic motivators for student participation in SAE (Bird et al., 2013; Dyer and Williams, 1997; Leising & Zilbert, 1985; Retallick 2010; Wilson & Moore, 2007). However, a gap in the literature exists to find the commonality among students as to their motivational factors to implement and sustain their learning through their SAE. Therefore, this study aimed to examine factors that motivated the 2012 National FFA American Degree Star Candidates SAE involvement.

Theoretical Framework

In qualitative research, a theoretical framework should be identified following the analysis of the data. This allows for emergent themes from the data to help identify a supporting theory and decrease the opportunity for theoretical frames from guiding the coding process. The data in this study supported achievement motivation as the theoretical framework. Achievement motivation centralizes student perspectives that make them strive for competence in effortful activities (Elliot & Church, 1997). Nested within achievement motivation are expectancy-value, familial influences, personality, self-worth, and task involvement concepts (Schunk, 2012). Using achievement motivation as a conceptual frame for the phenomenon provided a basis to examine the factors that participants found to be motivational during their engagement in an SAE. Further, achievement motivation provides a foundation for investigation in which participants described factors contributing to their motivation and success in the National FFA Organization awards program.

Ontological/Epistemological/Theoretical Perspectives

Crotty (2010) defined an ontological perspective as the "what is" (p. 10) of a phenomenon being examined through a research study. This study used a realism ontological perspective to guide the study. Schwandt (1997, p. 133) stated, realism "is the doctrine that there

are real objects that exist independently of our knowledge of their existence." Moreover, a realism ontological perspective stated that truth exists for an individual through independent realities from the real world (Mark, Henry, & Julnes, 2000). Research must examine an individual's interactions with the physical world through observations and thick description of the interactions (Turner, 2008). This ontological perspective was a strong fit with the researcher's view of student's individualized SAE programs. Students' have an independent view and interaction with the project they have developed as a part of the world around them.

To better understand the participants' view of the physical world, the researchers used a constructionism epistemological perspective. According to Guba and Lincoln (1990), every individual perceives the natural-physical world differently. Further, Patton (2002) stated that an individual's reality "is not real in an absolute sense, as the sun is real, but is 'made up' and shaped by cultural and linguistic constructs" (p. 96). Therefore, Crotty (2010) posited that constructionists believe that an individual's knowledge was constructed through interactions with their reality of the world.

A theoretical perspective was defined as "an elaboration … of the assumptions brought to the research task and reflected in the methodology as we understand and employ it" (Crotty, 2010, p. 7). In this study, a constructivism theoretical perspective guided the methods employed by the researchers. More specifically, constructivism refers to an individual's meaning making process. Constructivists believe that meaning and knowledge was constructed rather than discovered (Denzin & Lincoln, 2000). Crotty stated, "it is clear that different people may construct meaning in different ways, even in relation to the same phenomenon" (p. 9). Crotty (2010) purported that constructivists deny the existence of an objective reality. Therefore, an individual's knowledge and meaning was based on personal experience and interactions with a given phenomenon. In this study, the researchers used the aforementioned ontological, epistemological, and theoretical perspectives to examine the motivational factors that influence student participation in SAE programs.

Purpose and Research Question

The purpose of this study was to examine the factors that motivated American FFA Degree Star Finalists to conduct and engage in an SAE program. This study examined student engagement in meaningful SAE learning environments, supporting Priority Area 4 of the National Research Agenda (Roberts, Harder, & Brashears, 2016). The research question that guided the study was: what factors motivate SBAE students to engage and participate in SAE programs?

Methods

This study examined the motivational factors which influenced student participation and engagement in their SAE program. The researchers used qualitative methodology to collect and analyze participant responses to specific questions regarding their participation in SAE. Qualitative research has been defined as "an inquiry process of understanding based on distinct methodological traditions of inquiry that explores a social or human problem" (Creswell, 2013, p. 15). Within qualitative research face-to-face or observation data collection methods should be

used to further understand the examined phenomenon/individual within a natural setting (McMillian & Schumacher, 2010, p. 489). Within this study, the researchers used face-to-face focus groups to interact with agriculture students who have conducted SAE programs in SBAE.

The researchers in this study were formally trained in teacher education at the graduate level and completed an agriculture teacher preparation undergraduate program. Both researchers had experience instructing agricultural education at the secondary level and incorporated SAE programs into the agricultural education curriculum. Moreover, the researchers philosophically believe that SAE was an integral component of SBAE and that motivational factors influence student participation in SAE.

The participants in this study were 16 previous agriculture education students who were selected as the 2012 American FFA Degree Star Finalists. Participants were recruited to participate in the study by a written letter that was sent by the National FFA Organization. The National FFA Organization through specific selection criteria, established by the organization, purposively selected the American FFA Degree Finalists. During the review process, a panel of experts with expertise in SAE and agricultural education selected the 16 finalists.

This study used focus groups to determine the motivational factors that influenced student participation in SAE programs. Dooley (2007) posited, during the data collection process "most qualitative researchers are guided by a set of basic questions and issues to explore but deviations may occur to capture nuances and emerging trends not previously determined" (p.36). Therefore, the researchers developed semi-structured focus groups that guided the data collection process. Furthermore, when using a constructivist theoretical perspective, Koro-Ljungberg, Yendol-Hoppey, Smith, and Hayes (2009) deemed focus groups as an appropriate data collection methodology.

During the semi-structured focus groups, participants were asked to respond to various questions regarding factors that motivated them to participate in SAE programs during their SBAE courses. Specifically, participants were asked questions regarding individuals who influenced and provided motivation towards their engagement and participation in their SAE program. Furthermore, the focus group questions were reviewed and approved by a panel of agricultural education experts. Two separate focus groups were conducted at the same time with eight and seven participants. During the focus groups, the participants were asked to respond to a series of questions regarding their motivation to participate in an SAE program. Each focus group lasted between 65 and 75 minutes (Patton, 2002). Participants were provided the opportunity to utilize pseudonyms during the data collection process. During transcription every participant was assigned a pseudonym even if the participant used a pseudonym during the data collection process (Creswell, 2013; McMillian & Schumacher, 2010).

This study used Lincoln and Guba's (1985) conceptualization of the constant comparative method, who described a process to remove the ground theory approach from this analysis method. Lincoln and Guba presented four steps that should be followed by researchers when utilizing the constant comparative analysis method. The four steps of the constant comparative analysis method include: 1. Create categories that were present in the data, 2. Redefine and combine the established categories or create subcategories, 3. Integrate categories

as they become more defined, and 4. Construct the written findings (Lincoln & Guba, 1985). This study did not attempt to develop a new theory, but utilize the analysis methods to ensure that a true comparison was made between each focus group in the study.

The focus group transcription manuscripts were reviewed three times to develop conceptual understanding of the data. During each review of the transcriptions, categories were established and redefined. Further, similar categories were combined to garner the motivational factors that influenced student participation in SAE programs.

To ensure the trustworthiness and rigor of the study, the researchers ensured that the credibility, transferability, dependability, and confirmability of the research were upheld (Dooley, 2007; Lincoln & Guba, 1985). To uphold the credibility of the findings, the researchers used member checking, peer debriefing, and persistent observations. Member checking was conducted at the conclusion of each focus group (Dooley, 2007). Erlandson, Harris, Skipper, and Allen (1993) stated that researchers should utilize peer debriefing to gain a fresh perspective during the data analysis process. Further, triangulation of the data was attained through the utilization of multiple focus groups, researcher's observational notes, and multiple researchers involved in the data analysis process. The transferability of the data was upheld through the utilization of thick descriptions within the data of the context (Dooley, 2007). Therefore, readers of this study should examine the context and descriptions presented in the findings and conclusions of this study to determine if the findings can be transferred to their context or situation (Lincoln & Guba, 1985). To uphold the dependability and confirmability of the research, the researchers used a methodological journal to document the methodological decisions made throughout the study (Dooley, 2007). At the conclusion of the data analysis, the researchers asked another qualitative expert to conduct a dependability and confirmability audit of the journals kept by the authors. The external reviewer found that all decisions upheld qualitative research norms and rigor to ensure the credibility, transferability, dependability, and confirmability of the study.

The researchers noted the following limitations to the findings and conclusions of this study: (1) readers of this study must determine if the findings are applicable and can be transferred to their specific situation and context; (2) the participants in this study were not typical agricultural education students; therefore, the conclusions and results could be swayed; (3) while the data is aged the researchers believe this is a starting point to examine student motivation in SAE and could lead to additional examinations of student motivation.

Findings

The participants in this study graduated from high school between 2009 and 2011 and were 19 to 21 years of age. Eleven of the study participants were male and four were female ($n = 15$), one of the American FFA Degree Star Finalists opted to not participate in the study. Participants reported their post-secondary enrollment, of which, 3 were currently enrolled in an agriculture teacher preparation program. Furthermore, 13 of the participants were enrolled in some form of post-secondary education. The participants in this study represented each of the National FFA Regions and each SAE program type (entrepreneurship, placement, research, and exploratory). Finally, 13 of the participants reported that they had not served in a leadership

office above the chapter level. Two of the 13 participants who did not serve in a leadership office above the chapter level, never held an FFA leadership office. The following motivational factors emerged from the data analysis process: family, money, FFA, teacher, personal, and community.

Family

The participants believed that their families played a large role in motivating them to develop and conduct SAE programs. Ralph stated, his family "played a huge role I think in kind of the driving force of why I'm a farmer and a rancher." Further, the participants believed family tradition and culture played a role in motiving their participation in SAE programs. Several of the participants discussed their relationships between their siblings, close family relatives, and their SAE programs. The participants stated that sibling rivalry was a substantial motivating factor that influenced their decision to participate in SAE programs. Tiffany stated,

> … my oldest brother, he wasn't really involved in FFA but sports wise and now he's a professional bull fighter so ya he's kinda he's up there he's a professional athlete. Well then my [other] brother being a national winner and everything and him going into like being a US Marshall well that just kinda sets the bar like for career wise. Hey you know I've gotta achieve something you know I can't just be the low man on the totem pole. I've gotta set my reputation I've gotta hang with them.

Further, Bethany stated,

> … I'm the oldest grandchild on my mom's side of the family and I set the bar. That's how it's set. Also, the generation above me, my mom's brother and sister, were very very involved in FFA and it's all about beating my Uncle you gotta beat your uncle you gotta beat your aunt, you gotta set the bar high for the ten other kids that are coming in.

The participants discussed specific family members who supported them more than others. Some of the participants had developed strong relationships with retired agriculture teachers within the community. In one instance, the participant's grandfather was a retired agriculture teacher. Amy stated, "my grandfather was an Ag teacher for 38 years … so he was the one who was helping me with my records and my organization and my thoughts and filling out the forms and getting the dates ready."

Several times throughout the focus groups, the participants noted their parents as significant motivators towards their participation in SAE. Jared believed, "parents help you out a little bit and try to support you if you need help." A few of the participants were engaged in SAE programs which were part of a family business. In those cases, the participants believed their family, more specifically their parents, was an essential component to their participation in an SAE program. Ryan indicated, "my parents played just as big a role as my advisor did. Just cause that was part of my family's business, day in day out with them."

Further Aaron said, "a big part of what I do is due to the fact that my parents were big supporters. My dad got me into showing animals by the time I was 3 and he's kind of the one to push me into my Agribusiness."

Money

Throughout the focus groups, it was evident the participants were motivated by the thought of making money from their SAE program. The participants believed that being able to demonstrate sound financial business standing was an essential component of a successful SAE program. Albert said,

> … on the farm you gotta keep all your records for taxes and everything so, being if you're not really good at then you probably gonna have something wrong so, if you start it early and get the practice in so if you make a mistake hopefully you make it before it really hurts you.

Further, the participants noted that the money they made would be used to fund their post-secondary education expenses. Carl stated, "… I wanted to make enough money to be able to buy a car and go to college." Kyle further commented, "I wanted to be the best because it's my livelihood and that's how I'm gonna end up making my living in the future." Moreover, the participants stated that to achieve some of their SAE goals financial backing was required. Albert noted, "one of my (SAE) goals was to be able to rent my own farm ground. In 2011, I was able to do that." Finally, Aaron stated,

> I think what helps motivate me the most is just seeing constant expansion. After we started selling it for a couple of years it was kind of slow but after that we really saw a huge jump and people really started getting interested and buying it. And, also, I've earned countless scholarships and prizes through which helped me attend college and get set for my future.

FFA

The study's participants believed the National FFA Organization's award system was an extrinsic motivator to participate in an SAE program. Furthermore, the recognition that the student received at the local, state, and national level was a motivational factor which influenced student participation in SAE. Ralph stated, "… the awards, I knew I wanted to be a farmer and a rancher beforehand. The awards were definitely a plus." Further, the participants noted the National FFA award system encouraged them to expand and develop their SAE programs. Carl noted,

> Once I got in and started competing I wanted to continue to grow my record books so I could compete in proficiencies with my record books at the state and national level. I will definitely say that the awards are a huge motivator, for if there were no awards then I probably would have just kept maintaining my crop production and just grow the sweet corn for the business aspect. But the awards for ag-entrepreneurship was what pursued me to want to grow my entrepreneurship business and then the awards to try to pursue state winning with my record book and then to become a national finalist was definitely what pursued me to continue to grow my books and my projects.

Bethany said,

> I don't think that without the awards that I would be where I am. Because yes, I could have done the projects, but I think I would have dragged it on further instead of like trying to find a different subject every year, a different project every year, I think I would have worked on the same project and explored every single detail in that project and so well it may have helped it there with the awards. I mean I - baseline I think awards helped me better because it made me more diverse.

Beyond the awards structure, the participants believed the National FFA Organization allowed them to meet and interact with other students who had similar interest. The participants noted their interactions with other FFA members motivated them to develop SAE goals which were specific to their interests and personal development. Aaron said,

> FFA influenced my involvement. Mainly, just in putting me in the environment of thousands of other people who maybe came from not the same background but similar backgrounds and it's a huge almost support group of people that have some of the same ideas, some of the same views all working toward a goal, whether it's not the same goal just everybody working towards a goal to enhance agriculture in their own way.

Riley noted,

> FFA has been a major part of what we have done, have started. I was fortunate enough to have an FFA chapter in middle school. And I joined FFA in 6th grade. When I went on to high school and they (members) started to push you a little more wanting to do pre-developments, SAE's, proficiencies all sorts of things.

Brian explained, "FFA gave me being in competitions and giving me experience and let me do other stuff outside my comfort zone. I came to public school solely for the FFA and that has given me opportunities to branch out and made me who I am today."

Teacher

Throughout the focus group, the participants shared that their agriculture teacher was involved in their SAE program. However, the teacher ranged from being the most important motivational factor to being more of a support-based entity. Nonetheless, participants noted the agriculture teacher as being a motivational factor for conducting an SAE program. Kyle stated, "if it weren't for my ag teachers I definitely wouldn't be sitting here right now. It was pretty much all contributed to getting started in this was mainly my ag teacher my freshman year in HS." In some cases, the agriculture teacher may have been retired or retiring but continued to maintain a relationship with the student and their SAE program. The participants noted many times an agriculture teacher motivated their students without their knowledge. An agriculture teacher was able to build a firm relationship with their students and interact with students in meaningful ways that promote their involvement and participation in SAE. Derek said,

My ag teacher just had a way of motivating you without you knowing that he was motivating you, little subtle things. I don't know if he just knew my personality well or what but um and then one thing that I see in my state and other advisors that I don't see in him as much is that he just pushes for the what I call the fundamentals I guess of the SAE.

Bethany stated,

I heard one of his (ag teacher's) past students say this the other day and I really have to agree with him. He said that my ag teacher has provided the opportunities and the framework for success and you need to go and fill that in with whatever you want and I really think that's true because I can remember countless times that he said 'Bethany we're gonna take a weekend trip and we're gonna go see this and you're gonna see how you're gonna like it' he always provided me the opportunities.

Ryan added,

My ag teacher is always a real big supporter of anything that I wanted to do. I had known him ever since I was a baby. He was my dad's ag advisor so we did have that in common. He always knew me on a personal note and he also knew me on my SAE as well and like you said if you had a question it would get found out. He knew enough people that it could get found out. If there was something going on and he could drive there then he'd be there to support you in all ways possible

In addition, one participant noted his father's agriculture teacher, who was not the participant's agriculture teacher, still played a role in motivating this participant to engage in SAE. Aaron shared a "really big one (motivator) was my father's Ag teacher has always been a pretty big part of my life. He's still an ag teacher, he's been teaching for over 30 years. He's always been a big part of my life and we've always showed livestock together."

Moreover, the participants noted they were required to complete an SAE program. Likewise, the student's SAE program was required to have complete and accurate records. Many of the students explained this was one of the components the agriculture teacher motivated the student to complete. Derek stated, "basically with the records especially he really pushes all ag students in our school to make sure that we get records done and setting goals and he makes sure that you know that those are important early on."

Finally, the participants noted the supervision they received from their agriculture teachers was a factor for them to continue to participate in SAE. The supervision the participants received occurred both in the classroom and on-site. Regardless of the location in which the supervision occurred, the participants noted the agriculture teacher's supervision demonstrated their interest in the SAE program and the student. Ryan stated,

My advisor he'd show up all the time and just drop in. It'd be, he might come by two or three times in a week and then you might not seem him for a month you never could really tell, you just I mean he'd always be just out there taking pictures like he said, and

it's always something going on that he could come and be a part of and just share in and taking pictures and documenting everything.

Riley stated,

> My ag teacher supervised me both in the classroom and out in the field. We had leadership programs at school, production classes for ag and he would make sure that I was being the best student I could be as far as to learn to how to do an SAE how to do work in the industry and in the filed he would come out and just make sure that I was being the best employee for that company so I can make my SAE better and seeing that I had the best resources in the county for doing what I do to make sure that I was still being successful in everything I do.

Personal

One of the motivational factors the participant indicated was the concept of achieving personal satisfaction, interest, desire, and goals. The focus group participants expressed the importance of intrinsic factors in motivating their participation in SAE. Frank stated, "I'm gonna hit on the internal motivation. Absolutely, internal motivation needs to be a huge part because if you don't wanna do it then you will never be successful." Throughout the focus group, the participants mentioned the importance of personal goal setting that was directly related to their personal interest and desires. The participants noted when their personal goals were achieved they experienced personal satisfaction with their SAE program, which motivated them to continue their SAE program. Carl suggested, "more of the goals and the motivational drive came from myself." Kyle said, "I set three goals and that was one of them was to get as much involved in the farming industry as I can. Two, be part of management and be a large portion of the management side of the operation and the 3rd be as profitable as I can." Ryan suggested,

> I just one day I want to take over the family business. Of course, it's not going to happen yet, but one day it will so I made those goals long before I put SAE on paper. Because that was just always my dream to take over the family business.

While participants noted extrinsic factors motivated them to conduct an SAE program, some participants stated they hoped even without external motivators they would have continued to conduct their SAE. Susan stated,

> The awards were definitely a push, but I hope to think that I would have done my research and continued to do that and even if I wasn't in the agriscience fair it would have definitely been in the regular science fair. I was involved in that sort of environment and not about the recognition as much as it evolved into more of solving a problem and it is my problem that I want to solve

A few of the participants were involved in conducting SAE programs, involved with a family business or entity. These participants noted the term SAE was only given to them in their agricultural education courses and the projects they conducted had started prior to their involvement in SBAE. Aaron said, "I know personally, I just always shown, I didn't think of it

as an SAE. Really my ag teacher just kind of put a name to it – SAE. I had already been doing this for a really long time."

Community

The focus group participants believed the support they received from community members motivated them to continually participate in SAE programs. Participants noted simple messages and statements made by community members motivated them to continue their SAE. Further, these comments provided the participants with extrinsic motivational factors, which suggested that community members valued their SAE programs and the services the participants were providing. Jared said, "the communities, people if you work for them and then when you see them later you hear their neighbors say 'oh that person did such a great job' that kind of motivates you a little bit." Ryan suggested, "people that see you see every week that you see them there and that's it. They know you're trying to get your business started so they try to help you out and give you words of encouragement and just boost you up." Further, Kyle stated "…just from the community that I'm from, everyone is involved in farming one way or another just about I got a lot of encouragement from people, like from all the community. Like salesman, serviceman, other farmers, ag teachers."

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Conclusions/Recommendations/Implications-to-Practice

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The participants in this study were not deemed to be average agricultural education students; therefore, readers of this study must determine if the findings and conclusions are applicable to their context and situation. Further, this study supports previous literature that both extrinsic and intrinsic motivational factors should be used to influence student participation in SAE programs (Bird et al., 2013). The participants discussion of their motivations in regards to their SAE program was a direct indicator of the tenants of achievement motivation (Schunk, 2012). Throughout the study each of the participants noted various factors that motivated them to improve, adapt, and overcome many obstacles. Due to their motivation factors, the participants were able to achieve their dreams by becoming an American FFA Degree Star Finalist. Achievement motivation was played out in each of their programs through their programmatic decisions, various individuals who supported them, and the products or outcomes that were developed through their SAE involvement. Agriculture teachers and teacher educators must continue to ensure that achievement motivation is used in the development and implementation of SAE programs to help students remain motivated. Additionally, teacher educators should provide professional development sessions on achievement motivation for in-service teachers. Further research should examine current students' motivation to engage in SAE programs to determine if changing student populations have different or similar motivations for participation.

First, the participants' families played a large role in motivating the student to continue and participate in SAE. The families established culture and traditions were provided as evidence of the families' motivational influence on the student's involvement in SAE. Further, this was influenced by the families past history of involvement in SBAE, the National FFA Organization, and SAE programs. Therefore, it was recommended that families remain involved in the SAE program throughout the development, implementation, and sustainment phases. Furthermore, the researchers recommend that families be introduced to the concept of SAE prior to the

development of a student's SAE program. An implication-for-practice exists for agriculture teachers to provide this information to families through a variety of communication channels including: parent/teacher conferences, meet-the-teacher/back-to-school events, on-site supervisory visits, and through written letters/information guides. Further, agriculture teachers should utilize graduates and upperclassman experiences to provide SAE program examples to students and their families during the SAE development process. Finally, this leads to two recommendations for research: (1) to examine the roles of different family member groups (parents, siblings, aunt/uncles, grandparents) on student motivation to participate in SAE, regardless of the families past experience with SBAE and SAE; and (2) to further examine the influence that achievement motivation, conditioning theory, drive theory, social comparison, expectancy-value theory, and goals/expectations have on SAE program development, implementation, and sustainment. As achievement motivation was used as a theoretical lens for this investigation, additional theories and perspectives from participants describe intertwined motivational factors leading to their success in SAE.

Second, the researchers concluded that money and personal satisfaction were two large motivational factors that influenced student SAE participation. When developing and implementing SAE programs, students should work with their agriculture teacher and establish long-range goals that guide the SAE program. As the student's achieve their established goals, the student was able to determine if monetary and personal gains were made, which influences their personal satisfaction towards their SAE program. Personal satisfaction can also be achieved through interaction with community members. The comments made to students by community members can increase a student's level of personal satisfaction in their SAE program. Furthermore, the monetary gains that students achieved through their SAE programs provided the financial support to achieve personal goals that were established outside of their SAE, such as: post-secondary education and personal items. It was recommended that during the SAE development process that the student establishes attainable and relevant SAE goals, as a form of intrinsic motivation for SAE participation (Bird et al., 2013). Further, the researchers recommend that students keep records of their financial decisions to assist in determining if financial gains were made from their SAE programs. Finally, agriculture teachers should encourage students to celebrate when an established goal or monetary gain was achieved. This led the researchers to recommend the following two recommendations for research: (1) further examination of the role of personal satisfaction as a motivational factor towards SAE participation and (2) further examination of community member's involvement and role in SAE program development and implementation.

