The Critical Need for Experiential Learning Programs in Animal Agriculture

Jessica Lynn Tussing

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Rick D. Rudd, Committee Chair

Donna M. Westfall-Rudd

Rebecca K. Splan

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Abstract

Though experiential learning is a popular topic in higher education, a great deal of research in the field neglects to make ties between program outcomes and educational theory, creating a gap in knowledge regarding *how* participant students truly *experience* educational programs. Consequently, this study proposes an updated perspective of experiential education that considers the experiential *and* social aspects of these learning environments. While it is important to determine programmatic impacts, it is equally important to assess how learning has occurred, so programs can be modified accordingly.

The Equine Studies Program at the Middleburg Agricultural Research and Extension Center began in 2010, with seven cohorts having completed the program since its inception. At this time, however, no study has been conducted to gain a thorough understanding of the program's purpose, nor assess if programmatic impacts align with its objectives.

This study utilized qualitative interview methods to determine the program's objectives and impacts on participants. The findings provide insight on how experiential learning programs can be enhanced to better prepare students for the challenges of modern industry. Recommendations are made for continued research in this area to determine how the implementation of experiential learning programs may impact overall undergraduate curricula. Additional research should also be conducted to compare the impacts of varying types of experiential programs.

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Introduction

The Call for Curricular Reform

Academic institutions must adapt and face challenges presented by a changing society and the agricultural industry. In 2009, the National Research Council called for reform to undergraduate agricultural curricula. The council discussed numerous arguments supporting this reform, including changing student demographics and needs of the agricultural industry.

Over the past century the demographics of youth entering agricultural fields have changed significantly. Today, less than 5% of the United States' population lives on farms, and only 20% live in rural areas (Dimitri, Effland, & Conkland, 2005; NRC, 2009). Unfortunately, a large proportion of the U.S. population has become so distanced from agriculture that they are unfamiliar with how foods are grown and produced (NRC, 2009). Youth entering agricultural fields today are faced with a different set of challenges than those faced by youth a century ago (Splan, Porr, & Broyles, 2009). They must not only overcome agricultural unfamiliarity and outdated positions (NRC, 2009) but also gain the knowledge and experience necessary to solve complex challenges, from feeding the world to developing efficient and effective fuel sources. Undergraduate agricultural curriculum must be updated in order to adequately prepare these students. Specifically, the NRC (2009) calls for educational reform resulting in an increase of transferrable skills and additional use of problem-based learning and critical thinking strategies (Estepp & Roberts, 2011).

The agricultural industry has also seen substantial changes in the past century, presenting additional challenges that educational reform must recognize. As the baby boomer generation approaches retirement, the agricultural industry is left seeking qualified individuals to continue supporting its mission (NRC, 2009). Additionally, the agricultural industry's foci have shifted away from traditional interests to areas such as energy production and natural resource management (NRC, 2009, pg. 32). There has been a substantial increase in international operations, consequently introducing more complex logistics, heightened regulations, and a need for bridging social and cultural differences (NRC, 2009). Today's agricultural industry needs a talented new generation of employees possessing a strong knowledge base and a myriad of social and technical skills (Splan et al., 2009). Without these abilities, students may find themselves entering a complex workforce without the tools necessary to be successful.

The National Research Council (2009) suggests that undergraduate experiences in agriculture are in need of a change, stating that "The changes include new curricula and content, but it will also be vital to improve how teaching and learning occur" (pg. 35). The NRC (2009) highlights a number of steps that can be taken to help achieve this goal: skills development, teamwork, working across disciplines, communication, critical thinking, and problem-based learning, just to name a few. Each of which contribute to producing more prepared, knowledgeable, and well-rounded undergraduate students.

Many colleges and universities have responded to this call for reform by turning to experiential learning programs. By helping students connect crucial classroom knowledge with invaluable hands-on experiences in real-world settings, experiential learning opportunities can help answer the demands of the modern agricultural industry.

Problem Statement

The Equine Studies Program at the Middleburg Agricultural Research and Extension Center (MARE Center) was implemented in 2010 to provide students with an authentic, hands-on experience in equine science. Program participants are immersed in the day-to-day aspects of working in the equine industry while also participating in research projects and simultaneously completing a full load of equine specific coursework. This novel undergraduate program is meant to prepare students to become leaders in the equine industry, academia, or the veterinary sciences.

The program aims to produce students with heightened critical thinking abilities, extensive hands-on experience, and strengthened problem-solving capabilities –partially answering the National Research Council's (2009) call for reform. The question becomes, is the program producing knowledgeable students with the experience and problem-solving capabilities necessary for future success? Are program participants implementing what they have learned in their personal and professional lives?

Since its inception, the Equine Studies Program at the Middleburg Agricultural Research and Extension Center has worked to provide participants with a more complete background in the equine sciences while immersing them in industry practices and providing rigorous coursework. Though participants are surveyed regarding their experiences at the conclusion of each semester, the program has not yet undergone an evaluation to determine program objectives and programmatic impacts on participating students.

Purpose of the Study

The Equine Studies Program at the Middleburg Agricultural Research and Extension Center began in 2010, with seven cohorts having completed the program since its inception. Following each semester-long experience program participants are given a survey, which is used to assess participant perceptions of program quality and efficacy. At this time, however, no study has been conducted to gain a thorough understanding of the program's purpose, nor assess if programmatic impacts align with its objectives. Consequently, this study is dually purposed with assessing the Equine Studies Program's structure and objectives, as well as determining the extent to which program objectives were met by participant experiences.

The objectives of this study are:

1. Determine the program's objectives through the eyes of program administrators.
2. Assess the program's immediate impacts on participants.
3. Assess the program's residual impact on participants.
4. Assess the program's impacts on participating graduate students.
5. Compare and describe common program impacts amongst these unique groups with the program's objectives.

Limitations of the Study

This evaluation of the Equine Studies Program at the Middleburg Agricultural Research and Extension Center reflects data collected from individual interviews using qualitative research methods. All implications and generalizations resulting from this study are limited to the degree of similarity that programs and their participants have to those in the study.

Basic Assumptions

The following basic assumptions were relative to this study:

1. The participants provided honest and accurate answers to interview questions.
2. The participants were reliable, credible, and knowledgeable about the Equine Studies Program at the Middleburg Agricultural Research and Extension Center.
3. The interview questionnaire is a justifiable method in gathering information for the purposes of program evaluation.

in animal science, as well as how those experiences align with program objectives.

Significance

This research will provide a unique opportunity to investigate the nature of an experiential undergraduate learning program. A significant amount of time, funding, and effort has been put into this program, and program graduates are expected to utilize the knowledge and experience they have gained in order to more successfully pursue post-graduate endeavors. At this time, however, no research has been done to determine the program's objectives, nor assess if programmatic impacts align with said objectives. Furthermore, this study has great potential to provide insight on how agricultural colleges and universities can utilize educational principles and theories to develop immersive experiential programs capable of equipping students with the knowledge, hands-on skills and experience necessary to be successful in today's agricultural industries.

Manuscript #1

The Critical Need for Experiential Learning Programs in Animal Agriculture: A Literature Review

Abstract

Many colleges and universities have responded to the National Research Council's (1984) call for educational reform by turning to experiential learning environments. Due to its heightened importance from this perspective, this study reviewed literature pertaining to experiential learning programs in animal agriculture. While Kolb's (1984) model of Experiential Learning is often acknowledged in the literature, its importance in program development and evaluation is often underplayed, if recognized at all. Furthermore, Kolb's (1984) model does not consider the significance of social interactions in regards to learning. Consequently, a perspective of experiential education is proposed to better support the experiential and social aspects of these valuable programs. Since a great deal of research on experiential learning programs neglects to make ties between program outcomes and educational theory, there is a gap in knowledge regarding *how* participating students truly *experience* a program. Though it is important to determine what students gain from participating in a program, it is equally important to know how they have learned, so that programs can be modified and strengthened accordingly. As time passes, the demographics of students in agriculture will continue changing, as will the needs of the agricultural industry. To ensure that programs continue preparing students for their futures, experiential education programs must be periodically evaluated. By maintaining knowledge of the educational, experiential, and social facets of a program, as well as the outcomes produced by those facets, educators can more successfully prepare undergraduates in agriculture for the challenging futures that await them.

The Call for Curricular Reform

Academic institutions must adapt and face challenges presented by a changing society and the agricultural industry. In 2009, the National Research Council called for reform to undergraduate agricultural curricula. The council discussed numerous arguments supporting this reform, including changing student demographics and needs of the agricultural industry.

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Methods

Experiential learning programs are not new in higher education, and there is a great deal of research that has been done in this general area. Green, Johnson, & Adams (2006) define

narrative literature reviews, stating that "They are helpful in presenting a broad perspective on a topic and often describe the history or development of a problem or its management" (Day, 1998; Slavin, 1995). Consequently, a narrative literature review of experiential learning programs to summarize and draw conclusions from pre-existing theories and research studies was conducted. This review of literature primarily utilized the Virginia Tech Library, Google Scholar, ProQuest database, Journal of Extension, Journal of Agricultural Education, NACTA Journal, and the EBSCOhost database to establish the literature review.

Perspectives of Experiential Learning

Experiential learning is an educational model that views learning as the result of an interaction between discovery and experience. This model is based on immersing students in an environment with relevant, "real-world" experiences that allow students to build upon prior knowledge and learn in a more meaningful fashion. While this model is not ideal in every context, it often provides students with a unique realization of how their knowledge is relevant and useful.

Dewey's Perspective.

Experiential learning is rooted in Dewey's (1938) work, *Experience & Education.* In this work, he presents two views of education: traditional and progressive. Traditional education is depicted as the structured, didactic environment that most students are familiar with, whereas progressive education is described as a comparatively unstructured, student-centered environment. Dewey proposed that neither of these educational paradigms present a solution, and

that educators must begin to understand human experiences in order to resolve conflict between these two paradigms.

Consequently, he proposed a need for a theory of experience, and emphasized that while students in traditional settings do not have a lack of experiences, those they do have can lack quality and connection with other knowledge and experiences (Dewey, 1938). Ord and Leather (2011) cited a very specific definition of experience: “An experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment” (Dewey, 1938, p.43). Dewey continues to explain, “The environment, in other words, is whatever conditions interact with personal needs, desires, purposes and capacities to create the experience which is had” (1938, p. 44).

It is important to note, however, that Dewey (1938) does not simply consider experience to be an outward act, but rather the process of considering a notion, acting upon it, observing results and consequences, and ultimately applying that knowledge towards future situations. This perspective on experience presents a process far more complex than simply “doing” (Ord & Leather, 2011). This understanding is also integrally linked to meaning, as individuals must conceptualize that specific acts lead to certain consequences. Ord & Leather (2011) cite a specific example of the link between experience and meaning:

> It is not experience when a child sticks his finger into the flame; it is experience when the movement is connected with the pain that he undergoes in consequence. Henceforth, the sticking of the finger into the flames means a burn (Dewey, 1916, p. 104)

This also emphasizes Dewey's (1938) argument that learning is not solely accomplished by introspective behavior, but rather requires individuals to change during and as a result of their experiences (Ord & Leather, 2011). These elements must come together in order for meaningful learning to occur, as "No experience having a meaning is possible without having some element of thought" (Dewey, 1916, p. 107; Ord & Leather, 2011). Schunk (2012) further supports this in stating: "Learning is an enduring change in behavior, or in the capacity to behave in a given fashion, which results from practice or other forms of experience."

Ultimately, Dewey (1938) proposes that educators might use his theory of experience to structure learning around the prior experiences of students, consequently providing more meaningful and beneficial learning environments. He stipulates that educators must accept the role of a learning facilitator rather than dictator, creating a learner-centered classroom environment. It is off of these principles that Kolb (1984) partially bases his model of experiential learning.