The third conclusion made by the researchers was that participation in the National FFA Organization served as a motivational factor for student involvement in SAE (Leising & Zilbert, 1985). The National FFA Organization provided the participants with opportunities to develop personal skills though interacting with other's that had similar interests. Further, the National FFA Awards Program provided students with the ability to be recognized for the work that they had completed through their SAE program. The researchers noted that the participants discussed the awards program as a reward for their hard work in their SAE. The researchers recommend that the National FFA Awards system should be used as an award that recognizes a student's hard work in their SAE program rather than the entire purpose to conduct an SAE program. Further, it was recommended that the National FFA Organization continue to ensure that

student's hard work and SAE accomplishment be recognized. Therefore, preservice teacher education programs should ensure that preservice and inservice teachers recognize the role of the National FFA Awards System as a motivational factor in SAE participation. The researchers recommend that research should examine the role of the current National FFA Awards System in SBAE, specifically SAE.

The final conclusion agreed upon by the researchers was that agriculture teachers were a motivational factor that influences a student's decision to participate in an SAE program, differing slightly from previous work which stated the agriculture teacher was the most important factor (Dyer & Osborne, 1995; Osborne, 1988; Swortzel, 1996). The researchers concluded that agriculture teachers provided students with a mixture of on-site and classroom supervision practices. Agriculture teachers have the ability to develop lasting and meaningful relationships with students that influence SAE participation. In this study, the agriculture teachers required each the participant to conduct an SAE program during their SBAE courses. The researchers recommend that agriculture teachers develop meaningful relationships with students in their SBAE classrooms. Moreover, it was recommended that agriculture teachers require every SBAE student to conduct an SAE program during their agricultural education courses. To ensure that engagement by all students was achieved, agriculture teachers should utilize all available resources to assist students in identifying their interests within the agricultural industry. Finally, the researchers recommend the following research recommendations: (1) examination of current practicing teachers SAE instructional practices; (2) examination of motivational theories that influence student SAE participation; and (3) examine the role of classroom instruction & supervision practices (classroom and on-site) on student motivation to participate in SAE.

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Climbing Jacob's Ladder: A Phenomenological Inquiry to Understand Ugandan Farmers' Experiences Using Fertilizers

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Climbing Jacob's Ladder: A Phenomenological Inquiry to Understand Ugandan Farmers' Experiences Using Fertilizers

This article examines factors influencing Ugandan subsistence farmers' adoption or rejection of mineral fertilizers using the theory of planned behavior as a theoretical lens (Ajzen, 2011). We conducted semi-structured interviews with 30 Ugandan farmers in-situ. Participants were criterion selected based on their rate of adoption of fertilizers and membership in farmer groups. We analyzed the interviews following phenomenological research design. Four themes emerged, they were (a) we are better together, working in farmer groups improves outcomes, (b) behavioral change begins within the family and farmer groups, (c) farmers need greater access to agricultural production knowledge and inputs, and (d) changes in farmers' knowledge leads to intentional behavior changes. The themes were summarized to generate the phenomenological essence of climbing Jacob's ladder. The factors that influenced fertilizer adoption included being a member of a formally recognized and registered farmer group. Farmer group members were more likely to understand the benefits of fertilizer use, while also receiving training regarding fertilizers from NGO and Extension agencies. Farmers not belonging to farmer groups had less access to fertilizers and were less likely to adopt fertilizers due to a lack of confidence in their ability to apply them and a lack of financial resources. Challenges and barriers participants experienced when learning about fertilizers included limited training opportunities from credible, research-based agencies, a lack of access to fertilizers at the markets, and a lack of funding to purchase inputs. The study elucidates how researchers can apply the theory of planned behavior to understand farmers' decision-making process regarding fertilizer use in Uganda and may inform future educational interventions aimed at increasing fertilizer adoption.

Keywords: Uganda farmers; Extension education; Fertilizer use; Subsistence farming; Phenomenological research design; Barriers to fertilizer adoption.

Introduction and Review of the Literature

The Need for Increased Food and Fiber Production Globally

We investigated Ugandan subsistence farmers' perceptions of fertilizer use and barriers to adoption. It is essential for global agricultural productivity to increase significantly as the population advances to nine billion by 2050 (FAO, 2015). There has been insufficient research conducted on identifying educational and Extension practices that holistically assist farmers in meeting the challenges facing increasing agricultural production, especially in Sub-Saharan Africa (SSA). SSA farmers face many challenges such as limited financial and input resources, imperfect markets, lack of agronomic knowledge, and market constraints. Overall, there is a need to increase the adoption of agricultural inputs, including fertilizers, in developing countries to improve soil fertility and subsequent yields to meet the demands of population growth (Connolly, Sodre, & Phillips-Connolly, 2016).

Uganda is a rapidly growing SSA country with a population comprised of mostly youth who lack formal education and practical training in agricultural sciences (FAO, 2015). A third of Ugandans (31.4%) are between the ages of 10-24 years, and 56% of the population is under the age of 18 (FAO, 2015). Furthermore, 72% of Uganda's population works within the agricultural

sector as subsistence farmers who are reliant on local food production for survival. Generally, subsistence farmers lack both formal and practical knowledge to improve the quality and quantity of their produce. To meet the demands of an increasing local and global population, Ugandan farmers need greater access to best agricultural practices including technical innovations to reduce their reliance on foreign hunger assistance and other aid programs (FAO, 2015).

Need for Fertilizer Adoption

Over the past 100 years, developed agricultural economies in the West and Far East have converted from subsistence farming to highly mechanized practices by adopting technologies such as fertilizers and pesticides. The use of yield-enhancing agricultural inputs have resulted in increased productivity in a short time (Barrett & Sheahan, 2017). The green revolution affected countries around the world, especially those within Asia and Latin America. However, SSA countries did not participate in the 20th century green revolution because of a lack of universally accepted policies with national and state governments (Quiñones, Borlaug, & Dowswell, 1997), leading to an overall lack of advancement across their economies (Barrett & Sheahan, 2017).

Without an increase in agricultural input use, SSA farmers' ability to produce enough food for the projected population will be compromised (Barrett & Sheahan, 2017). Experts predict that much of the growth will come from emerging markets in Brazil, Russia, India, China, and South Africa (BRICS). Beyond BRICS, Connolly et al. (2016) reported that the next breadbasket for global agriculture production must be SSA but only if African farmers increase their rate of adoption of fertilizers.

One aspect of stimulating fertilizer use in SSA is determining why farmers have not adopted fertilizers to improve soil fertility and enhance agricultural production (Chahed, 2018; Quiñones et al., 1997). Barriers to adopting fertilizers both economic and social are poorly understood, which prompted this study.

Barriers to Fertilizer Use SSA

Previous research regarding barriers to fertilizer adoption in SSA included limited availability of product at markets, a lack of research on fertilizer application rates, and inadequate agronomic fertilizer application knowledge (Liverpool-Tasie et al., 2017). In addition, Extension agents were reported to have low competencies regarding proper fertilizer use, limiting the diffusion of innovation (Ragasa, Ulimwengu, Randriamamonjy, & Badibanga, 2016). SSA countries have implemented programs to stimulate fertilizer demand including investing in Extension agents to teach farmers about managing soil fertility, providing subsidy programs, and enhancing farmers' access to credit-based programs to purchase fertilizers. However, the majority of subsidy and credit-based programs were unsuccessful in raising SSA fertilizer application rates because of poor national infrastructure, substandard transportation systems, poor soil quality, and a lack fertilizer availability at the markets (Liverpool-Tasie et al., 2017).

The growth of agricultural productivity in SSA is far behind most other nations. Olwande, Sikei, & Mathenge (2009) reported that Kenya was the only country that achieved a 30% increase in fertilizer use starting in the early 1990's. With few African countries using fertilizers at rates needed to boost production, as well as ineffective Extension systems to diffuse best practices in agricultural production, researchers have concluded that SSA is doomed to remain in poverty despite numerous educational and incentive programs (Christianensen, 2017; Ragasa et al., 2016), warranting the need for additional study on the barriers to adoption among farmers.

Fertilizer Use in Uganda

African farmers use less than 1% of the total global fertilizer application, resulting in 29.1% of the world's land mass receiving little to no fertilizers (Yanggen, Kelly, Reardon, & Naseem, 1998; World Bank, 2013). Uganda has the lowest rate of fertilizer adoption in SSA with only 3.2% of farmers applying then. When fertilizers are applied, application rates are minuscule at less than one kilogram of fertilizer applied per year (Henao & Baanante, 2006).

In addition, one-third of the landmass in Uganda is suitable for agricultural production. However, the agricultural capacity is further diminished because of a lack of irrigation capacity on 42% of the farmland (FAO, 2015; Uganda Bureau of Statistics, 2010). Uganda has great potential to increase agricultural outputs if farmers adopt the use of fertilizers and irrigation (Barrett & Sheahan, 2017).

Purpose of the Study

The study's purpose was to describe the lived experiences that presaged Ugandan farmers' decision to adopt the use of fertilizer as an agricultural production practice.

Theoretical Framework

Ajzen's (2011) theory of planned behavior (TPB) was based on the assumption that individuals will make decisions rationally while simultaneously considering the implications of their decisions, leading to a behavioral intention. An individual's intentions (INT) are affected by their attitudes (ATT) toward the behavior, the subjective norms (SN) that exist within society, and the individual's perceived behavioral control (PBC). People are more likely to have positive attitudes toward an action and exhibit behaviors toward adoption when they believe that they can execute them successfully, and the behaviors are in line with subjective norms.

We used the TPB as a lens to frame farmers' decisions toward fertilizer adoption. ATT toward a particular behavior, SN, and PBC are precursors to INT, which precipitate behavioral change. ATT foretells one's favorable or unfavorable evaluation of intended behaviors, leading to INT of a future behavior. SN are an individual's perceived social pressure to perform behaviors. The TPB explains how beliefs and social expectations motivate behavior. Therefore, unraveling Ugandan farmers' ATT, SN, and PBC are critical to understanding their decision to adopt fertilizer use.

Several meta-analytic studies have confirmed TPB for usefulness and validity (Armitage & Conner, 2001; Godin & Kok, 1996). The TPB provided a lens to frame how participants established social norms. According to the TPB, Ugandan farmers' acceptance of fertilizers served as a function of perceived usefulness to their current farming practices.

Research Methods

Reflexive Statement

Our shared epistemological stance is pragmatic, both having been raised in agricultural production families. We seek practical solutions to complex problems, favoring applied research methods. Our research practice is grounded in the constructivist paradigm as a way to understand participants' experiences from an emic perspective (Creswell & Poth, 2018). We have worked internationally in the Caribbean as a Peace Corps Volunteer (1987-88) and Fulbright scholar in Kenya (2009) and Thailand (2012, Dr. Kelsey) and as an AgriCoprs Volunteer (2017, Mr. Mulvaney). Our White, rural, and middle-class cultural backgrounds inform our understanding of agricultural development from a privileged, first world perspective. We were drawn to agricultural education as a centerpiece of our vocational aspirations because we desire to seek solutions through the action research cycle. The research reported here exemplifies our attempt to contribute to agricultural development through a better understanding of the problem from participants' voices.

Population

Thirty criterion-selected participants agreed to participate in the study. Staff from the International Fertilizer Development Center (IFDC) and the District Community Development Officer (DCDO) helped us to identify participants. The criteria for participation in the study included farmers who had received formal training from IFDC and/or the DCDO on how to use fertilizers and those who had not receive training. IFDC staff identified 22 chairpersons of registered farmer groups and eight farmers with no association with a registered farmer group. The IFDC and DCDO staff also helped us to establish rapport and trust among participants before the interviews took place. The university institutional review board approved the study before contact with participants.

Research Design

We used phenomenological research design to describe the lived experiences that presaged Ugandan farmers' decision to adopt fertilizer use. A phenomenon is "an event or a lived-through experience" that is shared by the community of interest (Van Manen, 2014, p. 65). Phenomenology design allowed us to explore the issue from a holistic stance to capture the lived experiences of participants, resulting in describing the *essence* or allegory to elucidate the findings. The central phenomenon addressed in this study was farmers' ATT, SN, PBC, and INT regarding fertilizers use.

Data Collection

After reviewing the literature to identify salient variables affecting fertilizer use in SSA, we developed a semi-structured interview protocol to facilitate a naturalistic conversation with farmers. The interview questions were open-ended and focused on the participants' lived experiences as a substance farmer.

IFDC provided an interpreter to assist with conducting the interviews. Of the 30 participants, 22 were non-English speaking. The interpreter followed along with a copy of the interview protocol to ensure that all questions were asked and answered appropriately by participants. Eight farmers required no assistance from the interpreter. I conducted and recorded the interviews at the participants' farms or at the local sub-county building within their respective districts in October 2018.

We managed the data by transcribing the interviews verbatim. The cleaned transcripts were sent to the translator for member checking purposes. No statements were changed, indicating face validity (Tracy, 2010). The interview transcripts were loaded into Atlis.*ti*, a computer-based qualitative data analysis tool, for analysis (Saldaña, 2015).

Analysis consisted of reading the transcripts line-by-line and interpreting the meaning of the farmers' lived experiences while writing interpretative notes (memoing), and engaging in reflective thinking. We developed codes to tag significant statements from the original transcripts that held meaning for answering the research questions, a process of data reduction. We combined the significant statements to develop themes to explain what and how farmers experienced farming. A textual description of what participants experienced follows a structural description of how participants experienced farming and fertilizer use, presented as themes. The essence statement is an allegory used to enhance understanding of the central findings for narrative purposes (van Manen, 2014).

Engaging stakeholders in the research enhanced quality control. IFDC staff were actively involved in all phases of the study, including authorship. To ensure anonymity, we assigned pseudonyms to the participants and reported the findings as a composite profile to reflect individual responses. Participants' quotations were included in the findings to establish truth-value and to add authenticity to our normative belief statements (Tracy, 2010).

Results

Our findings focus on farmers' attitudes and social norms regarding fertilizers that lead to perceived behavior control in the decision-making process for adoption. The farmers were split into two groups; those who identified as a member of a farmer group within their local sub-county ($n = 22$), and those who identified as independent farmers' without the support of a farmer group ($n = 8$). A farmer group in Uganda is characterized by members who pay dues, meet frequently to share production practices, and make joint decisions regarding resource allocation. NGO's and Extension agencies work through farmer group chairpersons to disseminate new innovations. Farmer group members have access to trainings to learn about best practices in agriculture, share plots of farmland, and have access to internal savings and loan programs. Table 1 lists participants' farmers group status, pseudonym, district, age, educational level, English language literacy level, and type of fertilizer used.

Table 1

Participants' Farmer Group Membership Status and Demographic Information

Farmers belonging to a farmer group	District	Age	Educational level[abc]	English Literacy[d]	Fertilizer Use[e]
Zaharah	Tororo	53	S4	Both	Organic
Asha	Tororo	52	P7	Both	Organic
Esther	Tororo	51	S4	Some	Mineral
Ami	Butaleja	55	None	None	Organic
Rabea	Tororo	31	S3	Both	Mineral
Sarama	Butaleja	47	Bachelor	Both	Both
Abby	Mbale	N/A	S3	Some	Both
Sabah	Butaleja	30	P7	None	Both
Sadah	Mbale	N/A	P5	None	None
Halah	Butaleja	46	P3	None	Mineral
Abdulla	Mbale	34	S2	Both	Organic
Aaden	Mbale	58	P6	None	Both
Noah	Tororo	59	Bachelor	Both	Mineral
Abraham	Butaleja	35	P3	Some	Organic
Omari	Butaleja	36	S4	Both	Both
Ode	Budaka	32	Bachelor	Both	Both
Ali	Tororo	50	S4	Both	Both
Amare	Budaka	40	P3	None	Mineral
Kwame	Butaleja	48	S2	Some	Both
Zane	Budaka	75	S2	Some	Both
Zakai	Butaleja	58	P7	Some	Mineral
Moses	Mbale	56	P2	None	Both
Farmers not belonging to farmer groups	District	Age	Educational level[abc]	English Literacy[d]	Fertilizer Use[e]
Kali	Budaka	27	S4	Some	Organic
Mada	Budaka	30	P7	Some	Organic
Mae	Budaka	35	P5	None	Organic
Laila	Budaka	45	P7	N/A	Both
Farya	Budaka	35	S2	Some	Organic
Caliana	Budaka	49	S3	Some	Organic
Saleem	Budaka	46	S3	Some	Both
Dawda	Budaka	64	S1	Some	Both

Note. [a]Primary school. [b]Secondary school. [c]University education. [d] *Both* denotes farmers' ability to write and speak fluent English with no assistance from the interpreter; *some* denotes farmers' ability to speak English conversationally with limited assistance from the interpreter; *none* denotes farmers' inability to speak English with full assistance from the interpreter. [e] *Both* denotes farmers' use of mineral and organic fertilizers; *none* denotes farmers' non-adoption fertilizers.

All of the farmers had positive attitudes toward fertilizer use. Further, they reported long-standing attitudes that fertilizers were innately beneficial for increasing their profits and improving the soil. As an illustration, when asked about their view on the use of fertilizers, the term "high yields" was mentioned by 19 of the 30 farmers. We present four themes to further elucidate the findings and conclude with the essence statement.

Theme 1: We are Better Together - Working in Farmer Groups Improves Outcomes

Normative belief. Farmers were better equipped to adopt fertilizers and other agricultural innovations when involved in registered farmer groups that enabled learning opportunities, sharing of resources among members, and potential for receiving training from outside organizations such as NGOs and Extension agencies. Farmer group members reported being "better together" as social norms (SN) supported the adoption of fertilizers.

Supporting Evidence. All of the 22 farmers that identified as a chairperson of a registered farmer group shared a desire to engage in additional learning opportunities to grow their knowledge of fertilizer use. The farmers wanted to learn more about improving their agricultural practices, and as leaders of their farmer groups, they had access to new information. Abdullah, chairperson, Mbale District, said that he learned about fertilizers through his group, stating, "the sharing of ideas and also, opportunities to meet other farmer group members provides my group the chance to be model farmers to go out and demonstrate to others in the community" (154-158). Farmer group chairpersons (n=22) reported the value of farmer groups by increasing opportunities for gaining knowledge about new innovations. When asked how being in the farmer group was helpful, Zakai responded through the interpreter stating, "I'm recognized. I can speak in public as I have been given an audience. I am respected publicly in the village as a chairperson. I have developed financially and now I'm the foreseer [leader] of the group" (71-72).

Theme 2: Behavioral Change Begins Within the Family and Extends to the Farmer Groups

Normative belief. Farmers' cultural identity necessitates that the family be a part of decision making prior to any changes made to farming methods, emphasizing the importance of considering SN within this population. The concept of family also extended to farmer group members.

Supporting Evidence. When asked how they made decisions, 14 of the 22 farmer group members responded by stating that they all "sit and discuss" prior to making decisions. When asked how he makes decisions, Abdullah, chairperson, said, "It is a joint decision. I am the head of the family but when it comes to the farm, we make decisions as a family or group" (373-374). Farmers relied heavily on their farmer group members to provide information and updates regarding the use of innovations, including fertilizers. Ode said, "We realize as farmers during this dry season, when you do apply those fertilizers, there is a way it helps us even when it is dry, the crop can receive that small water. Mostly these days when our crops are in a flowering period those fertilizers do help us in the absence of rainfall" (197-200).

Farmer group members were able to network and participate in trainings provided by NGOs and Extension agencies. Through trainings, they grew their knowledge of fertilizers and implemented new practices. Before joining a farmer group, Zane, chairperson, did not believe in modern farming practices. When asked about his thoughts on fertilizers, Zane said, "I did not even know its purpose, so it was not necessary for me to use it" (113-114). Zane attributed his professional growth to his farming group encounters.

We found that learning about new technologies was best facilitated in a group setting. Abraham said, "In a group, if a farmer says that they have one acre of land and he wants to cultivate it, they come together to evaluate, working together to help one another" (45-49).

The notion of *togetherness* reinforced the importance of considering SN when planning for educational interventions. Adong, Mwaura and Okoboi (2012) also reported that Ugandan farmers benefited from farmer groups by having greater access to information that resulted in improved productivity by adopting new technologies.

Theme 3: Farmers Need Greater Access to Agricultural Production Knowledge and Inputs

Normative belief. Participants had limited opportunities to learn about fertilizers outside of the existing community.

Supporting Evidence. Farmer-to-farmer interactions were the main source of information regarding agricultural advancements. Educational programs offered through the National Agricultural Advisory Development Service (NAADS) and local Extension agents were less effective in disseminating information. All of the farmers ($N = 30$) reported a desire for improved access to information, training, funds to purchase inputs, local knowledge on how to apply fertilizers (application times and rates), and locations for purchase agricultural inputs. When asked what her biggest limitation to applying fertilizers was, Sarame said, "Affordability and accessibility. My group of farmers cannot access fertilizers" (192-193). Others expressed their concern over the lack of information and training available to farmers, despite being in a farming group. When asked about her limitation to using fertilizers, Caliana said, "I am still ignorant about it. If I were to get training and learn about its benefits, then maybe I can use it. Also, if I were to get training and the cost was low, then I would use it on my farm" (51-53).

Halah expressed the same barriers to fertilizer adoption. She said, "The problem is the cost, the expense. Also, I lack knowledge and have never been trained on how to use fertilizers and as you can see the other farmers just use it locally in the rice farm. Also I don't have any idea on how it affects the soil and I want to learn how to use it and then testify (to other farmers)" (95-98).

All 30 participants lacked opportunities to varying degrees to learn about fertilizers through trainings provided by NGOs and Extension agencies. In addition, knowledge that circulated among farmers not associated for a farmer group came from the farmers' personal experiences rather than from research-based sources, resulting in limited advancements in production. In addition, farmer group members lacked strategies for making large fertilizer

purchases, while non- farmer group members lacked information, training, and cooperative purchasing strategies to increase production through the adoption of fertilizer.

Theme 4: Changes in Farmers' Knowledge Leads to Intention to Change Behavior

Normative belief. Farmers with stated INT to adopt fertilizers were more likely to experience a change in behavior (PBC) after gaining new knowledge regarding fertilizers. Farmers' new knowledge came from NGO workshops or farmer group members. Those not belonging to a farming group were less likely to experience changes in behavior, lacking PBC.

Supporting Evidence. Farmers' who had access to farmer groups were more likely to use fertilizers. Intentional behavior was shaped by exposure to the benefits of fertilizer use on yields. All 30 farmers believed that fertilizers would increase yields and provide their households with added financial stability. However, only 19 of the 30 farmers were consistently using mineral fertilizers. The same 19 farmers also belonged to a farmer group. When asked why he did not use mineral fertilizers consistently, Abraham said, "I am using the type of organic fertilizer I am now because it is what I can afford. But, if I had a chance to use others, I would. The challenge is the price" (5-6).