Kolb's Perspective

Kolb's (1984) model provides a structure for meaningful learning environments in which students can apply prior knowledge within a real-world hands-on setting. Based on fundamental constructivist theory, Kolb's model proposes that knowledge and experience are shaped through reflection into concepts, which are then used as a basis of experimentation. Kolb (1984) presents an ongoing cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation (Figure 1). Through this process, students can participate in meaningful learning and higher-order thinking while gaining invaluable skills and life experiences.

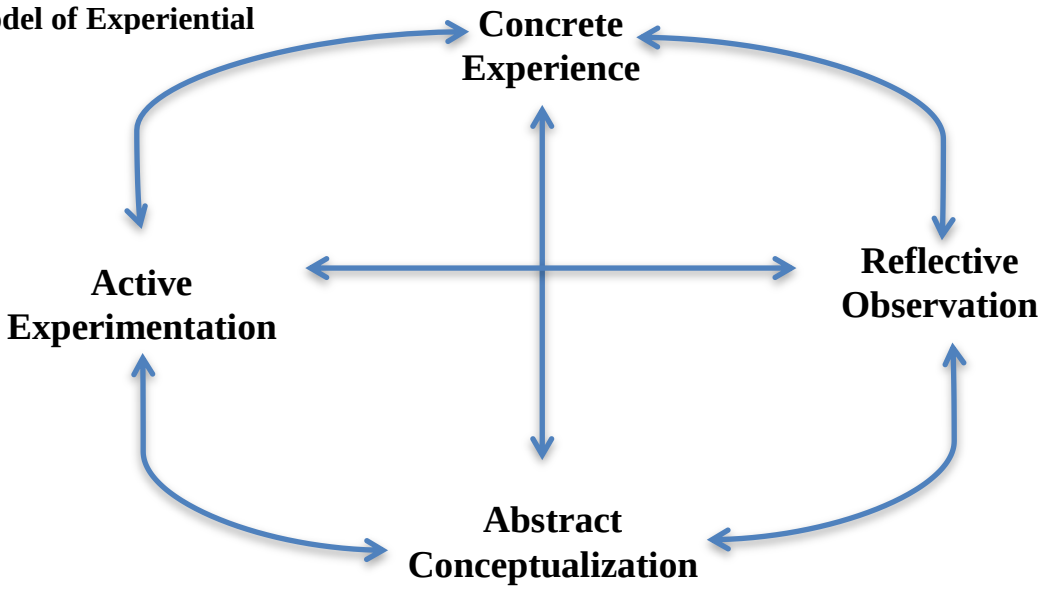
The four stages of Kolb's (1984) model represent two continuums proposed in his work: perception and processing. The perception continuum is learning through thinking or feeling, and is stimulated by the learner's intellectual or emotional response. This continuum includes the first and third stages of Kolb's model –concrete experience and abstract conceptualization. The processing continuum, however, references a learner's approach to a task, where learning is stimulated by doing. This continuum involves the second and fourth stages of the model – reflective observation and active experimentation. It is essential to consider these two continuums when considering Kolb's (1984) model, as they begin to provide the "bigger picture."

It is important to recognize that Kolb does not present a straightforward, sequential cycle through which learning occurs. On the contrary, he proposes that learning is sparked by an observation, leading to continued consideration and ultimately beginning the process that encompasses all four of Kolb's (1984) key principles. There is not, however, a starting or ending point to Kolb's proposed model – learning can begin at any phase of the model, and does not terminate after an individual has actively experimented with generalizations of a concept. Not unlike his theoretical predecessors, Kolb (1984) proposes that learning is a lifelong process, rooted in personal experiences.

Kolb's (1984) model is, in many ways, cut from the same cloth as Dewey's (1938) theory of experience. Both Kolb and Dewey agree that learner-centered environments can facilitate meaningful learning spawned by facilitated experiences in a real-world setting. If higher education is to meet the NRC's (2009) call for reform, it is essential that undergraduates be provided this type of learner-centered environment, where classroom knowledge and hands-on

experience are undoubtedly connected. What Dewey and Kolb neglect to address, however, is the pervasive social influence present within modern society and programs in higher education.

Figure 1: Kolb's (1984) Model of Experiential



Social Cognitive Theory

Social cognitive theory lends further explanation and insight into the importance of social factors when designing educational programs. This theory posits that individuals will learn by doing, sensing, and observing the actions of others (Bandura, 1986; Ormrod, 2008; Schunk, 2008). By making observations within their environment, individuals acquire knowledge that can then influence future behaviors. Albert Bandura challenged behaviorism with this comprehensive theory of observational learning, where reciprocal interactions occur among individuals, their behaviors, and their surrounding environments (Bandura 1982, 1986, 2001; Schunk, 2008).

Social cognitive theory views learning as the processing of information from behaviors and environmental factors which ultimately serve as a guide for action (Bandura, 1986, p. 51).

Learning can occur in one of two ways: enactively or vicariously. Enactive learning, not unlike the theory of experience proposed by Dewey (1938), involves learning by doing, whereas vicarious learning occurs primarily through observation in some form. A majority of human learning occurs vicariously, allowing individuals to learn more rapidly than would be possible if humans only learned from behavior (Schunk, 2008). Complex skills and theories are typically learned through a combination of vicarious and enactive learning – students can learn some components of a skill through observation and continue learning via practice, which models can then use to provide corrective feedback.

Humans learn a great deal through observation, and models of all shapes and sizes play an important role in learning. Schunk (2008) defines modeling as "…behavioral, cognitive, and affective changes deriving from observing one or more models" (Rosenthal & Bandura, 1978; Schunk, 1987, 1998; Zimmerman, 1977). Models provide valuable data points to process, which individuals can then translate into behavior. In a classroom setting, teachers and peers can all serve as models, providing multiple perspectives for an individual to consider. Bandura (1977, 1986) noted four necessary conditions for an individual to model the behaviors of another person: attention, retention, motor reproduction, and motivation. Prior to successfully modeling another individual's behavior, one must attentively watch and observe the behavior being performed. The individual must also remember the behavior that he/she has observed, and then be able to replicate the demonstrated behavior. Lastly, an individual must be motivated to model the learned behavior. If any of these four conditions are not met, the likelihood of exhibiting the behavior decreases (Ormrod, 2008).

Social cognitive theory further expands on the concept of motivation, as its presence is often key to an individual's learning. Self-efficacy, or an individual's belief regarding whether or not they are capable of executing a behavior correctly, is a significant component of motivation (Ormrod, 2008; Schunk, 2008). For instance, if an individual believes that they won't perform well on an upcoming test, he or she has low self-efficacy regarding that task, and may not be motivated to study, as they may already feel it is hopeless. Self-efficacy is largely developed as a result of successes and failures and can have a powerful effect on an individual's behavior, including goal setting, activity choices, persistence, and ultimately learning (Bandura, 1997, 2000; Ormrod, 2008; Schunk & Pajares, 2004; Zimmerman, 1998).

Bandura (1997, pg. 1) stated that "A key assumption of social cognitive theory is that people desire 'to control the events that affect their lives' and perceive themselves as agents." Individuals with higher overall self-efficacy also exhibit an increased sense of agency. Self-regulation, or the process through which individuals perform specific behaviors oriented towards achieving goals, is key to this agentic perspective. According to Ormrod (2008), the social cognitive perspective of self-regulation involves at least four key components: goals, self-observation, self-evaluation, and self-reaction (Bandura, 1986; Schunk, 1989c, 1998; Zimmerman & Schunk, 2004). Individuals set goals for themselves based on peer or model observations, and personal self-efficacies regarding a task. Individuals then observe themselves in action, and evaluate whether their behaviors were adequate based on the standards they have set. Finally, an individual will react to their self-evaluation, typically by exhibiting pride for accomplishing a goal, or punishing themselves for not having met their expectations.

As a whole, social cognitive theory provides a framework to support the numerous social interactions that occur in any educational environment, and how those interactions impact an individual's learning. Social cognitive theory supports the notion that students who succeed in a given environment may ultimately exhibit indicators of increased self-efficacy or even perhaps self-regulation. These lifelong learning traits feed into the NRC's (2009) call for more prepared young professionals, capable of tacking the complex quandaries that inevitably lay ahead of them.

A Perspective of Experiential Education

As we have previously discussed, Kolb's (1984) model of experiential learning provides an outlined structure to consider when designing experiential learning programs. While the four key principles of Kolb's (1984) model are a good starting point and certainly hit on key components of experiential learning, they also leave a great deal to be desired when considered on their own. For instance Kolb (1984), neglects to address the social interactions present in educational environments.

Consequently, one might propose adopting a modified version of Kolb's (1984) model of experiential learning. So as not to confuse the two, let this updated perspective be referred to as experiential education. Beginning with Bandura's (1986) concept of reciprocal causation, the interactions between an individual, their environment, and resulting behaviors creates knowledge that is later used as a guide for action (Bandura, 1986, 2006; Ormrod, 2008; Schunk & Pajares, 2004; Zimmerman & Schunk, 2004).

In essence, these reciprocal interactions create an experience – the first key tenant of Kolb's (1984) model. When an experience occurs, it often draws attention from participating or

observing individuals, the first key component in Bandura's (1977) modeling process. Focused attention can lead to goal-setting behaviors, the first component of Bandura's (1986) concept of self-regulated learning. From there, individuals oftentimes proceed to a period of reflection, the second tenant in Kolb's (1984) model. This aids in an individual's retention of an experience, the second key process in Bandura's (1977) modeling process. Furthermore, this provides individuals with an opportunity for self-observation, the second component of self-regulated learning (Bandura, 1986).

From this reflective period, individuals naturally move to conceptualizations of their experience, the third key tenant of Kolb's (1984) experiential model. These conceptualizations can be a motivating factor for students, addressing the third key component of Bandura's (1977) modeling process. This can also stimulate self-evaluation, the third component of self-regulated learning (Bandura, 1986), where an individual can evaluate behaviors or conceptualizations resulting from their experience. The last tenant of Kolb's (1984) model posits that an individual will proceed to actively experiment with new conceptualizations of their experience, which creates a type of reproduction, the final component of Bandura's (1977) modeling process. Results of this experimentation or reproduction lead an individual to self-reaction, the last component of Bandura's (1986) concept of self-regulation.

It is important to recognize that these models and concepts may not always occur simultaneously. However, this perspective provides a logical way to help educators recognize the importance of social interactions in learning environments. Furthermore, facilitating personal experiences and social interactions in a learning environment works to answer the calls for educational reform by providing students with strengthened processing, observation, and self-regulatory abilities.

Experiential Learning Programs in Animal Agriculture

Despite an extraordinary amount of research making mention of experiential learning's importance in agricultural education (Anderson, 2009; Andreason, 2004; Marshall et al, 1998; Parr & Trexler, 2011; Roberts, 2006), there is a surprising lack of literature discussing program ties to educational theory. Reiling, Marshall, Brendemuhl, McQuagge, & Umphrey (2003) published a study where researchers collected demographic and experience information from cohorts in an introductory animal science course over a three-year period. Having assessed student backgrounds, it was determined that students needed hands-on experience with livestock. Consequently, a multispecies large-animal management and production practicum course was designed and implemented. Reiling et al. (2003) concluded that a program "that primarily involves experiential learning activities to teach basic applications of animal science principles and animal husbandry skills has proven successful." However, the study made no mention of underlying educational theories, or how the program can continue to be improved. In similar fashion, other studies have acknowledged educational theories and models in support of experiential learning programs without drawing conclusions regarding how theoretical applications have affected program outcomes (Anderson, 2009; Guay & Oshel-Shultz, 2009; Marshall et al, 1998), much less how applications of teaching and learning theory can be used to further strengthen student learning experiences.