All but one of the farmers were using either mineral or organic fertilizers. However, 10 farmers only used organic fertilizer because of a lack of training and knowledge of mineral fertilizers. Zaharrah said, "We have not been sensitized (trained). If there could have been somebody to tell us that the mineral fertilizer are here we would use them but we are ignorant about them" (128-129). The 10 farmers' who did not use mineral fertilizers lacked knowledge and training, leading to no behavioral changes regarding adoption, consistent with the TPB where individuals make intentional decisions based on expected outcomes (Ajzen, 2011).

Participants not belonging to farmer groups were willing to receive training regarding the use of mineral fertilizers; however, they lacked access to such. INT to adopt can be improved by providing training opportunities to farmers as well as access to funds for purchasing mineral fertilizers.

<center>**Discussion**</center>

The overarching purpose of phenomenological research design is to emerge an essence to illustrate and summarize findings. The essence forms the structure of essential meaning and illuminates the fundamental characteristics of the phenomena under study (Dahlberg, 2006). Therefore, the allegory that best describes how and what farmers experienced regarding fertilizer use in Uganda was *climbing Jacob's ladder.*

Jacob's ladder refers to a biblical story from Genesis 28:10–17 where Jacob dreams about climbing a ladder to heaven but falls down repeatedly. He ascends and descends the ladder, never reaching his intended destination.

Farmers hoped to ascend the ladder toward increasing agricultural productivity and profitability; however, the climb proved to be a defeating and repeating process of adding one ladder rung (barrier) after the other. Barriers included a lack of knowledge regarding fertilizer

application, a lack of access to fertilizers in the market, and a lack of access to credit or pooled funds through farmer groups to purchase fertilizers.

Farmers who were not group members experienced a closed community where knowledge was circulated among each other; however, little new information from NGOs and Extension agents penetrated the groups to advance farming practices. On the other hand, farmer group participants experienced supportive relationships among members and had access to outside agencies such as NGOs and Extension agencies that shared research-based information for improving agricultural production. They also had greater access to fertilizers, providing a boost up the ladder, thereby increasing INT behavior through increased PBC, resulting in increased mineral fertilizer adoption. Our findings support the theoretical application of the TPB to address the adoption of fertilizers in Uganda (Ajzen, 2011).

In summary, the 22 farmers who were a part of a farmer group provided evidence that offering all farmers support in a group setting to address SN can propel technological adoption and agricultural and science literacy within subsistence farming communities. This finding aligns with Adong, Mwaura, and Okoboi (2012) who reported that targeting farmer groups is an effective vehicle for promoting access to information and value addition in markets.

Participants were willing to increase fertilizer use on their private and group farms; however, they believed that the lack of training and exposure to fertilizer application methods justified the current levels of fertilizer adoption (PBC). This finding is consistent with Barrett and Sheahan (2017) and Liverpool-Tasie et al. (2017) who reported knowledge gaps among Ugandan farmers about fertilizer application rates and timing.

Additionally, our findings suggest a need to support farmers by conducting educational needs assessments at a local level to design trainings, as well as increasing fertilizer access. Needs assessments can serve to gain a better understand of the motivation farmers have to use fertilizers, while building trust and rapport within farmer groups. It is important to stress that educational interventions be conducted within the existing farmer groups, as social cultural norms require family and peer interactions for decision-making. Unlike the global north, where Extension education is delivered one-on-one as well as in groups (Dunne, Markey, & Kinsella, 2019), Ugandan farmers preferred receiving education in a community setting.

Participants desire behavior change but lacked external resources in order to support their intention. With additional training from NGOs and Extension agencies, farmers' groups can overcome barriers to improved yields by adopting fertilizers.

Based on these findings, we propose the following steps to remedy farmers' lack of knowledge regarding fertilizer application, lack of access to fertilizers, and social factors that inhibit behavioral change. These steps can be used to guide future research to promote fertilizer adoption through intentional behavioral change (Ajzen, 2011).

Change agents should first identify points of access that enable farmers to act upon their intentional behaviors such as attitudes toward fertilizers. While farmers desired to adopt fertilizers, they were unable to access fertilizers because they did not know where to purchase

them and they did not have cash and/or subsidies to purchase fertilizers. Farmers attitude and subjective norms were positive toward fertilizer adoption. If farmers were provided access to fertilizers in the market and subsides, they would adopt fertilizers.

Second, encourage farmers to join farming groups. We found that farmers who belonged to farming groups learned about new technologies and gained access to cash and/or subsidies through NGOs and Extension agencies. Membership in farming groups also positively influenced attitudes, perceived behavioral control, and social norms that lead to intentional behavior change toward fertilizer adoption.

Third, implement participatory approaches within sub-districts to facilitate communication between farmers not associated with farmer groups and farmer group members. We found that farmers who did not belong to a group expressed overwhelming challenges due to lack of information regarding best practices in agriculture. Seeking ways to recruit farmers into farmer groups may enable ATT, SN, and PBC to move in the direction of INT to adopt fertilizers. Future research should investigate why farmers did not join farmer groups to understand additional barriers to adopting fertilizers.

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Knowledge, Skills, and Competencies Needed by Students with Training in Agricultural and Environmental Practices as Perceived by Local Leaders: A Delphi Study

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Knowledge, Skills, and Competencies Needed by Students with Training in Agricultural and Environmental Practices as Perceived by Local Leaders: A Delphi Study

The purpose of this study was to examine the knowledge, skills, and competencies needed by high school students with coursework in agricultural and environmental practices as perceived by educators and industry members. This study utilized a true Delphi technique in order to obtain the perceptions of the respondents. Respondents indicated 122 items that were important for students to possess with coursework in this area. The top 83 items were reported based upon panel members' perceived importance of these items. There were three major themes or categories of importance identified by the panel members, which include: life/leadership skills, core subject area knowledge, and competence in production agriculture knowledge/practices. The respondents on the panel also indicated the importance of incorporating local conditions and practices into the curriculum. This panel was specific to the needs of Hendry County in Florida thus limiting the transferability of the results beyond this region. However, some responses may be utilized beyond this population and this study provides a methodological framework for similar studies in other regions.

Introduction

Agricultural production has been predicted to increase 70% by 2050 to feed the world's growing population (Krogstad, 2012). An increase in production will require an increase in the skilled agricultural workforce who can meet the demands of a growing population. However, the United States continues to have a shortage of skilled agricultural workers (Gasperini, 2011). Setting aside political barriers to acquiring an agricultural workforce, the main concern is the level of skill needed by workers. A skilled workforce is necessary for agriculture to sustain and increase current levels of production (Rivera & Alex, 2009). Within agricultural education a need exists to develop students who are skilled in agricultural content and competencies, while preparing all students to be agricultural literate citizens who contribute to society (Roberts & Ball, 2009). More specifically, a skilled agricultural worker is someone who is knowledgeable of agricultural content and skills and has the ability to utilize critical thinking and decision making in an agricultural environment (National Research Council, 2009). Further, Roberts (1957) posited that "the controlling purpose of such education [agricultural education] shall be to fit for useful employment … [those] who have entered upon or who are preparing to enter upon the work of the farm or the farm home" (p. 615). According to the Bureau of Labor Statistics (2012), employers expect to lose up to three percent of their skilled workers by 2022. The need for a skilled workforce is evident based upon the need to increase the food supply and sustain a growing population. Meeting the demands for a skilled workforce will require training and education. Teachers, employers, and other professionals will be responsible for providing training and education in skilled agricultural jobs in order to prepare job seekers for the workforce (Roberts & Ball, 2009).

Rivera and Alex (2008) suggested that the need for employees in agriculture can be satisfied through the development of a knowledgeable workforce that is educated and trained based upon the needs of the location. Training and education will be necessary in order to supply a skilled workforce; however, as stated by Rivera and Alex (2008) the knowledge and skill required by workers is entirely dependent upon the needs of the geographic area. In order to

prepare an adequate workforce, training and education will need to be tailored to the region and commodity area. Phipps, Osborne, Dyer, and Ball (2008) stated that educational program design should "include the workforce demands of the community, the general interests and needs of the students, and opportunities and trends in the area" (p. 113). The authors also noted the importance of collecting information from local industry experts and stakeholders.

In addition to training and education based upon the needs of the area, training will also need to be provided at all academic levels. Based upon the 2011 *Agribusiness Jobs Report* (AgrowKnowledge & AgCareers.com, 2009) 58% of job openings posted on the AgCareers.com website required a bachelor's degree, 11% required an Associate's Degree, and 13% required a High School Diploma. The variation of training and education at multiple academic levels will allow for the development of a workforce that is prepared with the various skill sets necessary to sustain the agricultural industry.

Literature Review

Based on the needs of this study, literature was reviewed that employed the Delphi method as a means of obtaining responses to questions concerning curriculum development or employment competencies in secondary school-based agricultural education. Additional literature was reviewed that focused on curriculum development or revision for purposes of employment in the agricultural industry. Finally, other research was investigated that illustrated high school graduates current level of preparation to enter the workforce.

Akers, Vaughn, and Haygood (2003) sought to determine what topics should be taught in a high school agricultural communications course and what competencies students should possess. The researchers utilized the Delphi method to obtain answers to the previous questions. The Delphi panel consisted of 75 members—33 high school teaching experts, 21 agricultural industry leaders, and 21 university faculty that taught agricultural communications courses. These panel members were selected for three reasons. First, all individuals that would be affected by the program should be included during the curriculum planning process (e.g., teachers, employers, and employees) (Akers et al., 2003). The second reason for utilizing the Delphi was addressed by Finch and Crunkilton (1999) who stated that curriculum should reflect the needs of the workforce, thus validating the need for agricultural industry leaders to participate in the panel (Akers et al., 2003). Lastly, Sprecker (1996) noted technology and job requirements in agricultural communications have changed frequently, thus the information should be evaluated by experts in the field. Therefore, university faculty members in agricultural communications were selected to be on the panel (Akers et al., 2003). The panel developed 262 responses concerning the topics that should be included in a high school agricultural communications course. Results were categorized into 11 topic areas. Of the responses, the panel agreed or strongly agreed that 91 competencies should be included in a high school agricultural communications course.

Slusher, Robinson, and Edwards (2011) examined if the current agricultural education curriculum was meeting the needs of the animal science industry. In order to do this, the researchers sought out the opinions of Oklahoma animal industry experts regarding the competencies needed by high school graduates interested in entry level positions. Researchers

chose to use a modified Delphi method in order to obtain more detailed, rigorous information from experts and stakeholders in the livestock industry. Additionally, this method was used because of the ability to elicit anonymous, controlled feedback. Researchers also used careful consideration when selecting individuals to participate in the study. Participants were selected with assistance from faculty in the animal science department at Oklahoma State University based on the likelihood to hire entry-level employees and with regard to the animal specialization (Slusher, Robinson, & Edwards, 2011).

The Delphi study (Slusher, Robinson, & Edwards, 2011) to determine animal science industry needs yielded 48 technical competency statements. These statements indicated that students needed skills in the following areas: business, marketing, and data management; health and nutrition; operation and maintenance of tools and machinery; reproduction and genetics; animal handling/animal husbandry; policies and food safety; animal selection and evaluation; and production agriculture. Specific skills in which all Delphi participants strongly agreed high school graduates should possess were: "use of basic math skills," "execute general farm safety practices," and "understand animal needs" (Slusher, Robinson, & Edwards, 2011, p. 100).

Scanlon, Bruening, and Cordero (1996) conducted four focus groups to determine agriculture curriculum modifications being made in Pennsylvania to help develop the knowledge and skills of students seeking employment in the agricultural industry. Focus group members were purposively selected for their knowledge of agribusiness and agriculture industry workforce needs. Members of the focus groups identified several areas for modification of the agriculture curriculum. Those modifications included: the inclusion of business related skills, human relations skills, critical/analytical thinking, problem solving, decision making, understanding of the business cycle, knowledge of quality control, communication skills (both written and spoken), and team work skills (Scanlon, Bruening, & Cordero, 1996).

In a report from The Partnership for 21st Century Skills, employers were asked to identify the very basic skills that high school graduates should have to be successful in the workforce. Employers identified reading comprehension, English language, writing in English, mathematics and foreign language as the five most important basic skills areas that students should possess (Casner-Lotto, 2006). Additionally, employers were asked to identify the most important applied skills for job success. Professionalism/work ethic, teamwork/collaboration, oral communications, ethics/social responsibility, and critical thinking/problem solving were identified by respondents (Casner-Lotto, 2006). The aforementioned skills are termed soft skills. Rutherford, Stedman, Felton, Wingenbach, and Harlin (2004) posited that soft skills are essential to be successful in today's workforce. Furthermore, Bancino and Zevalkink (2007) stated that the development of soft skills, to complement technical skills, increases personal productivity, collaboration, and synergy. Regardless of importance, employers have cited that many high school graduates do not possess these skills (Casner-Lotto, 2006).

When developing curriculum, Roberts and Ball (2009) posited that content- and context-based curriculum should be developed within agricultural education programs. By engaging students in content- and context-based curriculum, agriculture teachers can assist in the development of a skilled agricultural workforce and prepare learners to be agriculturally literate. Finally, school-based agricultural education programs provide students a context to apply the

content knowledge that they have gained in other academic courses to real-world situations and environments (Roberts & Ball, 2009).

Curriculum development provides benefits for students as well as teachers. Teachers who engage in action research regarding curriculum development become more self-confident in their ability to develop new curriculum and to increases their professional confidence. Engagement in science curriculum development assisted teachers in increasing the utilization of science in their classroom instruction. Therefore, engaging teachers in curriculum development improves the quality of the educational learning environment and assists in the development of engaging hands-on lessons for students (Bencze & Hodson, 1999). Based on the aforementioned findings, this study sought to determine the necessary knowledge and skills for a specific sector of agriculture in a south Florida community. This study focused on the knowledge and skill necessary for high school graduates. In addition, this study created a process to be replicated in other communities where skilled agricultural workforce development is necessary.

Conceptual Framework

This study is part of the Hendry County Sustainable Biofuels Research Center. The purpose of the Center is to create a partnership between the University of Florida and Southwestern State College, and Intelligentsia International, Inc. to foster the development of a sustainable biofuels industry in south Florida. In order to do this, one goal of the center was to develop a program that provides education and training in sustainable biofuels and agriculture (Burleson, Rubenstein, Thoron, & Hanlon, 2012).

Therefore, an educational continuum was developed that focused on education and training at both the secondary school and post-secondary school levels (Figure 1). The overarching purpose of the continuum was to develop an agricultural workforce based on community needs. As stated in the introduction, educational program design should be based upon the workforce needs of the community (Phipps et al., 2008). Therefore, community needs should be identified by county stakeholders within the given segments of the model.
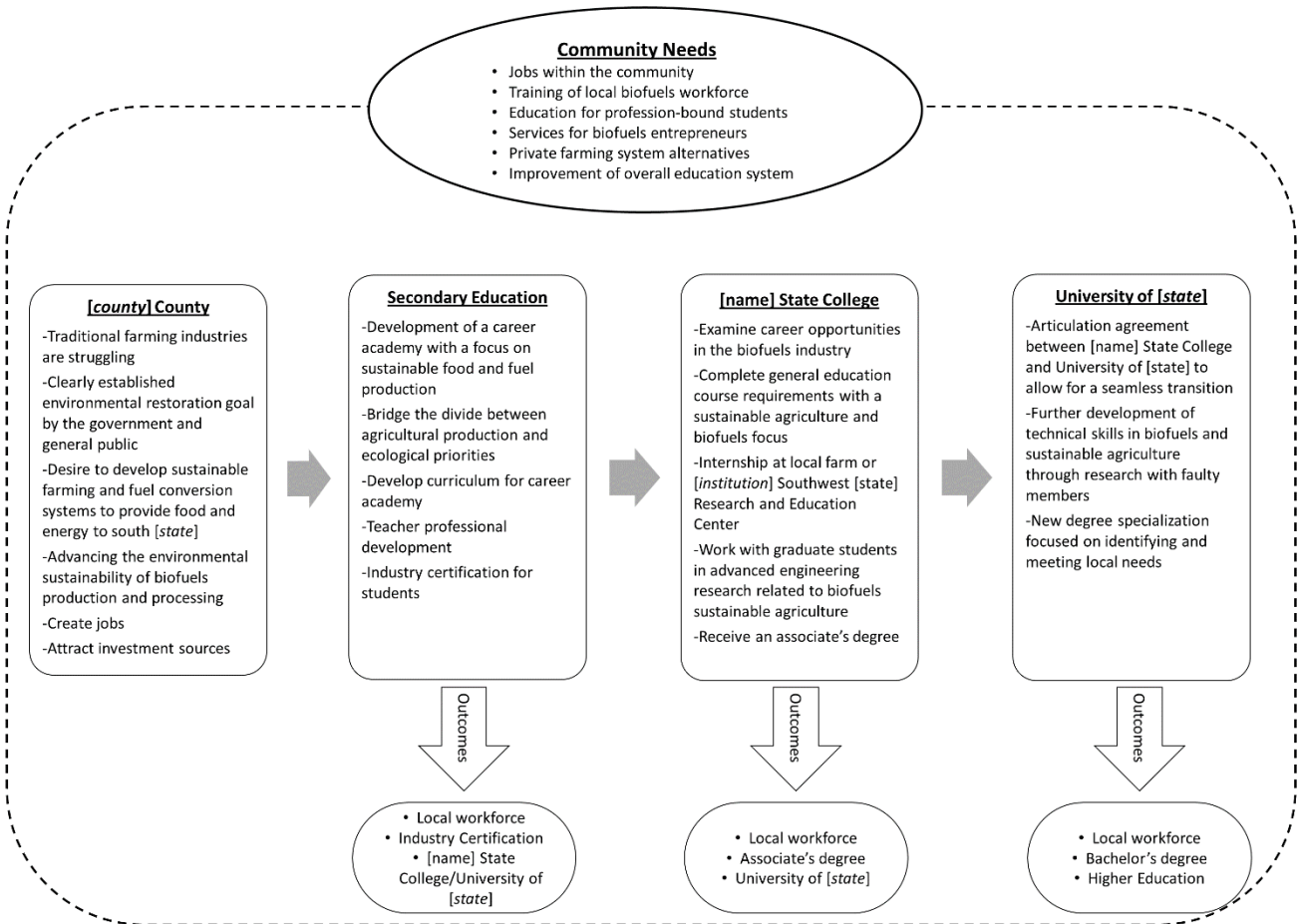
Figure 1. Educational Continuum developed to meet the skilled workforce needs in South Florida as part of the Hendry County Sustainable Biofuels Center (Burleson et al., 2012).

Once the community needs are identified, the agricultural industry within the defined geographical region should be described in order to determine the necessary steps toward meeting the identified needs. In this study, Hendry County is a traditional farming community; however, this traditional industry is struggling. There is a clearly established need for environmental restoration, resulting in a desire to utilize more sustainable farming methods for both food and energy. As previously described, Rivera and Alex (2008) illustrated the importance of basing education on the agricultural workforce needs of the community. Thus, prior to the study it was important to understand the state of the agricultural affairs in Hendry County.

Following an understanding of the current state of the agricultural industry, educational programs must be outlined in order to meet the community needs. At the secondary school level, a career academy should be developed that focuses on environmentally and economically sustainable food and fuel production. Additionally, teacher professional development must be provided. The goal is for students to obtain certification in this area with the opportunity for employment in the community upon graduation of high school or advancement to Southwestern State College/University of Florida.

The next element of the conceptual model was progression to post-secondary education. If students were seeking further education, the continuum provides for educational opportunities at the community college and university levels. Students can enroll in Southwestern State College to further explore opportunities in the biofuels industry to ultimately obtain an associate degree in the field. Furthermore, a student can gain experience through an internship with a local farm or the University of Florida Southwest Florida Research and Education Center to develop further knowledge in agricultural and environmental practices. Following the completion of an associate degree, students choose to enter the workforce, or obtain their bachelor's degree from a program at the University of Florida.

At the University of Florida students can further develop knowledge and skills in the field which will be applicable to their home community (Burleson et al., 2012). The very nature of this continuum allows students to choose to participate in part or all components of the continuum. However, the ultimate goal is that students receive education and training in agricultural and environmental practices, directly applicable to their home community. This continuum helps meet the demand for a more skilled workforce (Burleson et al., 2012).

While this continuum presents the overall goals of the educational programs through the Sustainable Biofuels Research Center, this study focused solely on the development of the secondary school education portion of the continuum and the curricular components that should be included within secondary school education programs focused in sustainable and biofuels. Thus, the findings and conclusions of this study were tailored to the needs of educating a skilled agricultural workforce with only a high school diploma.

Purpose and Objective

The purpose of this study was to describe the consensus of south Florida agricultural industry members and educator regarding the competencies needed by high school graduates for entry-level employment in agricultural and environmental practices. Therefore, the objective of this Delphi study was to identify the knowledge, skills, and competencies necessary for entry-level employment of high school graduates in the agricultural industry in Hendry County. As a means of accomplishing this, answers to the following question were sought from each panelist:

- If you were to hire a high school graduate with training/education in agricultural and environmental practices, what are the knowledge, skills, and competencies you would want the student to have?

The research objective that guided this study was:

1. Identify the knowledge, skills, and competencies needed of high-school graduates in agricultural and environmental practices.

Methods

The Delphi method was developed in the fifties by RAND Corporation as a means of obtaining a reliable consensus about the opinions of experts within a field of study (van Zolingen & Klaassen, 2003; Okoli & Pawlowski, 2004). The Delphi method was widely used and applied

in the sixties and seventies, particularly in the fields of science and technology. Today, the Delphi method is an accepted research method that has been used across many disciplines in order to predict future events or generate new programs or policies (van Zolingen & Klaassen, 2003; Okoli & Pawlowski, 2004).

The Delphi method has been used in agriculture education for various reasons. Often, the Delphi approach has been used to identify perceptions of problems in the field of agricultural education (Connors, 1998; Dyer, Breja, & Ball, 2010; Mundt & Connors, 1999). Other studies have used the Delphi approach to identify needs of pre-service or practicing agriculture teachers (Rayfield & Croom, 2010; Saucier, McKim, & Tummons, 2012). Still others have used the Delphi method to identify the skills and competencies to be developed from a program in a particular area (Akers et al., 2003; Scanlon et al., 1996; Slusher et al., 2011). This study was intended to determine the knowledge, skills, and competencies necessary for high school graduates with coursework in agricultural and environmental practices, as perceived by educators, industry, and environmental experts.

For this study, a face-to-face Delphi was chosen and conducted with experts in a select region of Florida. In this study, a state extension specialist, a regional education specialist, and the investigators utilized Okoli and Pawlowski's (2004) five-step process for selection of an expert panel. The five steps were:
Step 1: Prepare a knowledge resource nomination worksheet (KRNW),
Step 2: Populating the KRNW with names,
Step 3: First-round contacts – nominations for additional experts,
Step 4: Ranking experts by qualifications, [and]
Step 5: Inviting experts to the study (pp. 20-23).
The expert panelists ($N = 10$) were purposefully selected on the following criteria: expertise in educational practices in the public schools; expertise of agricultural education in the public schools; industry knowledge in the agricultural industry; environmental expertise in the region; and knowledge of issues interfacing agriculture, natural resources, and environmental stewardship. According to Okoli and Pawlowski (2004), face-to-face Delphi panels should contain 10 to 18 experts who have an in-depth comprehension of the issue. The expert panelists were selected purposively in cooperation with a state extension specialist, a regional education specialist, and the investigators. The purposive selection resulted in ten panel members, five members who were current agricultural education or science education teachers and five members who were employed in the agricultural and natural resources industry. According to Bencze and Hodson (1999), teachers should be included in curriculum development to reduce teachers' use of Harlen and Holroyd's (1997) coping strategies when teaching science such as: reduce science emphasis in lessons, concentrate on the teacher's strengths in science, use textbooks and kits as curriculum, and avoid advanced hands-on laboratory activities.

The researchers chose a lead question to begin the panel discussion in collaboration with an educational expert with experience in the Delphi approach. The Delphi panel was conducted by a trained discussion leader and recorder to transcribe the concepts presented by the panel. A trained faculty investigator oversaw the process and provided an overview of the process to panel members during an introduction to the study.

The Delphi process consisted of three rounds that were conducted over a one-day period-of-time. During the first round the question: "If you were to hire a high school graduate with training/education in agricultural and environmental practices, what are the knowledge, skills, and competencies you would want the student to have?" was asked to the expert panel. Panel members were asked to respond to this question with a brainstorm of ideas based upon their expertise. As ideas were presented each was recorded on the board and in an Excel spreadsheet. During this round, members were asked not to give value to a response (i.e. state that it was correct or incorrect), but rather to utilize the responses of others to continue to brainstorm ideas. This process was conducted by the lead investigator to ensure that value was not given to any responses shared during round one. Round one lasted one hour and thirty minutes. At the end of the round, panel members came up with 100 items and rated each item on a scale of 1 to 5 (1= Not Needed; 2 = Optional; 3 = Somewhat Important; 4 = Very Important; 5 = Essential). Following round one, the panelists were given a 20 minute break and were asked to not discuss their thoughts with the other panelists until the second round began.

At the conclusion of round one, scores for each item were averaged and compiled into one document. Round two began with the distribution of scores to each panel member. This initial ranking provided all panelists with a baseline ranking of the importance of each item. After reviewing the responses, panel members were asked to revisit the question posed in round one to determine if there were additional ideas which still needed to be added, combined, or deleted. The additional ideas that were added, deleted, or combined were developed through discussion between the panelists. The lead investigator ensured that discussion remained on topic and that the ideas shared were clear. When ideas were no longer being presented, the round ended. This round lasted approximately one hour, resulting in 22 additional items and no deletions or combination of items. Following round two, the panelists were given a 60-minute break for lunch and were asked to not discuss their thoughts with the other panelists until the final round began.

During the final round panel members evaluated the entire list of 122 items. Panelists discussed the relative importance of each item and considered adding, deleting, or combining items that were overlapping. The lead investigator kept the panel of experts on topic and if a consensus was not reached on combining items each item was left as a stand-alone item. Additionally, terms were identified by investigators that needed more clarification or further discussion by panel members, thus those terms were presented in order to garner the complete ideas and opinions of the panelists. A total of 134 items were agreed upon to remain on the list. At the conclusion of the final round, panel members again rated each of the 134 items using the same scale as in the first round (1= Not Needed; 2 = Optional; 3 = Somewhat Important; 4 = Very Important; 5 = Essential).

During this process, expert panelists rated the items at the end of each round. Responses were averaged for each item, during each rating. The ratings from the final round were utilized to determine the final recommendation for the agricultural and environmental practices curriculum. It was determined *a priori* that an item scoring "4" or higher would be included in the final recommendation of knowledge, skills, and competencies necessary for the agricultural and environmental practices curriculum.

Findings

Each round sought to develop a list of knowledge, skills, and competencies for students seeking employment in agricultural and environmental practices, using the open ended question "If you were to hire a high school graduate with training/education in agricultural and environmental practices, what are the knowledge, skills, and competencies you would want the student to have?" In round one, 100 items were identified. Round two yielded 22 additional items. The final round was used for combining overlapping terms and clarifying ideas previously presented. In total, 134 items were obtained.

A consensus was agreed upon that "work ethic," "responsibility," "teamwork and cooperation with others," "follows instruction," "accountability to own work," and "required internship experiences" were essential to be taught in courses that provide training and education in agricultural and environmental practices. Additionally, 31 of the items were rated as either "essential" or "very important" by all 10 panel members. Responses that had a mean equivalent to "essential" or "very important" (i.e., "5" or "4" respectively) were reported.

Out of the 83 items reported above, 20 items were life or leadership related skills (e.g., "work ethic," "responsibility," "open-minded," etc.) (Table 1).

Table 1
Descriptive Statistics of Life/Leadership Skill Characteristics for All Delphi Panel Responses

Knowledge/Skill/Competency	M	SD	E or VI %
1. Work ethic	5	.00	100%
2. Responsibility	5	.00	100%
3. Teamwork and cooperation with others	5	.00	100%
4. Follows instruction	5	.00	100%
5. Accountability to own work	5	.00	100%
6. Dedication	4.9	.32	100%
7. Communication skills	4.9	.32	100%
8. Time management	4.8	.42	100%
9. Task-oriented	4.8	.42	100%
10. Life skills	4.7	.48	100%
11. Ability to document their own work	4.7	.48	100%
12. Computer skills	4.7	.48	100%
13. Problem solving ability/adaptable	4.7	.48	100%

	M	SD	E or VI %
14. Open-minded	4.5	.53	100%
15. Critical thinking ability	4.5	.71	90%
16. Evaluate the credibility of information	4.4	.70	90%
17. Accepting of change	4.4	.70	90%
18. Community service requirement	4.3	.67	90%
19. Recording/reporting daily operations	4	.67	80%
20. Question business as usual (e.g., develop innovations, think outside the box)	4	.82	70%

Note. E= essential, VI= very important

There was also an emphasis on having knowledge and understanding in core subject areas, including mathematics, sciences, and writing (Table 2).

Table 2
Descriptive Statistics of Agricultural Knowledge/Skills Characteristics for All Delphi Panel Responses

Knowledge/Skill/Competency	M	SD	E or VI %
1. Required internship experience	5	.00	100%
2. Personal and environmental lab/field safety training	4.8	.42	100%
3. Knowledge from education farm tours	4.8	.42	100%
4. Knowledge of basic agriculture terms	4.8	.42	100%
5. Understanding of water use	4.7	.48	100%
6. Hands-on experience	4.6	.70	100%
7. Knowledge of food safety principles	4.6	.52	100%
8. Irrigation	4.6	.52	100%
9. Equipment safety	4.5	.97	90%
10. Ability to read pesticide labels	4.5	.71	90%
11. Water conservation	4.5	.71	90%

12. Waste management	4.5	.53	100%
13. Understanding of local conditions	4.5	.53	100%
14. Plant nutrition	4.5	.71	90%
15. Soil conservation	4.5	.71	90%
16. Ability to read and understand technical manuals	4.5	.53	100%
17. Obtain certifications in agriculture	4.5	.53	100%
18. Ability to read/understand material safety data sheet	4.4	.70	90%
19. Water quality	4.4	.52	100%
20. Ability to feed plants/animals correctly	4.4	.70	90%
21. Understand how agriculture fits into the world	4.4	.84	80%
22. Ability to operate basic agriculture equipment	4.3	.95	90%
23. Environmentally safe pest control practices	4.3	.67	90%
24. Basic understanding of crop growth	4.3	.82	80%
25. Basic understanding of plant biology	4.3	.82	80%
26. Water resource management	4.3	.67	90%
27. Animal nutrition	4.3	.67	90%
28. Individual student project	4.3	.82	80%
29. Knowledge of basic agriculture equipment repair and maintenance	4.2	.92	90%
30. Pesticide licensing and safety knowledge	4.2	1.03	80%
31. Basic understanding of soil management	4.2	.79	80%
32. Ability to manage local conditions	4.2	.79	80%
33. Planting experience	4.2	.63	90%

34. Ability to operate equipment	4.2	.79	80%
35. Ethical animal treatment	4.2	.63	90%
36. Understanding of environmental rules/regulations	4.2	.42	100%
37. Obtain occupational licenses/permits	4.2	.63	90%
38. Basic understanding of fertilizer usage	4.1	.57	90%
39. Harvest experience	4.1	.57	90%
40. Knowledge of IPM (Integrated Pest Management)	4.1	.74	80%
41. Ability to conduct a Risk/Benefit analysis of agriculture practices	4.1	.88	70%
42. Technical competency in field	4	.67	80%
43. Understand the results of a tissue/soil analysis	4	.82	70%
44. Understand the business of agriculture	4	.82	70%

Note. E= essential, VI= very important

Lastly, the ability to perform basic agriculture tasks were emphasized (Table 3).

Table 3
Descriptive Statistics of Core Subject Area Knowledge Characteristics for All Delphi Panel Responses

Knowledge/Skill/Competency	M	SD	E or VI %
1. Writing skills	4.8	.42	100%
2. Understanding of the scientific method	4.6	.70	90%
3. Ability to measure accurately	4.6	.52	100%
4. Knowledge in core subject areas (math, biology, sciences)	4.5	.71	90%
5. Ability to interpret collected data	4.5	.71	90%
6. Ability to explain (written) what you have observed	4.5	.53	100%
7. Ability to convert fractions to decimals	4.5	.85	80%
8. Understanding of how to research for information	4.5	.71	90%
9. Interpreting data	4.5	.71	90%

10. Use of proper measurement tools	4.4	.70	90%
11. STEM (Science, Technology, Engineering, Math) related knowledge	4.4	.84	80%
12. Conversion of measurements	4.3	.67	90%
13. Application/transferability of scientific principles	4.2	.63	90%
14. Understanding that hypothesis doesn't have to be correct	4.1	.74	80%
15. Knowledge of the metric system	4.1	.88	70%
16. Creating/interpreting graphs	4.1	.99	80%
17. Developing testable hypotheses	4	.94	80%
18. Understand what makes something reproducible via the scientific method	4	.82	70%

Note. E= essential, VI= very important

Conclusions

The responses of panelists yielded three major themes when discussing the knowledge, skills, and competencies necessary for high school graduates with coursework in agricultural and environmental practices. Those three themes were Life/Leadership Skills, Agriculture Knowledge/Skills, and Core Subject Area Knowledge.

Life and leadership skills were reported as important skills for high school graduates with coursework in agricultural and environmental practices. Identified characteristics that fit within this category include: work ethic; responsibility; teamwork and cooperation with others; follows instruction; accountability to own work; dedication; communication skills; time management; task-oriented; life skills; ability to document own work; problem solving ability/adaptable; open-minded; critical thinking ability; acceptance of change; and question business as usual.

Life and leadership skills identified by the Delphi panelists (Table 1) can be termed soft skills. As mentioned previously, soft skills are necessary for success and personal productivity in the workplace (Bancino & Zevalkink, 2007; Rutherford et al., 2004). These skills identified by the panelists align directly with a survey of employers who indicated that skills such as professionalism/work ethic, teamwork/collaboration, oral communications, ethics/social responsibility, and critical thinking/problem solving are essential in the workplace (Casner-Lotto, 2006). Furthermore, in the Delphi study conducted by Akers et al. (2003) panelists also indicated the need for professional skills such as listening skills, working in teams, work ethic, and professionalism. This research validates the necessity of life/leadership skills that panel members presented when discussing the necessary skills needed by high school graduates with coursework in agricultural and environmental practices.

The next overarching theme present in the responses was core subject area knowledge (Table 2). Identified characteristics that fit within this field include: writing skills; understanding of scientific method; ability to measure accurately; knowledge in core subject areas (math, biology, sciences); ability to convert fractions to decimals; STEM related knowledge, conversion

of measurements; algebra; application/transferability of scientific principles; knowledge of the metric system; and creating/interpreting graphs.

The emphasis on the necessity of this skill would lead one to understand the importance of core subject area knowledge, but to also question if high school graduates possess enough knowledge and skill in this area. Previous research has indicated that high school graduates are deficient in this area (Casner-Lotto, 2006). Employers reported that 42.2% of new employees with a high school diploma were deficient in overall preparation for the position, citing specific deficiencies in writing, knowledge of mathematics, and knowledge of science (Casner-Lotto, 2006). Furthermore, in the Delphi study conducted by Slusher et al. (2011) panel members indicated that students needed basic math skills, the ability to record data, and basic accounting skills. Additionally, the Delphi study conducted by Akers et al. (2003) yielded core subject area needs in writing, including grammar, punctuation, and spelling. Both the reports of employers and the results of previous Delphi studies evaluating curriculum focused on employment have indicated the necessity of core subject area skills for obtaining employment in the agricultural and natural resources industries. This supports the need identified by the panel for high school graduates with coursework in agricultural and environmental practices.

Lastly, competence in production agriculture knowledge and practices was a theme identified based on the panel responses (Table 3). Thirty-six competencies in agriculture knowledge were identified. The five highest rated competencies were: personal and environmental lab/field safety training; knowledge of basic agriculture terms; understanding of water use; knowledge of food safety principles; and irrigation. Other thematic areas that were also rated in high regard include: equipment usage (including safety and maintenance), water and waste management; plant and animal care, and soil management.

Responses from the panel indicate a wide variety of abilities and knowledge that students should be able to possess. High school graduates with coursework and training in these areas would help meet the demand for skilled workers in agriculture (Rivera & Alex, 2008). The responses presented are only representative of the needs of this south Florida community. As illustrated by Phipps et al. (2008), education in agriculture should be based upon the needs of the community. Delphi panel members indicated the need for students to be able to "understand local conditions" and have the "ability [to] manage local conditions." Input from the panel members aligns directly with the literature in agricultural education which suggests the need for education in agriculture to be representative of the agriculture in the community. However, it is interesting to note that some competencies identified by this Delphi panel aligned with responses from the Slusher et al. (2011) Delphi study. Panelists from both studies indicated the importance of training in safety, animal health, machinery operation, and understanding the business of agriculture.

The results of this study contribute greatly to the previously presented conceptual framework and the success of the Hendry County Sustainable Biofuels Research Center. First and foremost, the results of this study will be used to begin curriculum development for agricultural and environmental practices at the secondary school level. This curriculum will be tailored to the needs of this community, which was the overarching goal of this study. Once curriculum is developed high school graduates will be prepared to enter the workforce as skilled

agricultural workers with training in agricultural and environmental practices. However, graduates have several options once completing this coursework, which includes entry into the workforce or pursuit of a higher education. Regardless of a student's choice beyond high school graduation, the knowledge, skills, and competencies developed should serve students well, and contribute to the overall skilled agricultural workforce and the success of the Hendry County Sustainable Biofuels Research Center.

Recommendations and Implications

The results of this study have provided knowledge regarding the important knowledge, skills, and competencies that students with coursework in agricultural and environmental practices should possess to be hired in this industry in south Florida. The life and leadership skills, as well as core subject area skills, are practices that can be implemented regardless of geographic location since research has indicated the necessity of these competencies. It is recommended that life and leadership skills, as well as core subject area skills, be incorporated into agriculture courses, particularly to help prepare students for employment.

These findings, particularly the agricultural competencies, may only be applicable to the population studied, and more specifically to the geographic area in which this study was conducted. However, it is important to note that some agricultural competencies were similar between two Delphi studies that were not conducted in the same region. This may indicate the necessity to teach some agricultural competencies regardless of geographic region. It is recommended that these results be utilized to develop courses, course outlines, and curriculum for Hendry County District Schools in Florida. It is also recommended that similar studies be conducted in other areas to help determine the knowledge, skills, and competencies that students should develop when a new curriculum is being developed.

It is recommended that the methodology used in this study serve as a framework for future studies in agricultural education concerning curriculum development. Based on the number of competencies yielded from this Delphi panel, it is recommended that the face-to-face Delphi expert panel be utilized whenever possible, in order to obtain a high level of data to encompass comprehensive characteristics. Thus, allowing for more thoughtful panelist responses that address the issue under investigation.

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Recruiting Minority Students into Secondary School Agriculture Education Programs: Barriers, Challenges, and Alternatives

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Recruiting Minority Students into School-Based Agricultural Education Programs: Barriers, Challenges, and Alternatives

The United States population is becoming increasingly diverse, and agricultural education should represent that diversity. Researchers conducted a Delphi study of 12 exemplary agriculture programs with diverse student populations in North Carolina. After three rounds, consensus was reached about 11 strategies useful in recruiting minority students, including most prominently, (1) making personal connections with potential students, (2) students recruiting their minority friends, (3) minority students recruiting other minority students, (4) showcasing exceptional minorities who have succeeded in the agriculture field, and (5) being yourself and care for your students. The study also identified 12 alternatives helpful in retaining the minority students into another agriculture course or FFA, most prominently, (1) buying-in from friends, (2) talking to minority students already in the program, (3) building teacher and student relationship, (4) creating interest in agriculture subjects, and (5) getting minority students connected and involved.

Introduction

United States population is becoming increasingly diverse. According to the U.S. Census (2016), the U.S. population diversity includes 61.3% Whites (not Hispanic), 17.8% Hispanics or Latinos, 13.3% African Americans, 5.7% Asians, 1.3% Native Americans or Alaskan Natives, 0.2% Hawaiian and Pacific Islanders, and 2.6% two or more race individuals. These population data indicate that almost 40% of the U.S. population comprises ethnic minorities. However, this ethnic diversity in the U.S. population does not reflect necessarily in secondary school agriculture programs (Bowen, 2002; LaVergne, Larke, Elbert, & Jones, 2011; Lawrence, Rayfield, Moore, & Outley, 2013; Talbert & Larke, Jr., 1995). Enrollment of minorities into secondary school agriculture education programs is important due to changing demographics in the U.S. (Cano & Bankston, 1992). The vast majority of students in secondary school agriculture education programs are White students. The secondary school agriculture education program is the beginning step of recruiting students into the agriculture professional preparation pipeline. Additionally, secondary school agricultural education programs are important sources for recruiting potential students into higher education in agriculture (Talbert & Larke, Jr., 1995). Due to this reason, lack of minority representation in secondary school-based agriculture education (SBAE) programs is a national issue that agriculture education professionals need to pay due attention. Exploring barriers preventing recruitment of minority students into SBAE programs and challenges faced by teachers of agriculture are helpful in understanding the alternatives effective in recruitment.

Barriers

Many barriers exist between students and agricultural education programs preventing student enrollment in SBAE programs. Some of these barriers include student perceptions toward agricultural education programs, negative attitudes, and scheduling conflicts (FFA, 1999). A Delphi study conducted with a national panel of agriculture teachers over 15 years ago identified "scheduling difficulties, finding time to recruit, student involvement in other activities, access to students, competition from other programs, lack of guidance counselor support, increased graduation requirements, image of agriculture, lack of interest in agriculture, and block

scheduling" as problems in recruiting students into secondary school agricultural education programs (Dyer & Breja, 2003, p.75). According to Beamon (2008), considerable involvement in athletic programs has negative effects on academic and career success of minority students. Research conducted in Ohio in the early 1990s to ascertain the barriers preventing minorities' participation in 4-H programs indicated their lack of knowledge about the program was a major barrier to their involvement in the program (Cano & Bankston, 1992). Lack of advertisements relating to minorities was another barrier to their involvement. A study conducted with secondary school students in Texas reported that minority students had less of a rural and farm background compared to that of White students (Talbert & Larke, Jr., 1995). In addition to the lack of rural background, this study reported that minority students were not exposed to agricultural youth development programs and 4-H programs to the same extent as White students were exposed. African American patents perceive that schools do not actively engage with them other than behavior or academic issues of their children (Howard, 2015). Lack of minority role models in agriculture profession is another hindrance to recruitment of minorities into agricultural education (LaVergne et al., 2011). All of these factors contributed to limit minority students' exposure to agriculture and acted as a barrier to their appreciation of agriculture as a profession.

Challenges

There is a need for diversity inclusion in SBAE programs to reflect the increasing ethnic diversity in the U.S. Available literature (Banks, 2008; LaVergne et al., 2011; Warren & Alston, 2007) supports the notion that ethnic diversity in the classroom is making positive impacts on students such as tolerance. However, achieving diversity in the SBAE classroom is not yet up to the level representing the population diversity despite many efforts. Increasing the diversity in SBAE programs remains a challenge that educators need to address realistically. Many factors contribute to this situation. For instance, minority students tended to have negative attitudes toward agriculture and perceived that agriculture occupations are mainly production-focused and those jobs do not require professional education (Talbert & Larke, Jr., 1995). This mindset of minority students is a considerable challenge to overcome when planning to recruit minorities into agricultural education programs. Minority students tend to enroll in agriculture courses if the agriculture teacher is a minority himself or herself (Talbert & Larke, 1995). However, only a small percentage of minorities enter into the agricultural education profession (Camp, 1995; Jones & Bowen, 1998). Overall, secondary teachers in the U.S. are not racially diverse as the student population. For instance, in the 2011-2012 school year, only 18% of teachers were minorities while 49% of the students were minorities (USDE, 2016).

Recruitment Strategies

Marketing agricultural education programs to potential students requires a strategic commitment from agricultural education teachers (FFA, 1999). LaVergne et al. (2011) asserted the need for increasing agriculture teachers' effort to recruit minorities into SBAE programs. In the recruitment process, agriculture teachers will have to convince potential students as well as others such as parents, school administrators, and counselors who could influence students' decision to enroll in agricultural education and understand the benefits of studying agriculture. Teachers who relate well to all students and make learning enjoyable are capable of recruiting African American students (Ladson-Billings, 1994). Confirming this notion, Jones and Bowen (1998) found enthusiastic teachers who could relate well to all students were able to enroll the

highest number of African American students in their agriculture education programs. Jones and Bowen (1998) recommended using minority students to recruit other minority students, use of minority professionals as role models, and enhanced teacher communication with the parents of minority students as strategies to recruit minorities into agricultural education. Myers, Dyer, and Breja (2003) reported minority recruitment success when agriculture teachers and students contacting other potential students, use of the FFA and promotional communications through various channels, a strong agriscience curriculum, use of agricultural education support groups, and the use of recruitment events as effective strategies to recruit students into agricultural education programs. A study conducted at the University of Missouri to determine the strategies effective in recruiting African American students into college of agriculture revealed that the majority of students' decision to apply for admission was influenced by their visit to campus and having a discussion with a representative from the college of agriculture, access to the college website, and printed university publications (Burns, 2006). This study also found that parents and relatives were the most influential factor when African American students made their decision to pursue a college education.

Lack of minority students enrolled in SBAE programs is a national issue needing the attention of agriculture educators and is the focus of this study. This study relates to research priority three: "sufficient scientific and professional workforce that addresses the challenges of the 21st century" and research priority five: "efficient and effective agricultural education programs" of the American Association for Agricultural Education National Research Agenda (Roberts, Harder, & Brashears, 2016, p. 9).