Another surprising gap in current literature is the lack of discussion regarding the evaluation of experiential learning programs. It is not uncommon to solely evaluate an experiential learning opportunity by providing a survey to participants. Reiling et al. (2003) utilized the University of Florida's standard course and faculty evaluation form as the sole

method of evaluation for the program. Although the information collected from this method was informative and useful, it could be greatly strengthened with an explanation of how the program currently applies theory, and how altered or additional applications could further strengthen program outcomes. Parr & Trexler (2011) utilized a focus-group method to evaluate student farm experiences in higher education. Due to the in-depth data collected, the researchers were able to connect reported program outcomes with applications of educational theory. Knowledge of how educational theory is being applied in a program is crucial, as it provides insight as to how those applications can be modified to further strengthen experiential programs.

Recommendations

While Kolb's (1984) model of Experiential Learning is often acknowledged in the literature, its importance in program development and evaluation is often underplayed, if recognized at all. Furthermore, Kolb's (1984) model does not consider the significance of social interactions in regards to learning (Seibel et al, 2012). Consequently, a perspective of experiential education is proposed to better support both the experiential and social aspects of these valuable programs in higher education. Since a great deal of research on experiential learning programs neglects to make ties between program outcomes and educational theory, there is a gap in knowledge regarding *how* participating students truly *experience* a program. While it is undoubtedly important to assess what students gain from participating in a program, it is equally important to know how they have learned, so that programs can be modified and strengthened where needed. As time passes, the demographics of students in agriculture will continue changing, as will the needs of the modern agricultural industry. To ensure that programs continue successfully preparing students for their futures, experiential education programs must

be periodically evaluated. By acknowledging the educational, experiential, and social facets of a program, as well as the outcomes produced by those facets, educators can more successfully prepare undergraduates in agriculture for the challenging futures that await them.

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Manuscript #2

The Critical Need for Experiential Learning Programs in Animal Agriculture: A Qualitative Case Study

Abstract

The Equine Studies Program at the Middleburg Agricultural Research and Extension Center began in 2010, with seven cohorts having completed the program since its inception. Following each semester-long experience program participants are given a survey, which is used to assess participant perceptions of program quality and efficacy. At this time, however, no study has been conducted to gain a thorough understanding of the program's purpose, nor assess if programmatic impacts align with its objectives. Consequently, this study is dually purposed with assessing the Equine Studies Program's structure and objectives, as well as determining the extent to which program objectives were met by participant experiences.

In-depth qualitative interviews with program administrators, undergraduate participants, and participating graduate students provided a detailed information about the program's objectives and impacts on participants. The findings of this study provide insight on how experiential learning programs can be enhanced to better prepare students for the challenges of modern industry. Recommendations are made for continued research in this area to evaluate how the implementation of experiential learning programs may impact overall undergraduate curricula. Additional research should also conducted to compare and describe the impacts of varying types of experiential programs.

The Call for Curricular Reform

Experiential learning programs have become increasingly important in higher education, assisting academic institutions to face the challenges posed by changes in society and industry alike. In 2009, the National Research Council (NRC) called for a reform to undergraduate curricula, stating a need to not only update content, but also improve how teaching and learning occur. The NRC (2009) substantiated this need for reform by emphasizing that academic institutions must recognize and adapt to working with changes in student demographics, as well as to the needs of agricultural industries.

Drastic demographic changes have occurred in recent decades, resulting in a mere 20% of the United State's population hailing from a rural background (Dimitri, Effland, & Conkland, 2005; NRC, 2009). This creates novel challenges for educators and youth alike, as a significant percentage of the population has become unfamiliar with agriculture, including how foodstuffs are produced (NRC, 2009; Splan, Porr, & Broyles, 2009). Consequently, academic institutions must be prepared to help students overcome their agricultural unfamiliarity while giving them skills and experience necessary to succeed in industry. The NRC (2009) highlighted several key components help accomplish this goal, including skills development, team work, critical thinking, and problem solving – just to name a few (Estepp & Roberts, 2011).

Agricultural educators and academic institutions must also recognize significant changes within the agricultural industries. With a majority of current workers retiring in the near future, the agricultural industry is left seeking a younger generation of qualified individuals to support its mission (NRC, 2009). Additionally, industry foci have shifted away from traditional production, instead focusing on more on sustainable endeavors including resource management and energy production (NRC, 2009, pg. 32). These factors, in addition to substantial increases in

international operations, leave the agricultural industry seeking a talented new generation of employees with the knowledge, technical skills, and social abilities to successfully face a myriad of complex challenges (NRC, 2009; Splan et al., 2009).

The National Research Council's (2009) call for reform highlights the critical need to produce more prepared, knowledgeable, and well-rounded undergraduate students. Many academic institutions have turned to helping students connect knowledge with hands-on skills in realistic environments through experiential learning opportunities. By providing these types of learning opportunities for undergraduates, educators are able to better prepare them for the complex challenges facing the agricultural industry.

A Perspective of Experiential Education

This study is rooted in the tenants of experiential learning, beginning with Dewey's (1938) theory of experience. Dewey proposed a more progressive classroom environment that would allow educators to acknowledge and build upon student experiences. Dewey emphasized that students don't actually lack experiences, but rather lack connections between their experiences and prior knowledge. However, it is also important to recognize that meaning is integral experience. Schunk (2012) emphasized the importance of meaning, stating that "Learning is an enduring change in behavior, or in the capacity to behave in a given fashion, which results from practice or other forms of experience."

Kolb's (1984) model of experiential learning built on the tenants of Dewey's (1938) theory of experience, and provides an outlined structure to consider when designing experiential programs. Kolb (1984) presents a non-cyclical model that posits that knowledge and experiences are shaped through reflection into concepts, which are then used as a basis for experimentation.

Kolb (1984) further emphasizes that learning is a life-long process, rooted in personal experiences.

A key aspect that Kolb's (1984) model neglects to address, however, are the pervasive social influences present in educational environments. Consequently, a new perspective of experiential education is proposed. Beginning with the social cognitive concept of reciprocal causation (Bandura, 1986, 2006; Ormrod, 2008; Schunk & Pajares, 2004; Zimmerman & Schunk, 2004), an individual interchangeably interacts with their environment and their behavior. "In fact, each of these three variables – environment, person, and behavior – influences the other two" (Ormrod, 2008). The interactions between these three variables create Kolb's concept of concrete experience. This concrete experience can cause an individual to focus their attention for a length of time – the first of four important stages in the modeling process. In this way, the individual begins to learn from both observation and experience.

Individuals will oftentimes proceed to reflective observation – a period of withholding judgment to further observe the environment and process the meaning of their experience. The process of reflective observation ultimately begins to create a data point or memory, and assists in the process of retention – the second key element of modeling. Kolb's next step provides individuals an opportunity to logically analyze their experience and observations in order to act on their knowledge of a situation. This process helps to build connections between an individual's recent experience and their prior knowledge – a motivational process to individuals, as they discover greater meaning behind their experience. From here, individuals will likely try to reproduce their experience. They do not, however, necessarily succeed when first attempting to reproduce a specific behavior. Hence, an individual will actively experiment with their

newfound knowledge until they have either succeeded in attaining their goal, or have lost motivation to continue experimenting.

This leads us to a final key process in our modified perspective of experiential education: self-regulation. Social cognitive theorists identify a minimum of four key elements to self-regulation: goal setting, self-observation, self-evaluation, and self-reaction (Bandura, 1986). Although these four principles may not occur simultaneously with our revised perspective, they absolutely can correspond with the principles of experiential learning and social modeling previously discussed. Goal setting can result from focused attention on a specific concrete experience. Self-observation, or the process of recognizing one's position or action within an environment, fits nicely with the concepts of reflective observation and retention. From there, an individual might self-evaluate during the process of abstract conceptualization. Remember that the goal of abstract conceptualization is to develop logical and intellectual knowledge of a situation – hence, evaluating one's actions contributes to the greater understanding that is developed. Furthermore, self-evaluation helps contribute to motivation, as active experimentation becomes more realistic with knowledge of current performance. Lastly, self-reaction is a natural response to reproduction and active experimentation. Based on the perceived results of their actions, an individual will react in either a positive or negative manner.

This perspective combines key elements of experiential learning and social cognitive theory, ultimately aiming to provide a more complete perspective of what experiential education can do for our students. This perspective of experiential education not only recognizes the processes through which students gain hands-on experiences, but also lends an explanation as to

how experiential education can provide students with heightened processing and observation capabilities, social competencies, and self-regulatory abilities.

Purpose

The Equine Studies Program at the Middleburg Agricultural Research and Extension Center began in 2010, with seven cohorts having completed the program since its inception. Following each semester-long experience program participants are given a survey, which is used to assess participant perceptions of program quality and efficacy. At this time, however, no study has been conducted to gain a thorough understanding of the program's purpose, nor assess if programmatic impacts align with its objectives. Consequently, this study is dually purposed with assessing the Equine Studies Program's structure and objectives, as well as determining the extent to which program objectives were met by participant experiences.

The objectives of this study were:

1. Determine the program's objectives through the eyes of program administrators.
2. Assess the program's immediate impacts on participants.
3. Assess the program's residual impact on participants.
4. Assess the program's impacts on participating graduate students.
5. Compare and describe common program impacts amongst these unique groups with the program's objectives.

Limitations of the Study

This evaluation of the Equine Studies Program at the Middleburg Agricultural Research and Extension Center reflects data collected from individual interviews using qualitative research methods. All implications and generalizations resulting from this study are limited to the degree of similarity that programs and their participants have to those in the study.

Basic Assumptions

The following basic assumptions were relative to this study:

1. The participants provided honest and accurate answers to interview questions.
2. The participants were reliable, credible, and knowledgeable about the Equine Studies Program at the Middleburg Agricultural Research and Extension Center.
3. The interview questionnaire is a justifiable method in gathering information for the purposes of program evaluation.

Methods

The nature of the research objectives led the researcher towards qualitative inquiry. Strauss and Corbin (1990) defined this approach as, "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (as cited in Yüksel, 2010, p. 79). Rossman and Rallis (2012, p. 10) wrote: "Fundamentally interpretive and emergent, qualitative research is systematic inquiry that is characterized by a stance of openness, curiosity, and respect." With a focus on holism, this naturalistic approach seeks to understand

phenomena in real-world settings without researcher manipulation (Patton, 2002; Rossman & Rallis, 2012; Seibel, Rudd, Westfall-Rudd, McFerren, & Redican, 2010; Yüksel, 2010).

In justifying the use of qualitative inquiry in student affairs, Manning (1992, p. 133) states:

> The object of qualitative research is to understand the meaning that respondents interviewed and observed (e.g., students, staff members, faculty, college presidents) made of their experiences. Discovering meaning as well as the manner in which people understand themselves and their world is the raison d'être of emergent paradigm qualitative research.

By employing qualitative methods, the author gained in depth knowledge of student experiences participating in an experiential learning program in animal science at a land-grant university in Virginia.

In order to effectively develop inclusive open-ended interview questions, the researcher developed a set of *a priori* propositions, aligning each proposition with the research questions and supporting literature (Appendix A). Three *a priori* tables were developed – one for each category of study participants: program administrators, participants, and participating graduate students. Corresponding interview questionnaires (Appendix C) were then created to ensure consistency amongst study groups. Experts from the Department of Agricultural Education and Extension reviewed the interview guides to establish validity, and changes were made based on their recommendations.

On October 8, 2013, a recruitment email (Appendix D) requesting study participation was sent to all individuals who have previously been associated with the Middleburg Equine Science Program, either as administrators, graduate students, or undergraduate participants. 15 individual interviews were conducted via telephone for consistency, since many study participants were located out of state. Each interview was digitally recorded by the researcher, and later transcribed into Microsoft Word ©**.** Interview transcriptions were then transferred into Atlas TI © for coding and theme analysis.