Conceptual Framework

Researchers conceptualized the study based on Bronfenbrenner's (1979) ecological systems theory. Bronfenbrenner's ecological systems theory explained the importance of studying a child in the context of multiple environments, also referred to as 'ecological systems' for understanding his or her development. Normally, a child is interacting with different ecosystems simultaneously from most intimate home ecological system to most distant society and culture. Bronfenbrenner explained five different ecological systems that influence the development of a child. These five systems are 1) microsystem, 2) mesosystem, 3) exosystem, 4) macrosystem, and 5) chronosystem. Microsystem is the closest environment in which the child lives and makes interactions frequently with individuals such as family members, teachers, and friends. Microsystem comprises the interaction of different environments such as home, church, or school where the growing child interacts with others daily. Interactions in the microsystem involve personal relationships with the members in the system. These interactions with the child influence how the child develops. As a reciprocation to these interactions, how the child responds to individuals in his/her microsystem will also affect how they treat the child. Supportive and nurturing interactions and relationships naturally contribute to positive development of a child. Bronfenbrenner described mesosystem as the interactions of different microsystems such as home, school, or church in which the child is growing. Mesosystem is a system of interactions between the microsystems of the child. Mesosystem involves linkages between home and school, between family and friends, between church and family, etc. For example, if the parents are closely interacting and working with teachers for helping a child address learning issues and selecting classes, it will positively influence the child development and learning.

According to Bronfenbrenner (1979), exosystem comprises the linkages that exist between two or more systems, one of which may not include the child; however, that system affects him or her indirectly. Other people and places which the child may not directly interact with but may still have an effect on the child constitute the exosystem. Examples for such places and people include parents' workplace and coworkers. Parents' workplace and coworkers may not directly interact with the child but may have some effect on the child. For example, if a coworker is telling the parent, that his/her child is a member of FFA and talks about the positive effects of FFA on his/her child, the parent may consider talking about the FFA with his/her child and convincing the child to enroll in the school FFA program.

Macrosystem constitutes the child's cultural and value system, economic system, and political system. Macrosystem includes peoples and places distance to the child but still have a significant effect on the child. For example, if the cultural system of the child is such that it appreciates agriculture, then the system will have positive effects on the child toward agriculture. The difference in values among the children growing in urban centers versus rural areas can be attributed to their differences in macrosystems. Chronosystem is comprised of change and consistency in the child's environment over a period of time. For example, chronosystem includes a change in family structure, living location, school, parents' employment, and societal changes that influence the child. For example, if the child lived in an urban area and moved to a farm in a rural area with his/her parents, then that will have a significant effect on the child.

Purpose

The purpose of this Delphi study was to determine the barriers and challenges of recruiting minority students into SBAE programs and alternatives to overcome those barriers and challenges. The following research questions guided the study:

1. What are the barriers preventing minority students' enrollment in agricultural education programs?
2. What are the challenges preventing minority students' enrollment in agricultural education programs?
3. What are the alternatives to overcome barriers and challenges preventing minority students' enrollment in agricultural education programs?

Method

The modified Delphi technique was used to conduct this study. Delphi technique is an exploratory research method (Clayton, 1997) and it is appropriate for exploring the barriers, challenges, and alternatives for recruiting minority students into agriculture programs. Delphi technique is a group process used to collect expert views and building consensus (Delp, Thesen, Motiwalla, & Seshadri, 1977). "It aims to guide group opinion towards a final decision and to answer questions through triangulation of subjective group judgments, analytical techniques and the experience of the researcher" (Cantrill, Sibbald, & Buetow, 1996, p. 67).

Modified Delphi technique is a three round iterative process. The first round aims to obtain a broad range of opinions from the selected group of experts. The responses to the first round of questions, when summarized, provide the basis for the second round of questions.

Summarized responses from the second round of Delphi process feed into the third and final round (Haughey, n.d.).

Delphi technique is effective in reaching consensus among the group of experts selected purposively (Stufflebeam, McCormick, Binkerhoff, & Nelson, 1985). A group of 20 agriculture teachers in North Carolina were selected purposefully based on their success of recruiting minorities into their agricultural education programs. There was a diverse group of students in the agricultural education programs of the selected teachers. The study used Qualtrics to conduct three rounds of online surveys for collecting data. The first round of the study used an online questionnaire with the following four open-ended questions:

1. What do you consider as major barriers preventing minorities enroll in secondary school agricultural education programs (courses and FFA)?
2. What do you consider as real challenges when recruiting minorities into secondary school agricultural education programs?
3. What do you consider as the strategies effective in recruiting minorities into secondary school agricultural education programs?
4. If minority students are placed in your courses due to reasons such as student overflow, which strategies are effective in recruiting them into another agriculture course or FFA?

Open-ended questions were used to generate possible responses from the Delphi panel. In addition to these four questions, there were five demographic questions to describe the background of the panel members and their agricultural education programs. Five demographic questions were about number of students enrolled in the agricultural education programs, percentage of minorities in the agricultural education program, years of teaching experience, gender and ethnicity of agriculture teachers. In the first round, 12 agriculture teachers responded to the survey. Their unique responses to the four open-ended questions were identified and used to develop the second-round survey. In the second-round survey, panel members were asked whether they agree or disagree with the listed responses received for the first round and list or modify if any item needs to be added or modified. In the second round, six agriculture teachers of the panel responded to the survey. Most of them agreed with the items listed and few added/modified responses. The responses received for four open ended-questions in the second round were used to develop the third round online survey. All unique responses received and agreed in the second-round for each of the four open-ended questions were listed under the question with a five-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neither Agree nor Disagree, 4=Agree, 5=Strongly Agree) for the third-round survey. Eleven panel members responded to the third-round survey. Descriptive statistics were used to analyze and summarize the data. The responses to *strongly agree* and *agree* categories were aggregated to determine the percentage of Delphi panel members in agreement with each item. Similar to that, responses to *strongly disagree* and *disagree* categories were aggregated to determine the percentage of Delphi panel members disagree with each item. The items having 70% or above agreed or strongly agreed rating were identified as important items with Delphi panel-built consensus. Boulkedid, Abdoul, Loustau, Sibony, and Alberti (2011) analyzed the response rate of 80 Delphi studies conducted in health care for a systematic review study and found only 39% had reported the response rate. The lowest response rate was 80% in the first round and 69% in the last round among the 39% studies reported the response rate. The low response rate of this study especially for the second round is mainly due to busy timing of the teachers. Low response rate is a limitation of this study.

<center>**Results and Discussion**</center>

Of the respondents, nine were White, one was African American, and two were identified as "others." Eight of the respondents were male and four were female teachers. The respondents' years of teaching experience ranged from four years to 45 years with the mean value of 14.4 years. The number of students in reported agricultural education programs ranged from 26 to 300 with the mean of 128. The minority presentation in these agricultural education programs ranged from 7% to 90% with the mean of 46%. These programs represented the community population diversity in their SBAE programs. The review of this background information about the responding agricultural education teachers and their programs indicates that the group comprised a mixed group of experienced teachers having a good size of agricultural education program with diverse group of students.

Barriers to Recruit Minority Students

Barrier is described in this study as a circumstance or obstacle that prevents students' enrollment in agriculture programs. The analysis of the third-round data was used to identify barriers of recruiting minority students into agricultural education programs. Lack of parental encouragement, competition with athletic programs for time, lack of minority students' family experience in agriculture, lack of minority students' exposure to agriculture, and the preconceived stereotype idea of FFA and its typical membership is White were identified as the top ranking six barriers to recruit minorities into agricultural education (see Table 1). Over 80% of the Delphi panel members either agreed or strongly agreed with these six items signifying those are major barriers. The next major barriers having over 70% agreement were negative views/stigma associated with minority students toward agriculture/agriculture careers, minority students' culture that see little or no opportunities in the agriculture sector, and friends of minority students not being enrolled in agricultural education.

Table 1
Barriers to Recruit Minority Students into Agricultural Education Programs (n = 11)

Barriers	Disagree or Strongly Disagree (%)	Neither (%)	Agree or Strongly Agree (%)
Lack of parental encouragement	---	9.1	91.0
Competition with athletic programs for time	---	18.2	81.8
Lack of minority students' family experience in agriculture	9.1	9.1	81.8
Lack of minority students' exposure to agriculture	9.1	9.1	81.8
Lack of minority students' interests in agriculture	18.2	---	81.8
The preconceived stereotype idea of FFA and its typical membership is White	9.1	9.1	81.8
Negative views/stigma associated with minority students toward agriculture/Ag careers	---	27.3	72.8
Minority students' culture that see little or no opportunities in the Ag Sector	9.1	18.2	72.8

Friends of minority students not being enrolled in Ag Education	---	27.3	72.8

Challenges to Recruit Minority Students

Over 80% of the penal members agreed or strongly agreed convincing minority parents buy into agricultural education programs, creating appreciation for agriculture among minority students, and breaking down cultural barriers as the three most significant challenges when recruiting minority students into agricultural education (see Table 2). Of the panel members, 72.8% agreed or strongly agreed breaking down stereotype perceptions of minority students toward agricultural education programs, getting minority students interested in agricultural education programs, finding minority students that are interested in agriculture and FFA, and removing "redneck" stigma of FFA with minority students as other significant challenges they need to consider when recruiting minority students.

Table 2
Challenges to Recruit Minority Students into Agricultural Education Programs (n = 11)

Challenges	Disagree or Strongly Disagree (%)	Neither (%)	Agree or Strongly Agree (%)
Convincing minority parents buy in Ag Ed Programs	---	9.1	91.0
Creating appreciation for agriculture among minority students	9.1	---	90.9
Breaking down cultural barriers	---	18.2	81.8
Breaking down stereotype perceptions of minority students toward Ag Ed Programs	---	27.3	72.8
Getting minority students interested in Ag Ed Programs	9.1	18.2	72.8
Finding minority students that are interested in agriculture and FFA	9.1	18.2	72.8
Removing "redneck" stigma of FFA with minority students	9.1	18.2	72.8

Alternatives to Recruit Minority Students into Agricultural Education

Delphi panel members unanimously agreed or strongly agreed making personal connections with potential students and students recruiting their minority friends as the best two alternatives to recruit minorities (see Table 3). Of the panel members 90.9% agreed or strongly agreed minorities recruiting minorities, showcasing exceptional minorities who have succeeded in the agriculture field, being yourself and care for your students, demonstrating student growth through leadership development, and showing minorities who are excelling in FFA as the second most effective alternatives. The third important alternatives received between 70.7% and 81.8% agreement were demonstrating how agricultural education is different from other courses, being receptive to minorities and acting as an encourager, meeting students where they are such as sporting events, concerts, awards ceremonies, church/community functions, and making North Carolina FFA an inclusive organization to attract minority students as shown in Table 3.

Table 3
Alternative for Recruiting Minorities into Agricultural Education

Alternatives	Disagree or Strongly Disagree (%)	Neither (%)	Agree or Strongly Agree (%)
Making personal connections with potential students	---	---	100
Students recruiting their minority friends	---	---	100
Minorities recruiting minorities	---	9.1	90.9
Showcasing exceptional minorities who have succeeded in the Ag field	---	9.1	90.9
Be yourself and care for your students	---	9.1	90.9
Student growth through leadership development	---	9.1	90.9
Showing minorities who are excelling in FFA	9.1	-	90.9
Demonstrating how Ag Ed is different (more hands on) from other courses		18.2	81.8
Be receptive to minorities and acting as an encourager	18.2	---	81.8
Meet students where they are, go to sporting events, concerts, awards ceremonies, church/community functions	18.2	9.1	72.8
Need to make NC FFA an inclusive organization to attract minority students	9.1	18.2	72.7

Strategies for Recruiting Minorities into Another Agriculture Course or FFA, if Minority Students are Placed in an Agriculture Course Due to Reasons Such as Student Overflow

The Delphi panel unanimously agreed or strongly agreed buying in from friends, talking to minority students already in the program, and building teacher and student relationship as effective strategies in recruiting minorities into another agriculture course or FFA if they are placed in an agriculture course due to reasons such as student overflow (see Table 4). Creating interest in agriculture subjects, and getting them connected and involved were identified with 90.9% agreement as the second most important two strategies for recruiting minorities into another agriculture course. The third important strategies identified with 81.8% agreement were helping minority students succeed in the class they already enrolled, exploring their interests, introducing fun activities such as travel and competitions, selecting a diverse group of people when discussing agricultural leaders as part of the class, treating minorities as other students, and taking them to non-competitive FFA events. Panel members identified with 72.7% agreement involving minority students in hands-on laboratory activities as the fourth important strategy to recruit them into another agriculture course (see Table 4).

Table 4
Alternatives for Recruiting Minorities into another Ag. Course or FFA, if minority students are placed in your courses due to reasons such as student overflow (n=11)

Alternatives for Recruiting Minorities into Another Ag Course	Disagree or Strongly Disagree (%)	Neither (%)	Agree or Strongly Agree (%)
Buy-in from friends	---	---	100

Talk to students	---	---	100
Building teacher and student relationship	---	---	100
Creating interest in agriculture subjects	---	9.1	90.9
Getting students connected and involved	---	9.1	90.9
Helping students succeed in class	---	18.2	81.8
Explore students' interests, culture/home life/prior experiences	9.1	9.1	81.8
Introduce travel and competitions that are fun	9.1	9.1	81.8
When discussing agricultural leaders as part of the class, select a diverse group of people to discuss	18.2	---	81.8
Treat students of diversity the same as other students and involve them in all facets of a total Ag Ed model	18.2	---	81.8
Taking students to non-competitive FFA events such as Regional Leadership Conference	18.2	---	81.8
Hands-on/laboratory activities are a major hook to keep students	9.1	18.2	72.7

Conclusions

The study identified nine barriers that hinder the recruitment of minority students into secondary school agriculture education programs. The major barriers preventing minority students' enrollment in agriculture education were lack of parental encouragement to enroll in agriculture education, competition with athletic programs for time, lack of minority students' family experience in agriculture, lack of minority students' exposure to agriculture, and the preconceived stereotype idea that FFA and its typical membership is White. The second major barriers were negative stigma associated with minority students toward agriculture/agriculture careers, minority students' culture that see little or no opportunities in the agriculture sector, and friends of minority students not being enrolled in agricultural education. The review of these identified barriers preventing minority students' enrollment in agriculture education indicates that minority students and their parents do not have adequate knowledge about the modern agriculture and agriculture-related professional careers. "Historically, minorities have participated less than Whites in agricultural careers other than as laborers" (Talbert & Larke, Jr., 1995, p.14). Their mindset and attitudes toward agriculture are based on their preconceived notion of manual hard labor work as the only agricultural career of which they are aware. Minority students and parents give priority for athletic programs over agriculture education program because they tend to consider getting to athletic programs is a way of moving to a higher earning professional athletic career. Unfortunately, they do not see the rare opportunity in this path. If the minority students are aware of the career opportunities and prospects available for them in agriculture, this situation could change.

Bronfenbrenner's (1979) ecological theory provides a framework for understanding identified barriers and finding solutions. The review of barriers indicates that minority students do not have much exposure to agriculture and agriculture-related careers. Their home and community environment are also not having any appreciative exposure or experience with agriculture. As Bronfenbrenner's (1979) ecological theory explains the most impactful everyday

interacting microsystem of minority students – home and community- is away from the current reality of agricultural careers. Additionally, mesosystem – interactions of different microsystems- of minority students seems to have not yet connected them with agriculture. Expanding the distance further from agriculture, macrosystem - culture and value - of minority students place higher value for athletic programs over other academic programs. When all of these combined, it is obvious that minority students grew up in an ecological system where they are disconnected from the reality of current agricultural career opportunities. If agricultural educators want to recruit minorities into agricultural education programs, it is important to link them through their microsystem, and mesosystem with the help of their own community members.

The study was able to build the consensus among the Delphi panel members for eight tasks as significant challenges when recruiting minority students into agricultural education programs. The identified challenges are convincing minority parents buy into agriculture education programs, creating appreciation for agriculture among minority students, breaking down cultural barriers, breaking down stereotype perceptions of minority students toward agriculture education programs, getting minority students interested in agriculture education programs, finding minority students that are interested in agriculture, and removing "redneck" stigma of FFA with minority students. The review of these challenges clearly indicates that establishing a communication link with the minority students, their parents, and the community to make them aware of the prospects of agricultural education and related careers is the major task all of these eight challenges are centered. Bronfenbrenner's (1979) ecological theory explained this communication process as the interactions between microsystems and it is referred to as the *mesosystem*. This includes interactions between the home and school, teachers and students, etc. to engage with minority students, their parents, and community for making them aware of prospects of agriculture education.

The study identified 11 strategies useful in recruiting minority students. These alternatives are 1) making personal connections with potential students, 2) students recruiting their minority friends, 3) minority students recruiting other minority students, 4) showcasing exceptional minorities who have succeeded in the agriculture field, 5) being yourself and care for your students, 6) demonstrating student growth through leadership development, 7) showing minorities who are excelling in FFA, 8) demonstrating how agriculture education is different from other courses, 9) being receptive to minorities and acting as an encourager, 10) meeting students where they are such as sporting events, concerts, awards ceremonies, church/community functions, and 11) making NC FFA an inclusive organization to attract minority students. A critical review of these alternatives highlights that building linkages with minority students using available opportunities and already connected minorities to make them aware of the prospects of agricultural education is necessary to change their mindset and convince to enroll in agriculture education. When making linkages it is effective to use minority students already in the program to convince their friends to enroll and participate. Similarly highlighting successful minority agricultural professionals as examples is helpful in convincing minority students. For instance, Jones and Bowen (1998) reported that minorities in agriculture professions could serve as role models to help minority students overcome their negative perceptions about agriculture-related careers.

The study also identified 12 alternatives helpful in retaining the minority students into another agriculture course or FFA, if they are placed in an agriculture course due to reasons such as student overflow. The 12 strategies helpful in retaining minorities are 1) buying-in from friends, 2) talking to minority students already in the program, 3) building teacher and student relationship, 4) creating interest in agriculture subjects, 5) getting minority students connected and involved, 6) helping minority students succeed in the class they already enrolled, 7) exploring their interests, 8) introducing fun activities such as travel and competitions, 9) selecting a diverse group of people when discussing agricultural leaders as part of the class, 10) treating minorities as other students, 11) taking them to non-competitive FFA events, and 12) involving minority students in hands-on laboratory activities. The review of these alternatives indicates that linking them with others in the class and creating an environment for helping them to gain a positive learning experience are necessary to retain them in the agriculture education program.

Recommendations

Agriculture teachers should be aware of possible barriers and challenges when recruiting minority students into agricultural education programs for finding ways to overcome barriers and face challenges realistically. This study identified possible nine barriers that agriculture teachers need to be aware of when planning to recruit minority students into agriculture education programs. Most of these barriers are associated with minorities' lack of knowledge about the prospects of agriculture-related career opportunities and misconceptions about agriculture. Therefore, it is important to use all available communication channels and public relation avenues to educate potential minority students, their parents, and the community about career opportunities available in agriculture-related professions and help them clear their misconceptions about agriculture. Strengthening school and home links and establishing a clear communication link with minority students and their parents are necessary steps to overcome barriers of recruiting minorities into agriculture education programs.

This study identified 11 alternatives useful in recruiting minority students into agricultural education programs and 12 alternatives helpful in recruiting minorities into another agriculture course or FFA if they are placed in an agriculture course due to reasons such as student overflow. These alternatives are helpful strategies to overcome barriers and address the challenges of recruiting minority students into SBAE programs. Agricultural educators should explore available communication linkages between the school and minority communities to make potential students and their parents aware of the career opportunities and prospects of agriculture and eliminate their misconceptions about agriculture for recruiting minorities into agriculture education. It is necessary to use exemplary minority agriculture career professionals as guest speakers to help minority students comprehend the potential careers in agriculture. That will help minority students change their stereotype mindset about limited opportunities in agriculture. Recruiting displays, websites, and handouts should be developed citing positive experiences of minorities who are successful in agriculture-related careers to educate potential minority students and their parents. Promotional materials should be made available to career counselors and administrators to convey the message to potential students and their parents. When minority students are in the program, it is important to help them to be successful, get a positive learning experience, and develop an appreciation for agriculture and agriculture-related careers. So that the minority students already connected with the program can be used as

ambassadors to reach their community and recruit new students. For example, 28 minority secondary school students were provided an opportunity to visit Purdue University's West Lafayette campus for a program that exposed them to agricultural careers and educational opportunities (Robinson, 2015). Bringing African American secondary school students into college campus was effective in recruiting them into college of agriculture (Burns, 2006). The minority students who exposed to agriculture and developed favorable values toward agriculture-related careers can be used to recruit other minority students.

This study used a small group of agriculture teachers from one state to determine barriers, challenges and alternatives when recruiting minorities into agricultural education program. This is a limitation of the study. Therefore, it is important to repeat this study with a national panel of agriculture teachers to validate the findings of this study further.

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Organizational leadership: A philosophical review and proposed model

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Organizational leadership: A philosophical review and proposed model

Organizational leadership is the foundation of success for mission-driven systems of all sizes. Leading an organization in today's society requires adaptive and relational skills that meet the demands of complex and changing environments. There is a need for a theoretically-based model specifically designed for organizational leadership. The purpose of this article was to address this gap by proposing a model of organizational leadership that expands upon previous recommendations in the literature and specifically identifies 11 areas synthesized from previous taxonomic recommendations. The organizational leadership conceptual model should provide agricultural leadership educators with a robust framework for the development of adaptive leaders and contextually appropriate leadership curriculum.

Introduction

Effectiveness in the area of organizational leadership is vital to every level of an organization and has implications for an organization's culture, finances, daily operations, and strategic plans (Society for Human Resource Management, 2015). As noted by Deloitte's Global Human Capital Trends Survey (Deloitte, n.d.) taken by thousands of human resource and business leaders from all over the world, the dominance and importance of organizational leadership is an increasingly prevailing trend each year. Based on research shared from Deloitte's 2014 survey findings, "Leadership remains the No. 1 talent issue facing organizations around the world" (Canwell, Dongrie, Neveras, & Stockton, 2014). From 2013-2018, organizational leadership was highlighted as a top area of challenge and opportunity in every survey report Deloitte produced, at times being rated by 86% of world-wide respondents as an *important* or *urgent* topic (Canwell et al., 2014).

Annual research findings connect organizational leadership trends to the development of a multi-generational workplace, adaptation to a fast-changing society, improvement of internal leadership development pipelines, success of digital intelligence, and collaborative efforts with and among leaders (Deloitte, n.d.). According to the Society for Human Resource Management, human resource leaders currently view the development of the next generation of organizational leaders as a top human capital challenge and will continue to do so through (and possibly beyond) the year 2025 (Society for Human Resource Management, 2015). Today's organizations "...have arrived at a turning point in the evolutionary arc of leadership, where yesterday's theories struggle to keep pace with the velocity of today's disruptive marketplace" (Pelster, 2013). Better organizational leadership theories are needed to assist leaders in adapting to trends such as technology advancements and workplace diversity (Abbatiello, Knight, Philpot, & Roy, 2017), as well as in the exploration of research areas such as, "how organizational design can shape and leverage leadership development" (Törnblom, 2018).

Within the organizational context a relevant consideration is the distinction between leadership and management. Abraham Zaleznik (1977) explored the differences between the two in his work finding managers tend to adopt a more impersonal approach with greater focus on rationality and control. Typically, organizations use managers to ensure proper execution of tasks and goals, whereas leaders may or may not be in a management role per se, therefore the two roles are not synonymous (Bass, 2008). Accordingly, the intent of the present work is not to

focus on management, but rather to focus on leadership, whether through formal or informal means. According to Lunenburg (2011), "In today's dynamic workplace [organizations], we need leaders to challenge the status quo and to inspire and persuade organization members" (p. 3). This sentiment is similar to Bennis (1989) who previously stated,

> To survive in the twenty-first century, we are going to need a new generation of leaders—leaders, not managers. The distinction is an important one. Leaders conquer the context—the volatile, turbulent, ambiguous surroundings that sometimes seem to conspire against us and will surely suffocate us if we let them—while managers surrender to it (p. 7).