Findings

The interview transcriptions were analyzed for common themes among interviewee responses to questions posed during the interviews. Study findings are organized around seven primary themes that emerged from interview data. These themes are:

1. Program resources allowed administrators to maintain a student centered learning environment.
2. Experiential learning opportunities allowed participants to apply knowledge in a real-world context.
3. Ongoing research projects provided additional experiential opportunities for program participants.
4. Relationships amongst administrators, graduate students, and peer cohorts influenced participant experiences in an immersive environment.
5. Programmatic design incorporates community involvement and consequently provided valuable networking opportunities for participating students.
6. Experiential aspects of programmatic design foster personal growth in participants.

7. Experiences in an experiential learning environment enhance participant understandings of career aspirations.

Opportunities for Applied Knowledge

Theme: Program resources allowed administrators to maintain a student-centered learning environment.

The Program developers sought to more effectively utilize pre-existing university resources while building on the academic foundation that students were receiving on the main campus. One administrator described the program as a method "for academic enrichment." Another administrator emphasized that the overall objective of the program was to give students "…an experience both in and out of the classroom that could be applied to something bigger than just the class or just the horse."

Program administrators consistently discussed need to provide in-depth, hands-on experiences for students. One administrator explained that a primary goal of the program was to create "A very very small setting, so labs became very immersive and hands-on for these students and was very individualized, because you've got a very good ratio of one faculty to six to eight students." To ensure that the program maintained focus, a set of core competencies was developed. One administrator explained:

> "So, we did have a set of skills that we determined would be useful for them to have, whether they went into the industry or, um, just graduate with a degree in animal science in the equine emphasis. So, yes, a sort of skills check sheet was put

> together. And we were able to spend time with the students to accomplish, or at least build competency in those skill sets."

However, the program also aims to meet student- identified needs beyond the established core competencies. One administrator described this, stating:

> "When the students come in we sit down with them and say here's what we told you the program would try to do - from an activity standpoint, and a learning standpoint. Given that, do you have some additional learning objectives that you would like to accomplish."

Administrators also talk with students about personal and professional goals, to ascertain if the program can be tailored to do more for a particular cohort. One administrator expanded on this topic further by stating:

> "We also sit down with them and ask them where they're trying to go in life, not just right after graduation but in general. And the faculty use their experience to say, well maybe we need to add this in then. Maybe this experience will help you get there. So, um, we can design projects to hopefully help them later in life."

Participant interviews consistently supported the student-centered nature of the program. A majority of participants made comments such as "Anything we wanted to learn while we were there, they made sure we were able to." Another participant referred to the student-centered learning objectives as a key component of the program, commenting:

> "I think that's one of the biggest things about this program - there are certain things they know that they need to cover, but beyond that they don't want to teach something the students aren't interested in. That's one of the benefits of being a small program - they really do personalize it so that students get the most out of it possible."

Participants consistently felt that administrators made a conscious effort to understand their needs and provide beneficial experiences. Several participants commented that every aspect of the program - even simple things like developing work schedules were student-centered, and allowed participants to make the experience work as best as it could for them.

Theme: Experiential learning opportunities allowed participants to apply knowledge in a real-world context.

Interviews across participant categories also consistently emphasized that the program's experiential learning opportunities allowed participants to apply knowledge in a real-world context. Administrators strongly emphasized the need to train students to implement the knowledge they were taught in coursework. One administrator explained:

> "I think that one of the shortcomings of college teaching is that there is a lot of theory and a lot of explanation, but when you walk out the door with knowledge it doesn't necessarily mean that you know how to put that to practice. So, I think one of the big things we tried to give students in this program would be the experience in knowing how to put into practice the knowledge they have. And even if they

> couldn't experience everything and do everything that they learned, they would have done enough to begin to see the pattern of how to apply their knowledge to a given situation."

Staying true to the essence of experiential learning, the program accomplished this goal by aligning the coursework and farm work requirements of participating students as much as possible. Participant interviews unanimously supported this effort. One participant described the connection of academic and farm work as "…a pretty perfect marriage of learning and practical work, so that you were cementing concepts you were learning in the classroom, and seeing how they were applicable or useful…" Another participant spoke to a more specific connection:

> "So we would talk about conformation in class, and then go out in the field and discuss the conformation of the horses. Then we might work them in-hand and see how their conformation affects their movement. And the same went for repro or the other classes – pretty much anything that was feasible for us to do hands-on, we went and did."

To further cement the connection between conceptual knowledge and realistic applications, students were expected to continue utilizing the information presented throughout the program. One way that the program seeks to accomplish this goal is through semester-long projects. Nearly every participant interviewed made mention of a herd health project, where they were assigned a subset of the farm's horses to care for. Whenever a horse became injured, students would be responsible for applying what they'd learned in class to propose a treatment plan. One participant described this experience:

> "Even if we hadn't learned about that particular health topic yet, we would be asked questions about the horse's condition and what we thought was wrong. And once we got it right, we would then be asked what we should do to treat it, and we would discuss different options until we decided what was best."

Participants discussed numerous experiences similar to this one – all of which were recounted as meaningful learning opportunities. In addition, many participants shared ways that they have applied knowledge gained from the program since then. One participant stated:

> "…[The program] allowed me to take all the classes I had taken and the classes that I took in the program and put it together. I had already done my Capstone project, but that program really let me take everything I learned and actually apply it. I felt like it was actually my Capstone experience."

Several participants also described feeling motivated by their experiences in the program. They felt encouraged by their ability to apply what they were learning in a realistic context, and consequently were more motivated to continue learning more. One participant stated:

> "You know, I could see throughout the semester that the more I learned in the program, the more excited to continue learning. And I feel like I've kept that since then. So it's been a long-term impact, because it grew throughout the semester and its continued to grow since. And I think a lot of my enthusiasm for learning budded from my experience."