Therefore, the need to focus on the skills necessary for leadership success within organizational contexts is important. However, the organizational context is also important to recognize as the environment within which the leadership occurs (Lunenburg, 2011).

According to the 2016-2020 American Association for Agricultural Education (AAAE) National Research Agenda, priority area five identifies the need for efficient and effective agricultural education programs (Roberts, Harder, & Brashears, 2016). This article presents a theory-based conceptual model of organizational leadership based on a comprehensive review and synthesis of existing leadership literature. The resulting model should provide an appropriate curriculum framework to enhance the transfer of learning in agricultural leadership education settings.

Theoretical Framework

From a systems theory perspective, organizations have a structure; however, the structure has been described as artificial insofar as they are constructs bound together through psychological, rather than physical, bonds (Katz & Kahn, 1977). According to Robbins and Judge (2009), an organization has been defined as, "a consciously coordinated social unit, composed of two or more people, that functions on a relatively continuous basis to achieve a common goal or set of goals" (p. 7). "Organizations emerge because individuals can achieve goals through collective action that could not be attained by individuals working alone" (Fleishman et al., 1991). Additionally, Bass (2008) indicated, "leadership is often regarded as the single most critical factor in the success or failure of [organizations]" (p. 11). Based on the ubiquity of organizations, a critical analysis of the leadership characteristics associated with organizational outcomes has been warranted (Bass, 2008).

Previous research has found leadership to be strongly related to organizational performance. For example, Day and Lord (1988) analyzed organizational performance when organizations experienced changes in executive leadership; when controlling for other factors, leadership accounted for up to 45% of the difference in performance. Similar performance differentials were identified when industrial organizations were retrospectively analyzed relative to leadership. Specifically, high performing leaders produced better organizational financial results than lower performing peers (Barrick, Day, Lord, & Alexander, 1991). Thus, organizational leadership makes a difference and is necessary for goal progression. Conceptualization of organizational leadership can involve the timeless aspects of: properly

acquiring and handling information, identifying needs, planning, taking risks, inspiring others, obtaining and maintaining resources, monitoring the environment, and providing feedback.

Acquiring information: Antecedents for organizational emergence are environmental pressures or requirements for a given situation (Katz & Kahn, 1977). Consequently, a primary responsibility of an organizational leader has been to acquire information germane to the organization's purpose or situation (Fleishman et al., 1991). Therefore, one of the primary themes within the literature has been that effective leaders have an orientation toward information. Specifically, effective leaders have been shown to collect information and intelligence (Olmstead, Baranick, & Elder, 1978; Olmstead, Cleary, Lackey, & Salter, 1976; Roby, 1961), seek information (Metcalfe, 1984), and process information (Olmstead, Cleary, Lackey, & Salter, 1976).

Although effective leaders typically have a level of expertise (Haiman, 1951; Krech & Crutchfield, 1948; Wilson, O'Hare, & Shipper, 1990) knowledge (Williams, 1956), and wisdom (Barbuto & Wheeler, 2006) necessary to lead within an organizational context, previous experiences and knowledge (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000) are not always sufficient. Specifically, higher performing leaders have been shown to have an awareness for situational needs, such as information acquisition (Berkowitz, 1953; Greenleaf, 1970). Subsequently, leaders have been found to take needed action based on the information they acquire (McGrath, 1964; Winter, 1978). One of the primary channels that effective leaders use to acquire information has been through interacting with others (Bennett, 1971; Bowers & Seashore, 1972; Luthans & Lockwood, 1984; Williams, 1956). Specifically, effective leaders have used networking (Senge, 1995; Yukl, 1998), social skills (Bell, Hill, & Wright, 1961; Luthans & Lockwood, 1984; Olmstead et al., 1973), and relationship cultivation (Hemphill, 1950; Metcalfe, 1984; Sayles, 1981) to gather information.

Clarifying, organizing, and evaluating information: After leaders have acquired information, effective leaders have been shown to clarify, organize, and evaluate information accordingly (Fleishman et al., 1991; Yukl, Gordon, & Taber, 2002). For example, effective leaders have been shown to handle (Morse & Wagner, 1978), process (Hitt, Middlemist, & Mathis, 1983), and clarify information as necessary (Gross, 1961; Wilson et al., 1990; Yukl, 1998). One strategy effective leaders have used to clarify information has been through negotiation (Fine, 1977; Kessing & Kessing, 1956; Mahoney, Jerdee, & Carroll, 1965; Miller, 1974; Sayles, 1981), which also assists with identifying and resolving information deficiencies.

When leaders feel they have acquired and clarified information to a satisfactory level, effective leaders have been shown to analyze the information accordingly (Bennett, 1971; Fine, 1977; Lord & Maher, 1993; Olmstead et al., 1976). One of the primary means that effective leaders have been shown to analyze and organize information has been through their technical, or functional, competence (Bradford & Cohen, 1984; Clement & Ayres, 1976; Helme, 1974 Heifetz, 1994; Senge, 1995; Showel & Peterson, 1958; Katz, 1955).

To evaluate information in an appropriate manner, effective leaders have been shown to use ethical (Clement & Ayres, 1976; Liden, Wayne, Zhao, & Henderson, 2008; Whitehead,

2009), moral (Sendjaya, Sarros, & Santora, 2008; Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008), and values-based approaches (George, 2003; Heifetz, 1994).

Identifying needs and requirements: Clarifying, organizing, and evaluating information assists with identifying needs and requirements, one of the primary areas where the most effective organizational leaders have been shown to demonstrate leadership capabilities (Fleishman et al., 1991). Insights into the flow of work (Sayles, 1981), and an ability to sustain (Schein, 1995) and conduct work (Bradford & Cohen, 1984), have been associated with an ability to identify appropriate needs of the organization and requirements to fulfill identified needs. Demonstrating proficiency in this area helps organizational leaders make decisions, which is a skill prominent in organizational leadership literature (Clement & Ayres, 1976; Hitt et al., 1983; Jacobs, 1983; Luthans & Lockwood, 1984; Olmstead et al., 1973; Olmstead et al., 1975; Olmstead et al., 1978; Page, 1985; Williams, 1956). When leaders decide (Bennett, 1971; Mintzberg, 1973; Suttel & Spector, 1955) or choose appropriate means (Gross, 1961), they provide the necessary direction to the organization (Farr, 1982). This direction is based on needs, and tasks to fulfill them, in an effort to make individuals and the whole organization more effective. Furthermore, requirements put forth to fulfill organizational needs can evolve into organizational standards.

Based on systems theory, an antecedent for organizations to exist has been through shared expectations and standards (Katz & Kahn, 1977). Effective leaders have been shown to establish standards to facilitate the implementation of their decisions, and subsequently the fulfillment of the requirements they set forth for others to follow (MacKenzie, 1969; Nealy & Fiedler, 1968). For example, leaders have been shown to establish standards of excellence (Larson & LaFasto, 1989), set guidelines (Metcalfe, 1984), and set procedures (MacKenzie, 1969; Metcalfe, 1984). Effective leaders have been shown to use power and influence techniques to facilitate the adoption of their decisions and standards (Bell et al., 1961; Bonjean & Olson, 1964; Hemphill, 1959; Terry, 1993).

Planning and coordinating: Within the literature, one of the most recurrent themes has been that effective leaders plan and coordinate activities (Fleishman et al., 1991; Yukl et al., 2002). Numerous authors have described the planning aspect of organizational leadership (e.g. Bennett, 1971; Clement & Ayres, 1976; Davis, 1951; Farr, 1982; Hitt et al., 1983; Luthans & Lockwood, 1984; Koontz, O'Donnell, & Weihrich, 1958; Olmstead et al., 1978; Page, 1985; Showel & Peterson, 1958; Schermerhorn, Hunt, & Osborn, 1982; Van Fleet & Yukl, 1986; Yukl, 1998; Yukl & Nemeroff, 1979), including planning and allocating resources (Dowell & Wexley, 1978; Kraut, Pedigo, McKenna, & Dunnette, 1989) and methods planning (Stogdill, Wherry, & Jaynes, 1953).

The coordination aspects of effective organizational leadership have also been well established in the literature (e.g. Berkowitz, 1953; Kraut et al., 1989; Mahoney et al., 1965; Nealy & Fiedler, 1968; Olmstead et al., 1978; Page, 1985; Tornow & Pinto, 1976). Effective leaders have been shown to improve coordination through sufficient organization (Davis, 1951; Hitt et al., 1983; Koontz et al., 1958; MacKenzie, 1969; Morse & Wagner, 1978; Schermerhorn et al., 1982; Williams, 1956; Wofford, 1967), ordering (Suttel & Spector, 1955; Wilson et al., 1990), facilitation (Har-Evan, 1992; Quinn, Dixit, & Faerman, 1987; Van Fleet & Yukl, 1986;

Yukl & Nemeroff, 1979), cooperation (Bonjean & Olson, 1964; Helme, 1974; Larson & LaFasto, 1989; Misumi, 1985; Wells, 1997; Winter, 1978), influence (Bell et al., 1961; Bonjean & Olson, 1964; Stogdill, Goode, & Day, 1965; Winter, 1978), tolerance (Stogdill, Goode, & Day, 1962; Stogdill et al., 1965), and environmental awareness (Morse & Wagner, 1978; Mumford et al., 2000).

To effectively lead within organizations, specifically as it has related to planning and coordinating, individuals have needed to act as change agents (Barnard, 1946; Gross, 1961; Haiman, 1951; Hook, 1943; Javidan & Dastmalchian, 1993; Leavitt, 1986; Paige, 1977; Tannenbaum & Schmidt, 1958; Schein, 1995) in combination with the appropriate amount of assertiveness (House, Hanges, Javidan, Dorfman, & Gupta, 2004). Along with creating the conditions necessary to be successful (McGrath, 1964), effective leaders have been shown to be both directive (Coffin, 1944; Hersey & Blanchard, 1969; Hitt et al., 1983; House & Mitchell, 1974; MacKenzie, 1969; Schermerhorn et al., 1982) and political (Beckhard, 1995; Birnbaum, 1988; Bolman & Deal, 1991; Cribbin, 1981; Miller, 1973; Shrivastava & Nachman, 1989).

Synthesizing the myriad of functions within a planning and coordinating framework, the most effective managers have been referred to as multispecialists (Mahoney et al., 1965). These super-leaders (Manz & Sims, 1993) span boundaries (Hitt et al., 1983), align the organization and the environment (Van Wart, 2003), address challenges (Sayles, 1981; Tornow & Pinto, 1976), and provide results (Van Wart, 2003).

Risk taking: Effective leaders have been shown to have a propensity for taking risks; specifically, taking the steps necessary to move from plans to action (Conger & Kanungo, 1998; Rothschild, 1993; Yukl et al., 2002). A willingness to challenge existing processes (Kouzes & Posner, 2002), innovate (Van Fleet & Yukl, 1986; Yukl & Nemeroff, 1979), and act in a revolutionary manner have been associated with effective leaders (Paige, 1977). Additionally, high performing leaders have also been shown to engage in intellectual stimulation with followers, whereby they encourage thinking that does not necessarily confirm to established norms (Bass & Avolio, 1990; Podsakoff, MacKenzie, Moorman, & Fetter, 1990).

Visioning and inspiring: Once a leader has identified the appropriate plan of action, and has taken a risk in deciding to act, a next step has been to develop a vision for the desired outcome in order to effectively inspire the organization to action (Yukl et al., 2002); thus effective leaders have used goals extensively. For example, to cast vision and promote inspiration, effective leaders have been shown to define (Bass, 1981; Gross, 1961; Helme, 1974; Miller, 1973; Selznick, 1957), set (Barnard, 1946; Farr, 1982; MacKenzie, 1969; Oldham, 1976; Van Fleet & Yukl, 1986; Winter, 1978; Wofford, 1967; Yukl & Nemeroff, 1979), articulate (House, 1977), administer (Gross, 1961), and explain goals (Bass, 1981). Organizational leaders also help individuals feel connected to goals (Kirk & Shutte, 2004), as well as help foster the acceptance of group goals (Podsakoff et al., 1990). Furthermore, leaders have been shown to apply goal pressure (Wilson et al., 1990) and goal emphasis (Bowers & Seashore, 1972) to bring about congruence (Roby, 1961) and to ultimately attain goals (Helme, 1974).

One method effective leaders have used to translate goals into motivation has been through articulating a vision (Conger & Kanungo, 1998; Dennis & Bocarnea, 2005; Podsakoff et

al., 1990). Visionary leaders (Manz & Sims, 1993; Wells, 1997) have been shown to use their foresight (Greenleaf, 1970; McGrath, 1964; Stogdill et al., 1962), conceptual ability (Greenleaf, 1970; Katz, 1955; Liden et al., 2008; Winter, 1978), convictions (Beckhard, 1995), and audience awareness (Hofstede, 1980; House et al., 2004) to appropriately motivate and inspire their organizations. Consequently, organizations have typically come to view such leaders as effective (Laub, 1999; Lord & Maher, 1991; Olmstead et al., 1973; Wofford, 1967).

According to the literature, appropriate goals have been shown to result in a sense of purpose (George, 2003; House & Mitchell, 1974; Pigg, 1999; Schein, 1995; Terry, 1993) and mission for the organization (Helme, 1971; Terry, 1993). Furthermore, purpose and mission have been shown to be related to organizational motivation (Gross, 1961; Helme, 1974; House, 1977; Koontz et al., 1958; Luthans & Lockwood, 1984; Morse & Wagner, 1978; Mumford et al., 2000; Olmstead et al., 1973) and inspiration (Kouzes & Posner, 2002; Van Fleet & Yukl, 1986; Yukl & Nemeroff, 1979; Yukl, Wall, & Lepsinger, 1990). For example, effective leaders have been shown to encourage the heart of followers (Kouzes & Posner, 2002) and provide inspirational motivation (Bass & Avolio, 1990) by having high performance expectations (Podsakoff et al., 1990). These actions have been associated with a sense of meaning and fulfillment (Terry, 1993) as well as hope and optimism (Luthans & Avolio, 2003) within the organization.

Communicating information: Although providing a vision and inspiration for an organization has been found to be necessary for effective leadership, it has also been found to be insufficient. To complement their strategies for motivation, effective leaders have been shown to be highly adept at communicating information (Fleishman et al., 1991). Communication competence has been identified in multiple ways within the literature. For example, effective leaders must be able to communicate generally (Clement & Ayres, 1976; Helme, 1974; Jacobs, 1983; MacKenzie, 1969; Olmstead et al., 1978; Olmstead et al., 1973; Stogdill & Shartle, 1955), communicate up (Hemphill, 1950; Wilson et al., 1990), communicate down (Hemphill, 1950; Jacobs, 1983; Prien, 1963), maintain communication capability and flow (Jacobs, 1983; Olmstead et al., 1976), and communicate for implementation (Farr, 1982; Jacobs, 1983; Leavitt, 1986).

Communication has also been associated with information dissemination (Israel, Schulz, Parker, & Becker, 1998; Olmstead et al., 1976; Van Fleet & Yukl, 1986; Yukl & Nemeroff, 1979), exchanging information (Fine, 1977; Luthans & Lockwood, 1984), and organizational collaboration (Larson & LaFasto, 1989). Leaders who communicate through discussion (Haiman, 1951), participation (Metcalfe, 1984), and collaborative partnerships (Israel et al., 1998) have been shown to promote group decision making (Miller, 1973).

Obtaining material and personnel resources: Communicating information is often complemented by the need to obtain the material and personnel resources necessary to achieve identified goals (Fleishman et al., 1991). For example, effective leaders have been found to be more adept at obtaining and managing personnel resources, including such functions as human resources (Bolman & Deal, 1991; Hemphill, 1959; Stogdill et al., 1953), selection and placement (Gilbert, 1975; Luthans & Lockwood, 1984; MacKenzie, 1969; Mintzberg, 1973; Nealy &

Fiedler, 1968; Oldham, 1976; Prien 1963; Schermerhorn et al., 1982), and leader-member relations (Dowell & Wexley, 1978; Fiedler, 1967; Helme, 1971; Showel & Peterson, 1958).

The ability to obtain material resources may be subsumed within the structure of an organization (Fleishman et al., 1991). For example, effective leaders have been found to focus on the structural aspects of organizations (Bolman & Deal, 1991; Terry, 1993), including the inducement, interpretation, and use of structure (Katz & Kahn, 1977). Effective leaders have also been found to be appropriately task-oriented with a prominent focus on structure (Blake & Mouton, 1964; Fleishman, 1953; Gross, 1961; Halpin & Winer, 1957; Olmstead, Lackey, & Christenson, 1975; Stogdill et al., 1962; Winter, 1978) and sensitivity to outside pressures (Bass & Farrow, 1977).

Utilizing and monitoring material and personnel resources: After material and personnel resources have been obtained, effective leaders have been shown to direct their efforts toward utilizing and monitoring those resources (Fleishman et al., 1991; Yukl et al., 2002). From a utilization perspective, effective leaders have been shown to focus on production (Halpin & Winer, 1957; Hemphill, 1950, Nealy & Fiedler, 1968; Stogdill et al., 1962; Stogdill et al., 1965), work facilitation (Bowers & Seashore, 1972; Wilson et al., 1990), performance (Javidan & Dastmalchian, 1993; Larson & LaFasto, 1989; Reaser, Vaughan, & Kriner, 1974; Van Fleet & Yukl, 1986; Wofford, 1971; Yukl & Nemeroff, 1979), and administration (Katz & Kahn, 1966; Manz & Sims, 1993; Olmstead et al., 1973; Stogdill et al., 1962; Stogdill et al., 1953). These functions have been shown to require unit record keeping (Elliott, Harden, Giesler, Scott, & Euske, 1979), compiling records and reports (Dowell & Wexley, 1978), and processing paper work (Luthans & Lockwood, 1984).

To further maximize resource utilization, effective leaders have been shown to be resourceful (Helme, 1971; Israel et al., 1998; Terry, 1993), competitive (Hemphill, Siegel, & Westie, 1951; Miller, 1973), and time-oriented (Olmstead et al., 1978; Wilson et al., 1990) with an ability to integrate knowledge (Cribbin, 1981; Hemphill, 1950; Stogdill et al., 1962; Stogdill & Shartle, 1955) and provide instruction to improve performance (Fine, 1977; Kraut et al., 1989; Olmstead et al., 1976; Suttel & Spector, 1955). Additionally, effective leaders have been shown to manage conflict within the organization (Krech & Crutchfield, 1948; Reddin, 1977; Selznick, 1957; Stogdill et al., 1962), providing clarity when needed (Bass & Farrow, 1977; Van Fleet & Yukl, 1986; Yukl & Nemeroff, 1979) to mitigate future conflict and simultaneously attend to morale issues (Helme, 1974; Sayles, 1981).

Leaders have also been shown to effectively use rewards to maximize utilization (Bass, 1981; MacKenzie, 1969; Miller, 1973; Oldham, 1976; Olmstead et al., 1975; Sayles, 1981; Winter, 1978; Yukl, 1998). Rewards have sometimes been allocated contingent upon performance (Bass & Avolio, 1990), or may be meted out with punishments (Krech & Crutchfield, 1948; Showel & Peterson, 1958); effective leaders have been shown to administer discipline (Van Fleet & Yukl, 1986; Yukl & Nemeroff, 1979) to address utilization impediments.

From a monitoring perspective, effective leaders have been shown to employ numerous approaches. For example, leaders have been shown to monitor in general (McGrath, 1964; Miller, 1973; Yukl, 1998; Yukl et al., 1990), monitor indicators (Page, 1985), monitor operations

(Van Fleet & Yukl, 1986; Yukl & Nemeroff, 1979), monitor the environment (Kraut et al., 1989), and monitor performance and results (Komaki, Zlotnick, & Jensen, 1986; Luthans & Lockwood, 1984; Winter, 1978). One of the primary mechanisms leaders have been shown to monitor personnel and materials has been through supervision (Clement & Ayres, 1976; Coffin, 1944; Hemphill, 1959; Mahoney et al., 1965; Miller, 1973; Olmstead et al., 1976; Page, 1985; Prien, 1963; Tornow & Pinto, 1976).

Based on their ability to obtain the necessary monitoring insights, effective leaders have been shown to evaluate their findings (Elliott et al., 1979; Mahoney et al., 1965; Metcalfe, 1984; Stogdill et al., 1953). This process has been shown to include collecting the necessary information (Komaki et al., 1986) as well as defining the evaluation criteria (Bass, 1981). One of the primary mechanisms that leaders have been shown to effectively evaluate data has been through their control of details (Wilson et al., 1990), materials and supplies (Nealy & Fiedler, 1968), activities (Davis, 1951), relationships (Krech & Crutchfield, 1948), and processes (Hemphill et al., 1951). Through the myriad of control conditions (Hitt et al., 1983; Koontz et al., 1958; Schermerhorn et al., 1982; Wofford, 1967) effective leaders have been shown to have a stabilizing effect across the monitoring process (Jacobs, 1983).

Maintaining material resources: One of the distinctions between organizational and non-organizational leadership has been a specific focus on materials, or the means through which an organization operates (Fleishman et al., 1991). Specifically, effective leaders have been found to have an orientation toward cost control (Hemphill, 1959; Nealy & Fiedler, 1968; Tornow & Pinto, 1976), budgeting (Barnard, 1946; MacKenzie, 1969), reporting (MacKenzie, 1969), and process oversight (Bennett, 1971; Prien, 1963). Additionally, a prominent theme within the literature was that effective leaders have tended to focus on maintenance of equipment (Dowell & Wexley, 1978), supplies (Elliott et al., 1979), and services (Stogdill et al., 1953).

External monitoring, feedback, and control: In addition to monitoring materials and personnel from an operational perspective, effective organizational leaders have been shown to actively monitor the external environment, as well as to the provide the appropriate feedback and control back to the organization (Fleishman et al., 1991; Yukl et al., 2002). A theme within the literature has been that effective leaders tend to be focused on performance (House et al., 2004; MacKenzie, 1969; Misumi, 1985; Mumford et al., 2000; Olmstead et al., 1976; Roby, 1961; Whitehead, 2009). Monitoring the external environment for threats as well as opportunities has been identified as one of the primary ways in which effective leaders optimize performance (Yukl et al., 2002).

When monitoring the environment, problem solving has been one of the primary mechanisms leaders have used to optimize processes and procedures (Farr, 1982; Leavitt, 1986; Morse & Wagner, 1978; Mumford et al., 2000; Olmstead et al., 1973; Shultz, 1961; Van Fleet & Yukl, 1986; Yukl, 1998; Yukl et al., 1990; Yukl & Nemeroff, 1979). Depending on the nature of the external environment, effective leaders have been shown to maximize their problem solving capacity by being adaptable (Cribbin, 1981; Heifetz, 1994; Lord & Maher, 1993; Luthans & Avolio, 2003; Metcalfe, 1984; Olmstead et al., 1978; Paige, 1977), while always remaining grounded through their representation (Gross, 1961; Hemphill, 1950; Kraut et al., 1989; Krech & Crutchfield, 1948; Page, 1985; Sayles, 1981; Stogdill & Shartle, 1955; Stogdill et al., 1962; Van

Fleet & Yukl, 1986; Yukl & Nemeroff, 1979) and stewardship of the organization (Barbuto & Wheeler, 2006; Greenleaf, 1970; Sendjaya et al., 2008; Van Dierendonck & Nuijten, 2011).

From a feedback perspective, effective leaders have been shown to seek feedback (Jacobs, 1983), provide feedback (Bass, 1981; Wilson et al., 1990) and design feedback systems (Oldham, 1976) in an effort to manage performance (Kraut et al., 1989). One of the primary outcomes associated with the feedback process has been defense of institutional integrity (Selznick, 1957) and an ability to give and receive reputation input (Bell et al., 1961; Hemphill, 1959).

One of the primary themes from the literature has been that effective leaders also take steps necessary to control processes. For example, leaders have been shown to propose the appropriate procedures for performing a task (Metcalfe, 1984), audit the implementation of the procedure (Javidan & Dastmalchian, 1993), maintain standards of performance (Berkowitz, 1953), enforce rules and procedures (Hemphill et al., 1951; Miller, 1973), and ultimately take corrective action (MacKenzie, 1969). Corrective action has been shown to sometimes include discipline (Luthans & Lockwood, 1984; Oldham, 1976; Winter, 1978), including active monitoring for performance issues (Bass & Avolio, 1990) or passively waiting for issues to arise (Bass & Avolio, 1990).

Conceptual Organizational Leadership Model

The most effective leaders have a sense of obligation (Graen & Uhl-Bien, 1995) or service (Craig & Gustafson, 1998; Javidan & Dastmalchian, 1993; Tornow & Pinto, 1976; Wong & Davey, 2007; Van Wart, 2003; Velasquez, 1992) toward their organization. When effective leaders feel accountable to the organization, they are more likely to engage in behaviors that are beneficial to the organization (Collins, 2001; Van Dierendonck & Nuijten, 2011). Behaviors of organizational leaders are expected to adhere to a somewhat consistent pattern. Based on the review of the existing literature, a conceptual model of the organizational leadership framework is proposed in this article; the model synthesizes the previous taxonomic recommendations within the literature (Fleishman et al., 1991; Yukl et al., 2002).

According to the literature, an expected first step within the organizational leadership process would be to acquire information (Fleishmen et al., 1991). Specifically, effective leaders have been shown to use their awareness of a situation (Berkowitz, 1953) to identify the need for additional information (Metcalfe, 1984) and to consequently take action (Winter, 1978). In addition to being competent (Mumford et al., 2000) and having the requisite wisdom (Barbuto & Wheeler, 2006) and expertise (Wilson et al., 1990) to be successful in their position, effective leaders have been shown to acknowledge their responsibility to serve (Craig & Gustafson, 1998; Graen & Uhl-Bien, 1995) and to seek information accordingly. Their ability to network (Senge, 1995; Yukl, 1998) and interact with others (Luthans & Lockwood, 1984) has been shown to be an effective channel through which to acquire information.

After acquiring information, effective leaders have been shown to clarify, organize, and evaluate information (Fleishman et al., 1991; Yukl et al., 2002). Specifically, a leader's technical or content competence (Heifetz, 1994; Katz, 1955) has been shown to be related to their ability

to analyze (Lord & Maher, 1993), clarify (Wilson et al., 1990; Yukl, 1998), and process information (Hitt et al., 1983) based on internal ethics, morals, and values (i.e. Heifetz, 1994; Walumbwa et al., 2008).

Once the prerequisite information has been acquired and evaluated, effective leaders identify needs and requirements (Fleishman et al., 1991). Based on their leadership position (Fielder, 1967; Terry, 1993), effective leaders have been shown to make decisions (Luthans & Lockwood, 1984) and establish standards related to requirements (Nealy & Fiedler, 1968). Formal positional power (Fiedler, 1967) in the form of management (Clement & Ayers, 1976; Winter, 1978) has not been identified as a requirement for effective organizational leadership in this regard; effective leaders have been shown to use power in upward, lateral, and downward directions (Fleishman et al., 1991; Terry, 1993).

Planning and coordinating activities has tended to follow the identification of needs and requirements (Fleishman et al., 1991; Yukl et al., 2002). The literature indicates effective leaders tend to plan (e.g. Yukl, 1998), organize (e.g. Hitt et al., 1983), and coordinate (e.g. Luthans & Lockwood, 1984) extensively. Additionally, the ability to plan and change through assertiveness (House et al., 2004), facilitation (Van Fleet & Yukl, 1986), influence (Bolman & Deal, 1991), and direction (Hersey & Blanchard, 1969) has been identified. As a consequence of planning and coordinating, leaders have been found to establish trust (Bass & Farrow; 1977; Dennis & Bocarnea, 2005; Graen & Uhl-Bien, 1995) and loyalty (Velasquez, 1992) within the organization. However, it is important to note that when leaders have taken on too much responsibility for the organization, there have been instances where work avoidance (Heifetz, 1994) and abdicating of responsibility to the leader (Miller, 1973) have resulted.

As a set of central tasks within the organizational leadership model, planning and coordinating have been conceptualized to link to multiple subsequent activities, specifically, risk taking, communicating information, and material and personnel related tasks. Planning has been associated with risk taking under conditions where there has been an innovative component to the plan or coordinated action (Bass & Avolio, 1990; Kouzes & Posner, 2002; Podsakoff et al., 1990).

Based on their willingness to take risks within the scope of their plans, the literature has indicated that organizational leaders must also be able to articulate a compelling vision that is sufficiently inspirational (Yukl et al., 2002). Specifically, effective leaders have been shown to establish goals (e.g. House, 1977), vision (e.g. Greenleaf, 1970), and purpose (e.g. George, 2003) to motivate (e.g. Bass & Avolio, 1990) and inspire (e.g. Kouzes & Posner, 2002) others.

A second primary node of activity has been identified as a leader's ability to communicate information (Fleishman et al., 1991) such as established goals. The ability to communicate information in the form of plans (Jacobs, 1983) or a compelling vision (e.g. House, 1977) has been established as a set of critical activities. Specifically, communication is related to a leader's ability to disseminate information (Israel et al., 1998), share information (e.g. Yukl, 1998), collaborate (Larson & LaFasto, 1989), and implement plans (Farr, 1982).

Once plans have been established and communicated, the literature indicates that effective leaders go about obtaining material and personnel resources (Fleishman et al., 1991). Specifically, leaders have been shown to identify appropriate personnel (e.g. Bolman & Deal, 1991) and empower them accordingly (e.g. Hersey & Blanchard, 1969). In coordination with the personnel related tasks, leaders have also been shown to maintain a focus on the structural aspects of accomplishing the task (e.g. Blake & Mouton, 1964; Katz & Kahn, 1977).

After the necessary personnel and material resources have been obtained, effective leaders have ensured that those resources are appropriately utilized and monitored (Fleishman et al., 1991; Yukl et al., 2002). Through supervision (e.g. Clement & Ayres, 1976) and administration (Luthans & Lockwood, 1984), leaders have monitored (e.g. Yukl, 1998), evaluated (e.g. Bass, 1981), and controlled (e.g. Wilson et al., 1990) the activities necessary to accomplish the task. According to the literature, leaders have also emphasized performance (Van Fleet & Yukl, 1986) and allocated rewards as a means to encourage utilization of resources (e.g. Bass & Avolio, 1990).

Maintaining material resources has also been shown to be a concern of organizational leaders (Fleishman et al., 1991). For example, maintaining equipment (Dowell & Wexley, 1978) and cost controls (Nealy & Fiedler, 1968) have been associated with leadership activities.

A final set of activities that has been found to be associated with organizational leadership has been external monitoring, feedback, and control (Fleishman et al., 1991; Yukl et al., 2002). Effective leaders have been shown to monitor the external environment based on a combination of problem solving (e.g. Mumford et al., 2000), adaptability (e.g. Heifetz, 1994) and performance orientation (e.g. House et al., 2004). In addition, literature indicates that leaders seek feedback (e.g. Bass, 1981) in an attempt to best represent the organization (e.g. Van Fleet & Yukl, 1986). However, leaders have also been known to extend feedback to a critical level, which may be seen as non-productive (Metcalfe, 1984; Van Fleet & Yukl, 1986; Yukl & Nemeroff, 1979). Additionally, leaders have been found to exercise appropriate controls through procedure enforcement (e.g. Javidan & Dastmalchian, 1993) and discipline (e.g. Bass & Avolio, 1990). A criticism within the literature has been that when leaders exert too much control, they can be seen as bureaucratic or inflexible (Birnbaum, 1988; Gupta & Govindarajan, 1984; Metcalfe, 1984; Sayles, 1981; Shrivastava & Nachman, 1989; Stogdill et al., 1965; Reddin, 1977; Wells, 1997).

As noted in Figure 1, the aforementioned aspects of the organizational leadership conceptual model are connected, sometimes serving as prerequisites for one another. Whether intentionally or unintentionally, decisions made within organizations affect the people, resources, and direction of that organization. Therefore, the single and double arrows indicate the iterative, rather than linear, process of organizational leadership action and influence. Though much is done to create and control the internal environment of the organization, the inevitable influence of external environmental factors is visually indicated by the need for external monitoring to affect multiple areas of organizational leadership. As indicated, visioning and inspiring is powerful and necessary. Though multiple organizational leadership behaviors funnel into visioning, its significance can affect the adoption of those behaviors. Lastly, as mentioned

previously, formal positional leadership is not always needed to fulfill some of the organizational leadership behaviors proposed in the model.
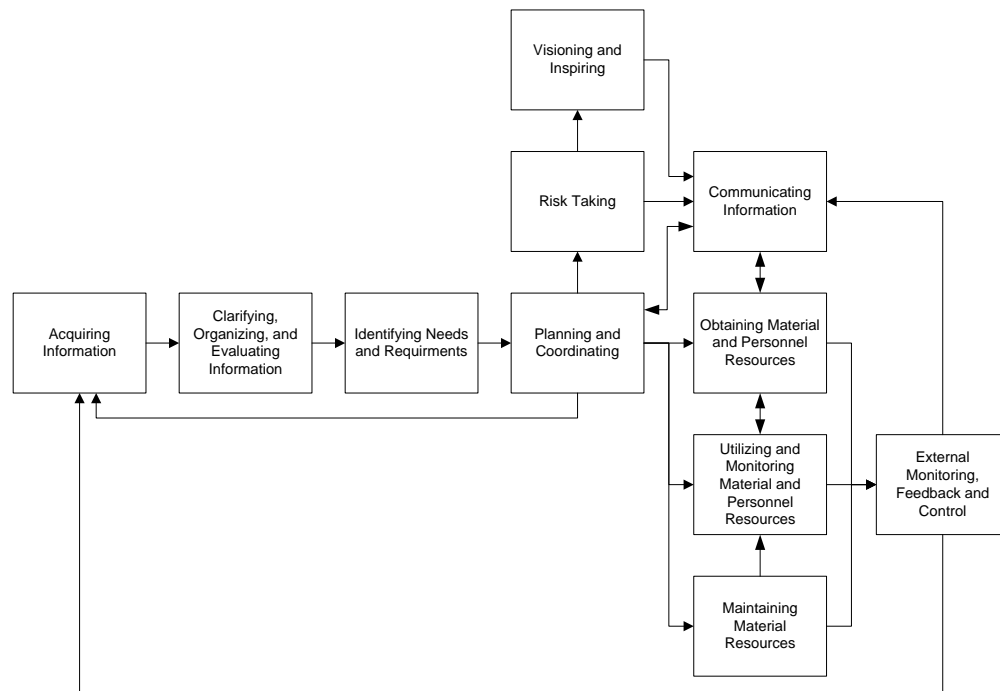

Figure 1. *Conceptual model of organizational leadership*

Conclusion

Though the importance of organizational leadership is well-known throughout popular press and academic literature, there remains a need to develop models and improve theories that assist current leaders in addressing the myriad of challenges and opportunities they face in the midst of social, economic, technological, and organizational change (Pelster, 2013). The purpose of this article sought to propose a foundational, theory-based organizational leadership model, one distinct from management roles within organizations (Lunenburg, 2011). Existing organizational leadership literature was synthesized to create a conceptual framework of leadership behavior in organizations.

As a next step, agricultural educators are encouraged to adopt, or adjust, the proposed model when facilitating learning about organizational leadership topics. Some of the 11 synthesized areas proposed in the model are missing from leadership curriculum, while others are taught in silos rather than in a holistic way that helps students see how the topics fit into the larger picture of organizational life. In addition to adult learners being able to seamlessly apply the model to their organizational settings and experiences, the framework can also be used to help undergraduate students better understand the leadership roles of their student-led agricultural organizations. The framework can also be used in graduate studies or non-higher education professional settings to create case studies that need a framework to determine if an organizational leader is adaptive to the complex changes internally and externally affecting their

organization. Attaching real-time decisions to the aspects of the model can create meaningful learning opportunities for organizational members interested in applying theory to praxis.

Future research is recommended to determine if any factors relating to societal changes and diverse employee dynamics (i.e. women's leadership, generational differences, global agriculture, etc.) are already sufficiently addressed by the model's existing factors or need to be addressed more specifically. For a specific example, unavoidable societal change over the past several years has related to the digital interface. Digital and technology intelligence as a necessary skill is becoming more of a requirement than a preference for organizations that seek to compete in a global and changing environment. As digitization affects organizations' structures, security, operating models, and communication and recruitment strategies, dedicated leaders equipped with the right skills are needed (Link, 2018). However, what organizational leadership looks like in this area continues to evolve (Link, 2018); the proposed model can be effective in helping with this evolution and can be adapted to the need of digital intelligence.

Other topics that influence organizations such as internal politics, organizational culture, mergers, and industry idiosyncrasies should also be looked at as factors to integrate into the organizational leadership characteristics that have been discussed. These types of topics make each organizational context different, therefore elevating contextual factors as important mediators to review when furthering this research. The initial conceptual model presented in this article should set a foundation upon which emergent models and theories can be built, equipping agricultural leaders with appropriate and necessary tools to be knowledgeable, intentional, and adaptive.

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The Perceived Impact of Life Experiences and Selected Growth Areas Upon the Employability Preparation of Land-Grant College Graduates

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Assessing the Influence of Life Experiences and Growth Areas Upon the Employability Preparation of Land-Grant College Graduates

The purpose of this study was to analyze the perceived impact of life experiences and selected growth areas upon the employability preparation of land-grant college graduates, as observed by employers. The study revealed that a variety of life experiences and experiential learning opportunities, in general, are significant for career success for land-grant college graduates. Further, participants reported that many trends would influence the agricultural industry over the next five to 10 years, such as Digital Agriculture (Precision Agriculture or Big Data), Research and Development, Agricultural Technology, Engineering, and Mechanization, Environment, Globalization, and selected Agribusiness related themes. Recommendations included Land-Grant Colleges considering curriculum and program revisions concerning these trend areas, to better prepare graduates to be future change agents within the global food, agriculture, and renewable natural resources fields.

Introduction

Keywords like turbulence, globalization, networking, innovation, coping with uncertainties, risks, and entrepreneurship are often used to characterize the future of the agricultural sector in the United States. Agricultural colleges are encouraged to develop a more rigorous curriculum to prepare and build today's college students (American Farm Bureau, 2015). Competition with other technical colleges for non-agricultural occupations will increasingly be a way of life. Historical roots in agricultural production will no longer provide land-grant colleges with adequate student enrollments. Land-grant colleges are encouraged to be more responsive to the needs of the global agricultural workforce to prepare graduates with the knowledge base, experiences, and leadership insight to address global agricultural issues. Autonomous and innovative colleges should form the core of the future agricultural land-grant system, a system that can provide leadership for the global food and fiber system (American Farm Bureau, 2015).

Likewise, regarding higher education in agriculture, "As students flock to study subjects they think offer a clear path to a job upon graduation, enrollment is booming" (Krogstad, 2012, para. 1). The overall attractiveness of obtaining a degree in agriculture is driven by the fact that the skills developed in these respective programs address issues such as global hunger, food safety, climate change, the environment, and obesity (Roberts, Harder, & Brashears, 2016). The human population will require an additional 50% increase for food and fiber over the next decades and in some regions, even more than 50% by 2050. The need for a highly trained and well-rounded agricultural professionals will become increasingly important to lead the industry and help address the current and future issues related to agriculture (Hazel & Wood, 2007; Godfray, Beddington, Crute, Haddad, Lawrence, Muir, & Toulmin, 2010).

Maurice Strong once stated, "The combination of population growth and the growth in consumption is a danger that we are not prepared for and something we will need global cooperation on" (Strong, 2010). According to AGree (2012), given the continuing population growth, the overall need for food, the ever-increasing challenges of conserving soil, water, and habitat conservation, combined with improving nutrition and public health, make having a sufficiently trained scientific and professional workforce to address the challenges of the 21st

Century a significant priority for all levels and aspect of agricultural education. With regard to the complexity and array of subject matter encompassed in agriculture, agriculture has drastically changed from just a focus on production agriculture, but now includes the areas of food and nutrition; natural resources; biotechnology, and the fast-emerging field of "big ag data" (Mercier, 2015, p. 1).

As the global job market continues to become more competitive, particularly within the agricultural arena, individuals with some experience and orientation to agriculture will be extremely competitive. According to Goecker, Smith, Fernandez, Ali, and Theller (2015), graduates that have work experience and possess mobility will find a high number of employment opportunities in the agricultural industry, mainly if they are flexible to work internationally. Moreover, individuals who have work experience that is highly related to their careers of interest or that have completed internships in those fields will find favorable conditions for employment in the food, agriculture, renewable natural resources, and environment. Given the multiple skillsets possessed by individuals with expertise and degrees in these areas, it also affords them opportunities to cross over into other fields, which complicates the issue of recruiting and retaining high-quality professionals in the food, agriculture, renewable natural resources, and the environment, even more. Individuals with professional expertise in these fields will become critically important to address issues concerning creating a sustainable environment, food security, and environmental quality.

One major area that has impacted the agricultural industry and is predicted to even more in the future is AgTech or technology in agriculture. During the year 2015, in the industry, investment in technology reached nearly $5 billion (Newman, 2018). Agriculture will become elevated to unforeseen levels of growth and influence with a growing global population and reduced land availability; the utilization of technology as a scalable and sustainable resource, along with industry professionals' willingness to embrace the ever-evolving digital transformation will increase the interest of studies in agriculture. With technologies such as RFID Sensors and Tracking, Machine Learning and Analytics, Farming and Robotics, Drones and Crop Monitoring, IoT and Sensors in Equipment, and overall Big Data the digital transformation of agriculture will have profound positive effects on society and the environment (Newman, 2018).

With the comprehensive nature of the agricultural industry, it is becoming more evident that graduates of land-grant colleges have exposure and experience to international perspectives, which often include culture, political, and economic aspects (National Research Council, 2009). According to the National Research Council (2009), today's agricultural employers recognize, more than ever before, that their personnel will live and work with individuals from all regions of the world and that the interdependence of global agribusinesses, demands that agricultural higher-education expand to meet the need of producing innovative agricultural professionals to lead this massive global enterprise. Jayakumar (2008) emphasized that land-grant universities today must develop and cultivate graduates that will be prepared to result in the worldwide marketplace.

Given the previous factors, employment opportunities for graduates with training and experience in the agricultural sciences through 2020 are robust. Annually, there exists a need for 57,900 graduates with training in the agricultural sciences. Still, only 35,400 graduates are

produced by colleges of agriculture, leaving a 39% gap in agrarian employment, that will have to be filled by individuals with training in related areas, but not agriculture (Goecker, Smith, Fernandez, Ali, & Theller, 2015). What is more, according to projections 46% of the employment opportunities in agriculture will be in Management and Business, 27% in Science and Engineering, 15% in Food and Biomaterials Production, and 12% in Education, Communication, and Governmental Services (Goecker, Smith, Fernandez, Ali, & Theller, 2015). Land-grant college graduates with training and expertise in agriculture, food, renewable natural resources, and the environment will be critically important to the United States' ability to solve issues regarding sustainable energy, environmental quality, and food security.

Agricultural Industry Economic Importance

According to the United States Department of Agriculture Economic Research Services (2019), agriculture, food, and related industries contributed $1.053 trillion to the U.S. gross domestic product (GDP) in 2017, encompassing over one percent of GDP. The actual overall contribution of the agricultural industry to the GDP is more significant, however, primarily because of agricultural related areas such as forestry, fishing, and related functions such as beverage, food, and tobacco products, textiles, apparel, leather products, food, and beverage stores, eating and drinking facilities, all of which rely on agricultural inputs, add value to the overall economy. During 2017, 21.6 million full and part-time jobs were directly related to the food and agriscience sectors, 11% of total U.S. employment. Concerning direct on-farm work that comprised 2.6 million of these jobs. Employment opportunities in agriculture and food-related industries in total accounted for another 19 million jobs. American household expenditures on food amount to 13 percent of household budgets on average. The agricultural sector must maintain a cadre of highly trained professionals equipped with the knowledge, skills, and dispositions to lead the industry and position the agricultural sector for future growth. With the emphasis placed upon the importance of experience related to agriculture for emerging agricultural professionals in the literature, and the perceptions of trends that are currently impacting agriculture and future ones as well, it is vital that employers within the agricultural industry are queried to get their opinions, as these areas affect the employability preparation of land-grant college graduates, as the future professionals that will carry the industry and its collective sectors forward.

Experiential Learning

Given the cited importance of experience for immerging agricultural professionals, pedagogical techniques such as experiential learning have gained increased importance. In recent years, students and employers have embraced an educational approach that allows their students to attain the practical skills that are necessary for the workplace. Students take on responsibilities featuring significant experiences with real outcomes that generate concrete learning achievements through participation and reflection. Experiential learning can have an extremely broad or narrow definition depending on the type and length of the experience. Experiential learning is the knowledge, skills, and abilities that can be defined in terms of a learning model, which begins with the background followed by reflection, discussion, analysis, and evaluation of the experience. The assumption is that students seldom learns from experience unless they assess the expertise, assign their meaning in terms of their own goals, aims, ambitions, and expectations (McLeod, 2017).

The educational goal of institutions of higher learning is to prepare students for professional life. With the use of experiential learning programs, a university offers the ultimate test of a student's attainment of knowledge within the academic program—the student must demonstrate the ability to transfer, apply, and use the knowledge she or he has gained. The students are no longer merely an educated person. They are trained individuals that have the required skills to function, perform, and make decisions in the workplace. The ultimate benefit comes with the acquisition of the specific abilities necessary to complete, combined with the improvement of skills in planning, goal setting, decision-making, interpersonal communication, and problem-solving. These experiences vastly improve the students' chances of gaining quality employment upon graduation (McLeod, 2017).

Futuring

In addition to the focus upon experience, one of the primary objectives of this study concerns the prediction of future growth trends that will impact agriculture and land-grant college graduates, an aim that centers around the concept known as Futuring. Futuring is a process that involves a systematic process of predicting the future, which does not just include numerical prediction and assessment (Fetsch 1990). With this process, the overall goal is to develop expectations about the future and identify the evolving opportunities and threats it presents. This process is done so appropriate strategies can be put in place to achieve the desired outcomes (Cornish 2004). Futuring is not intended to prepare an unchanged set of estimates; rather, it represents the making of decisions that will ensure the successful course of the enterprise and are characterized by flexibility (Millett 2006).

Theoretical Framework

Concerning this study, the Human Capital Theory (Goode, 1959) served as the theoretical framework. Human capital is a concept with many perspectives and definitions. Goode (1959) defined human capital as the knowledge, skills, attitudes, aptitudes, experiences, and required traits contributing to the overall production. Moreover, Van Loo and Rocco (2004) indicated that human capital theory should be considered an investment in human resources for employees to possess the necessary "skills and knowledge" (p. 99), and according to Swanson (2001), human capital is defined as an investment in people. When comparing both Van Loo and Rocco and Swanson, the scholars indicated that this investment is often useful to enhance knowledge and skills of employees for increasing worker output. The economist Gary Becker provided a further refinement to the human capital theory in 1962, in his book entitled *Human Capital* (1993), stating that "education and training are the most important investments in human capital" (p. 17).

Bowles, Gintis, and Osborne (2001) asserted that skills represent individual capacities contributing to production as an argument for the production function. Also, Blundell, Dearden, Meghir, and Sianesi (1999) found that two main components of human capital are highly correlated: new ability (whether acquired through experiences or innate) and skills acquired through formal education or training on the job and cooperative and planned experiences. It is important to note that human capital dramatically differs from other assets, primarily because it yields market returns only in proportion to the worker's supply of labor and experience (Hall & Johnson, 1980). According to Becker (1993), the human capital theory is the most influential economic theory of Western education, particularly with its influence on the workplace. One of

the critical aspects of this theory is the concept of experience as a crucial component for professionals, which is a significant focus of this separate study.

Concerning this study, the Human Capital Theory has a significant emphasis on the importance of experience concerning the composite human capital possessed by individuals. Additionally, for agricultural professionals to be ready to take on future growth trends, they must possess requisite knowledge, skills, and dispositions, which collectively comprise an individual human capital. The Human Capital Theory serves as the foundation of productivity within any professional enterprise.

Purpose and Objectives

The purpose of this study was to analyze the perceived impact of life experiences upon the employability preparation of land-grant college graduates, in addition to determining which growth areas will impact the agricultural industry in the future. The following research objectives were developed:

1. To determine the perceived value of various life experiences upon the employability preparation of land-grant colleges as viewed by employers.

2. To discover from the perspective of employers, what were the future growth areas that will impact agriculture and land-grand college graduates in the next five to ten years.

Methodology

The design for this specific study was a descriptive cross-sectional study (Creswell, 2011). The population for this study consisted of 60 employers representing 54 different governmental and corporate organizations from the agricultural section of an employer database at a major land-grant university. From this database the contact emails were obtained for the respective employer representatives. The employers consisted of state and federal agricultural agencies, plant and animal agribusinesses enterprises, food companies, and agricultural machinery companies as well.

Regarding the survey participants, no direct demographic data was collected. A survey was adapted and modified from a study formerly conducted at the University of Arkansas. The validity of the instrument was established using content and face validity. Brown (1983) defined content validity as "the degree to which items on a test representatively sample the underlying content domain" (p. 487). Brown recommended using expert judges as one means of establishing content validity. The research team established face validity with the aid of a panel of experts.

The web-based survey instrument for this study consisted of four sections. Section one was designed to gauge the opinion of employers regarding the level of preparation of land-grant college graduates concerning their interpersonal skills, communication skills, computer skills, character skills, and technical competency. Section two of the study was designed to gauge the opinion of employers regarding the level of importance of basic work-place knowledge, skills, and abilities for entry-level jobs. Section three was intended to rate the importance of various life

experiences with land-grant college graduate's potential career success. Section four was designed to measure the future growth areas that employers feel will impact or change agriculture for the next five to 10 years. This article reports data resulting from sections three and four of the web-based survey.

For this study, even though the instrument had pre-established levels of reliability, the researchers of this study conducted a post-hoc reliability test after the data collection. Concerning the study, Cronbach's alpha was used as the reliability measure. Nunnally (1967) suggested that .50 to .60 would be high enough in the early stages of research. For survey research, Chronbach's alpha measures of .80 or higher are adequate reliability levels. Chronbach's alpha reliability coefficients for the survey were as follow: *Section One* = .92, *Section Two* = .89, *Section Three* = .93 and *Section Four* = .91. The reliability levels attained for this instrument from previous work were *Section One* = .90, *Section Two* = .91, *Section Three* = .90 and *Section Four* = .93 (Graham, 2001). For the survey section concerning life experiences the following Likert-scale conventions were utilized: *Unimportant* = 1.00 - 1.49; *Somewhat Important* = 1.50 – 2.49; *Important* = 2.50 – 3.49; *Very Important* 3.50 – 4.49; and *Extremely Important* = 4.50 – 5.00. In relation to the survey section concerning growth areas, the following Likert-scale conventions were used: *No Influence* = 1.00 – 1.49; *Some Influence* = 1.50 – 2.49; *Influential* = 2.50 – 3.49; *Very Influential* = 3.50 – 4.49; and *Extremely Influential* = 4.50 – 5.00.

This study utilized a three-round, web-based questionnaire approach. The research team surveyed all 60 employers for the study. Elements of Dillman's Tailored Design Method (2009) were utilized to achieve an optimal return rate. An initial electronic letter was sent informing the potential respondents that they would receive an invitation by email with a link to the survey instrument in approximately two weeks. By the end of week one, the researchers had received 25 completed surveys. A reminder message was sent after week one had passed. By the end of week two, 15 more responses were received. A final note was sent, resulting in 10 more responses. Overall, a final return rate of 83% (n = 50) was accomplished. Non-response error was a relevant concern; to control for non-response error, Miller and Smith (1983) recommend comparing early and late respondents. Procedures for handling non-respondents were followed as outlined, as in Lindner, Murphy, and Briers (2001). An independent samples *t*-test indicated that no significant differences ($p < .05$) existed between the early and late respondents. Regarding data analysis, when considering the descriptive nature of this study and the stated objectives, it was determined that descriptive statistics using measures of central tendency in the form of means would be most appropriate.

Findings

Objective One

Employers were asked to rate a series of life experiences that they perceived as important for success on the job for land-grant university graduates. Table 1 illustrates the importance of these several life experiences. When interpreting the results of Table 1 the following conventions should be utilized**:** *Unimportant* = 1.00 - 1.49; *Somewhat Important* = 1.50 – 2.49; *Important* = 2.50 – 3.49; *Very Important* 3.50 – 4.49; and *Extremely Important* = 4.50 – 5.00 (Graham, 2001). Employers indicated that overall work experience, agricultural internships, agricultural employment, work experiences on a farm, and international experience were essential in

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preparation for the workforce. Employers also perceived that having been an active student club member, an officer of a student club, being reared on a farm, and being bilingual were important to employability preparation.

Table 1

Life Experiences Identified as Critical by Employers of Land-Grant University Graduates

Life Experiences	Mean	SD	Mean Rank
1. General work experience	4.50	1.09	1
2. Agricultural internships	4.48	1.33	2
3. Agricultural employment	4.45	0.97	3
4. Work experiences on a farm	4.23	1.21	4
5. Active student club member	4.06	1.44	5
6. International experience	4.03	1.39	6
7. Reared on a farm	3.06	1.11	7
8. Bilingual	3.02	1.09	8
9. Officer of a student club	3.01	0.74	9

Scale: 1 = Unimportant, 2 = Somewhat Important, 3 = Important, 4 = Very Important and 5 = Extremely Important

Objective Two

Employers were asked to rate how future growth areas will influence the agricultural industry in the next five to 10 years. When interpreting the results of Table 1, the following conventions should be utilized: *No Influence* = 1.00 – 1.49; *Some Influence* = 1.50 – 2.49; *Influential* = 2.50 – 3.49; *Very Influential* = 3.50 – 4.49; and *Extremely Influential* = 4.50 – 5.00 (Graham, 2001). In Table 2, employers felt that digital agriculture (precision agriculture/big data), environment, research and development, and agricultural technology, engineering, and mechanization would be extremely influential upon the agricultural industry. Based on the employers' ratings, the following growth areas were perceived as being very influential to the agricultural workforce: International agriculture, marketing; consumer relations; organic foods, management, quality control, and sales. In comparison, education and training and communication were viewed at the level of influential, regarding their potential impact upon the agricultural industry.

Table 2

Growth Areas Identified as Critical by Employers of Lan-Grant University Graduates

Growth Areas	Mean	SD	Mean Rank
1. Digital Agriculture (Precision Agriculture/Big Data)	4.50	0.88	1
2. Research and Development	4.50	0.78	2
3. Environment	4.50	0.62	3
4. Agricultural Technology, Engineering, and Mechanization	4.50	0.51	4
5. International Agriculture	4.42	0.65	5
6. Marketing	4.33	0.87	6
7. Consumer Relations	4.25	0.94	7
8. Organic Foods	4.17	0.82	8
9. Management	3.92	0.88	9
10. Quality Control	3.92	0.88	10
11. Sales	3.83	1.43	11
12. Education and Training	3.33	1.27	12
13. Communication	3.33	1.20	13

Scale: 1 = No Influence, 2 = Some Influence, 3 = Influential, 4 = Very Influential, 5 = Extremely Influential

Conclusions, Recommendations, and Implications

For this study, the impact of select life experiences upon the employability preparation of land-grant colleges was analyzed. It should be noted that items such as general work experience, agricultural internships, agricultural employment, farm work experience, active student-leadership, and membership, and being reared on a farm were necessary for employability preparation. These results are in alignment with Graham (2001), who found the experiences above to be essential for agricultural employment success. Further, employers of land-grant college graduates identified that possessing bilingual skills and having international experiences were critical. These findings are supported by the National Research Council (2009), Jayakumar (2008), and Goecker et al. (2015), who also emphasized the importance of international exposure and experiences for land-grant college graduates as they prepare for the professional agricultural workforce.

When examining the growth areas that will impact the agricultural industry within the next five to 10 years, factors included the digital agriculture (precision agriculture/big data), environment; research and development; agricultural technology; engineering and mechanization; international agriculture; marketing; management; organic foods, and sales were

very influential to agriculture now and in the future. In comparison, the areas of education and training and communication were only identified as influential. This finding is in direct alignment with Goecker et al. (2015), Newman (2018), and Mercier (2015), who indicated employment opportunities across these and related areas in the agricultural industry would impact the food, agriculture, renewable natural resources, and environmental sectors.

A number of recommendations are offered in preparing land-grant college students for success in the agricultural workforce. Curriculum and academic programs could be revised to include a variety of experiential learning opportunities that are embedded that will allow students first-hand experiences in different agrarian settings. Experiential learning opportunities are especially important for students in agriculture, with no direct agricultural background, before they enter the university. Given the emergence of agtech, including big data digital agriculture (precision agriculture or big data), coursework, curriculum, and experiential learning opportunities should be used to better-prepare graduates to provide leadership and innovation in this fast-growing space. With the ever-increasing and interconnected nature of the global agricultural industry, the importance of an international component in the agricultural curricula could be amplified to provide students experiences to participate in study abroad opportunities. To better prepare graduates for overall career success, land-grant college administrators and faculty could consider the growth areas cited in this study as curricula are revised to stay current with the ever-evolving agricultural industry trends.

A variety of life experiences are necessary concerning career success for land-grant college graduates based on the findings of this study. Many trends will continue to influence the agricultural industry over the next five to 10 years. With factors such as technological advancement in agriculture and biomaterials, global market shifts in population, income, food, and energy, changing consumer preferences for food and biomaterials, and lastly public policy choices, it will become highly imperative and incumbent that professionals with some related experience or orientation to the field are placed in positions of leadership, and have the ability to vision forward while also being agile change agents, thus fostering a dynamic future for the global agricultural industry. It is suggested that land grant-colleges are mindful of these trends given the previously cited factors. A final recommendation includes land-grant colleges to create and revise existing academic programs that will address these trends to prepare society and industry-ready agricultural professionals and graduates, who will serve as leaders and innovators throughout their professional careers.

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Asking more beautiful questions
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It is truly an honor and a privilege to be here and to give this talk. It is one of those things that when you start your career, you hope you have an opportunity to do it. Then when the call comes, you are like; I do not have anything important to say. More than likely, at the end of this you will agree that I do not have anything important to say. I want to get started here by telling you a story. About a month ago, almost a month to the day, I was sitting down at the Atlanta airport. I had just come from the NCAC-24 meeting in Washington, DC. If you don't know about NCAC-24, it is the group of department heads, chairs, and program leaders from around the country. It's a great group. We just finished this meeting and I was getting ready to make my connecting flight from Atlanta to Gainesville. Going to Gainesville we don't get the really big planes, but we get planes that probably have about 80 to 90 people in them. I found my gate and it had two rows of six chairs. So, there is 12 chairs for approximately 90 people. Using my skills of mathematics, I knew that it was going to be a little tight at that gate. I happened to look over and I saw there was a prime seat right next to the wall. It was also right next to the outlet and my phone was about to die. I made my way to said prime location and plugged in my phone. I thought what a great day! I came from a great meeting and I got this great seat. I got my phone plugged in. Now I could listen to my podcasts the rest of the way home. Then my phone rang. I looked down and it was my wife. I'm sure I answered it in some smart-alecky way because that's just kind of what I do. I heard her voice, something was wrong. She goes, "Tony just called." Tony's our 12-year-old son who is a seventh grader. "There's an active shooter at the school and he's with his friends and they're running." He was at the school and they were having a celebration for the end of the semester. All the seventh graders were in the gymnasium. There was report of gunfire out in front of the school. The teachers activated the system they had for an active shooter situation. They locked down all the kids in the classrooms but, because the seventh graders were in the gym, they had no place to take cover. So the teacher ran in and said "run". Tony and his buddies scaled the security fence and ran into the nearest neighborhood. My wife said she would call me back when she had more news. So, I'm sitting there wondering what's happening to my 12-year-old. Looking back on my phone, it was about three minutes, but it seemed like about an hour. She called me back. "I talked to Tony, he and his buddies are at one of his friend's house in the neighborhood and everybody's safe." Now, it turns out that the active shooter was a false alarm. They don't know whether or not it was a pneumatic air gun in a construction site nearby in which the hose blew off and caused the loud noise, or there might have actually been somebody target shooting or something just on the other side of the school. They're still not sure what happened. After all this settled down, I was on the plane and started thinking about why does it take events like that, where you're worried if you're going to see your 12-year-old son again, to make you think about where you invest your time.

As some of you know, I'm also filling in as the interim department chair for the Department of Animal Sciences at the University of Florida. It's been an interesting time working in another department and to see what they do and start asking questions. Questions like, why do you operate like this? It got me thinking about our own department- Agricultural Education and Communication. Why do we do things the way we do? Is it just because it's the way we always did it? I've noticed over the last two years that I've had a number of recently tenured associate professors either reach out to me at conferences, or call me up on the phone, all trying to figure out what's next for them in their careers. It seems that now that they've "rung the bell" and achieved the milestone of tenure, they aren't sure what or how to set the next goal. All of this got me thinking - How do all of us - senior faculty, departmental administrators and early career faculty - how do we make sure that the tenure and promotion process is not our focus? It is important. I get that. But it's not why we do what we do. I understand it's a whole lot easier for a guy standing on this side of the tenure and promotion line to say that. But I just ask you to hear me out today.

My question for us is how do we change the focus from just counting publications, grant dollars, students taught, and trying to "check all the right boxes" to how do we focus on thinking about and asking better questions? How do we ask more beautiful questions that excite us and serve our stakeholders? In his book, *A More Beautiful Question*, Warren Burger defines a beautiful question as "an ambitious, yet actionable question that can begin to shift the way we perceive or think about something and that might serve as a catalyst to bring about change." In this book, Burger talks about Van Phillips. Van's question was, if they can put a man on the moon, why can't they make a decent foot? Van was a 21-year-old, athletic, handsome, and bright young man. He was out waterskiing one day on a lake with some friends. Van was on the water skiing when they were coming around a bend in the lake. No one saw the other boat approaching from the other way. The boat struck Van in the water. When he woke up in the hospital, he saw that his left leg was severed from just above the knee. At the hospital, Phillips was fitted with what he called "a pink foot attached to an aluminum tube." It was basically a block of wood with foam rubber added. He was told "get used to your new best friend." For him it was clumsy, and it was awkward. He was told, "Van, you're just going to have to learn to accept this." When he heard that, he recalls, "I bit my tongue. I knew he was right. In a way, I did have to accept the fact that I was an amputee. But I would not accept the fact that I had to wear this foot." After years and hundreds if not thousands of failures, Van went on to invent the Flex Foot, a revolutionary design that is now the industry leader for prosthetics. So the question is, how did he do this? He wasn't an engineer. He wasn't a medical student. How did he invent the Flex Foot? I would argue he did it by taking ownership of the question. The question was, "why can't they make a decent foot," but he changed the pronoun. He took ownership and he changed it to "why can't I make a better foot?" He questioned established norms. He challenged what was known with heart and passion. He tried new ideas. He failed. He learned from those failures and tried again. Then failed some more. As he learned, he asked a more beautiful question. A question that inspired him and others around him.

My question for us today is what holds us back from this? What are the obstacles that we must overcome? I would argue our number one obstacle is fear - mostly fear of failure. Fear is the enemy of curiosity. Too often in our setting, we have implicitly or explicitly built a system that tells people to hold back ideas until they have been polished and are perfect. That tendency toward overthinking and excessively preparing, rather than quickly trying out ideas to get feedback, to see what works and what doesn't work, is a behavior that becomes ingrained over time. We're all being

challenged. We need to adapt to new and unfamiliar tools as well as ever changing technology without clear instructions. All of which require people to not only be better questioners, but better experimenters. Winston Churchill once said, "the trick is to go from one failure to another, with no loss of enthusiasm."

But how do we learn the trick of failing enthusiastically? When things fail, we can't get caught up in what went wrong. We have to look at each failure and ask the question "In this failure, what went right?" Identify those things and build upon those things. Build a culture in our departments, in our universities, and in our profession of where it's acceptable to try things and sometimes fail spectacularly. The key is to be able to look back at a series of attempts and ask, am I failing differently each time? Am I using these small failures productively as a means of avoiding devastating big failures later? Ask big questions - the more beautiful questions.

The questions we should be asking are too big for any one of us to answer. If you are pursuing a truly ambitious question, you probably can't answer it alone. Collaborative inquiry begins with asking others, "Do you find this question as interesting as I do?" "Want to join me and try and answer it?" We have to actively build our team or our squad. You have to find those folks which you trust, those that you can be honest with and can be honest with you. Those who you can be vulnerable with. People you can fail with, so that later you can succeed with. When you appeal to others with a shared question, you are involving collaborators as equals in a project. What may start out seeming to be your question quickly becomes their's too. Questions, even beautiful questions belong to everyone. Holding back ideas or hoarding your beautiful questions is usually pointless. It's hard to make headway on something hidden in a desk drawer or a computer file, or just a thought in your mind.

Here is a question that I am asking every single one of the faculty that I meet with this year. I'm going to ask them, "looking back on your career 20, 30, however many years from now, what do you want to say you've accomplished?" Then I'm going to follow up with "why is that accomplishment important to you?" Then I'm going to ask, "what do we need to do now to make sure that you can see that?" Now, the goal will change over time but the key idea is where are you going? But more importantly, why is it important to you and what actions must you take now to get there? Who do you need to get on your team to make that a reality?

We're often told to lean into our questions. There is a time for that, I'm not going to argue against it. But I would argue that we need to take more time to step back - to look at the bigger picture. If we are always in the middle of it. If we're always slugging it out, we risk losing the perspective we need to be able to see these larger and more beautiful questions. This is a challenge that we all face in our roles. I see it in the new graduate students and new faculty all the time as they transition from their previous roles of running a school-based agricultural education program or running their own business or working full-time. We need to get them to pull back and to see things from a larger perspective. To see agricultural education and communication from a statewide perspective or a national perspective or international perspective. It's hard. We're problem solvers. We like that feeling of solving a problem. If that is all we are doing it usually means we are only solving small problems. But how do we pull ourselves back and ask those tougher questions? So, I ask, what is your beautiful question? Who is your squad that will join you to work on this? How are you actively working to build that team?

We in agricultural education, communication, leadership and extension education have the skills that are needed to address the major issues of our time. I'm going to say that again, because I'm not sure we always believe it. We have the skills that are needed to address the major issues of our time. We are central to the missions of our universities and to the people we serve. However, we can only do this if we challenge ourselves to ask the more beautiful question, the challenging question. When I'm asked to describe the work of our department, I say "AEC equips people and teams to make more informed decisions about Agriculture and Natural Resources." We are not just working to give people the facts, but to equip them with the skills they need to assess the information they receive, to challenge their own assumptions, and to engage in a civil and productive dialogue. All with the with the goal of helping them make better, more informed decisions in agriculture and natural resources. We accomplish this though researching important and relevant questions and delivering top quality education and Extension programming. I got to this answer from hearing our senior administration complain about people's distrust of science, our industry people saying that people just don't understand agriculture. It's my argument that our failure and our industry's failure, is that we attack this issue from a knowledge deficit point of view. We think that if everyone just knew more about agriculture, all the problems would go away. However, today's public is more educated and more food aware than any generation for quite some time. We are not working just to give people the facts, but to equip them with the skills they need to assess the information they receive, to challenge their own assumptions, to engage in a civil and productive dialogue. All with the goal of helping them make better, more informed decisions.

I encourage you all to ask the hard questions. Squishy and unclear questions are not beautiful questions. They don't challenge. They don't lead us to make a real difference in the lives of those we serve. Your questions should make you a bit uncomfortable. When thinking about it, you should think "Wow, that's big! If we can do this, what a difference we're going to make." It is big. You will make a difference. And you can't do it alone. You need your team. You will fail at times. But the question is so important that you must learn and try again.

There's a memorable passage concerning the prophet Jeremiah's life when he was worn down by opposition and absorbed in the challenge before him. He was about to capitulate. He was ready to abandon his unique calling and settle for just being another statistic. At that critical moment, he heard the reprimand. "So Jeremiah, if you're worn out in this foot race with men, what makes you think you can race against horses? And if you can't keep your wits during times of calm, what's going to happen when troubles break loose? Like the Jordan flood?" (Jeremiah 12:5). Asking the more beautiful question is sometimes hard to hear. It challenges us. Eugene Peterson writes in his commentary on this passage, "are you going to quit the first wave of opposition? Are you going to live cautiously or courageously? You are called to live at your best, to pursue righteousness, to sustain a drive toward excellence. It is easier, I know to be neurotic. It is easier to be parasitic. It is easier to relax in the embracing the arms of the average. It is easier, but not better. It is easier, but not more significant. It is easier, but not more fulfilling. What is it you really want? Do you want to shuffle along with this crowd? Or, do you want to run with the horses?" (Peterson, 2009, pg. 21-22). It's my hope that we choose to run with the horses. To ask the more beautiful questions. Our students need us to do that. The stakeholders we serve need us to do that. And the universities where we serve need us to do that. We can if we only choose to.

References

Peterson, E. H., (2009). *Run with the horses: The quest for life at its best.* InterVarsity Press.