Other program participants expressed similar motivation as a result of the program, and feel that their desire to continue learning has grown as a consequence.

Theme: Ongoing research projects provided additional experiential opportunities for program participants.

The program also offers research opportunities to participating students, providing yet another opportunity for applied knowledge. Administrators explained that although research was not initially a programmatic priority, it steadily became more important, as it provided additional opportunities for individualized attention while promoting the growth of professional skills. One administrator offered an explanation behind this heightened focus, stating:

> "And a lot of that kind of science element is in parallel with problem solving, critical thinking – using [research] as a way to teach some of those skills and prepping the students to really understand the biology of the horse and the processes that go into that, as well as just how we ask questions and answer questions in equine science – and then that applies just in general also."

However, administrators quickly found that it was equally important to ensure that each cohort didn't become overwhelmed with research related responsibilities. Instead of trying to get one cohort through a full project each semester, programmatic research efforts shifted to providing straightforward opportunities that could be started and finished in different semesters.

A majority of participant interviews discussed the research opportunities offered by the program. Although many participants had not been exposed to research before, they consistently described experiences with ongoing research projects as beneficial. One participant stated:

> "I love the way that they do research projects – they're really neat to be a part of, and they're always organized and are a good learning experience for someone who hasn't done it before."

Participants also emphasized that the program's research opportunities provided yet another outlet to apply some of the hands-on skills they gained in the program. One student recalled:

> "While I didn't personally do a project of my own, we pulled samples and assisted with procedures for a couple different projects that were being run while we were there. And that was a really great experience too – just seeing that side of scientific research and academia."

However, a majority of participants focused on the experience of performing research as being the most beneficial. A majority of participants have moved on to graduate or veterinary school since completing the program, and felt that the research experiences they gained have been a significant benefit. One student commented:

> "I began working on my thesis project not long after I finished the program, and the research experience that I gained in the program helped me to come up with project ideas and also gave me the skills to carry out my project."

Participants supported the research aspect of the program, and consistently stated that they would maintain or even increase research opportunities in the program were they to become administrators.

Graduate students were also impacted by the program's research opportunities. Although graduate students had research projects of their own, they often served as mentors and supervisors for the undergraduate participants – especially in regards to research. Graduate students frequently taught proper procedures and oversaw research protocols for ongoing projects. Graduate students felt this part of their role was beneficial in providing teaching and supervisory experiences. One graduate student explained:

> "I mean, my professional goals are to get a position at a university where I have a teaching as well as a research appointment. I thought it was very helpful to me professionally to have those experiences teaching and managing other individuals doing research."

Graduate students also felt they benefited from the program's unique setting, as the majority of a research project could be conducted on site. One graduate student stated:

> " I think the MARE Center provides a very unique opportunity – which is, that if I have a research question, it's easy to work towards an answer. You know, that's the thing – with my dissertation research I had the ability to go out to the barn, take my samples, and then come back into the lab and, you know, do a limited amount of research."

As a whole, program participants – both undergraduate and graduate – benefited from the research opportunities provided by the program. These opportunities were consistently beneficial, providing new opportunities and perspectives for participants.

Social Context

Theme: Relationships amongst administrators, graduate students, and peer cohorts influenced participant experiences in an immersive environment.

By far, the program's social context was one the most frequently discussed aspects of participant experiences. Administrative focus on providing individualized experiential learning opportunities ultimately created a very hands-on setting for small cohorts of students. In doing so, administrators knew that there would be a heightened importance on the social interactions of participants in the program. One administrator reflected on this challenge, stating:

> "You end up spending a lot of time with the people that you live with and work with, and when you live and work with them everyday and you can't get away from them, it really forces you to evaluate not only other people's personality traits and quirks, but also your own. So again, you learn how to behave, how to compromise, and how to work with others even if you don't necessarily get along with them on a personal basis. I hope it taught some of the students that they could separate their personal biases from what needed to be done so that they can do an excellent job even though they may not love everyone they work with."

However, administrators also recognized the benefits that students could gain from interacting so closely with individuals who had different backgrounds and experiences than they did. Several administrators commented on the benefits that the students could gain from teamwork, and

viewing themselves as part of something bigger, as well as learning from the experiences of others.

Participants frequently commented on the impacts that these social interactions had on their overall experiences in the program. For better or worse, students consistently recognized significant personal gains in communication and teamwork. One participant commented:

> "I thought it was a very unique environment for appreciating what good communication and teamwork can do. And also the opposite – when communication amongst interns or between interns and administrators could have been better – what kind of impacts that had on the day to day efficiency of the work being done, and also the effects it had on the general demeanor."

Although participants frequently discussed the inevitable conflicts that arise in this type of social environment, they also recognized substantial gains in their ability to work around these types of conflicts. One participant reflected on this, stating:

> "Learning how to approach or work with someone that is having a bad day for some reason was definitely a challenge, but it definitely improved my skills to handle such challenges. We have to work as a team to get everything done, and I know it was a challenge for everyone, but I think we all really benefited and learned something from that challenge."

As a whole, participants felt that living and working in that type of environment proved beneficial despite the many social challenges. Participants also recognized that learning to deal with social challenges would prove helpful in future careers, regardless of discipline.

Participants also recognized the benefits of working with individuals who had different backgrounds and experiences than themselves. One participant stated:

> "…everyone came from different backgrounds and had different goals. So everyone had different strengths, so we all tried to build on the different strengths. I think that when you bring people together who have a broad range of interests, everyone learns to work with each other and build on the strengths of the group as a whole."

Graduate students also felt that they benefited in this way, though their participation in the program was different than that of the undergraduate students. Graduate students discussed building a level of respect and friendship with undergraduate students, and felt that they benefited from those interactions. One graduate student commented:

> "There was always a good group of people who thought about things in a scientific way, and thought about things in a different way, and so that sort of – the different experiences that came in and the different backgrounds that came in and the different areas of interest that came through sort of helped everybody come up with new ideas, or think about things differently."

Despite the challenges of working and living with the same cohort in that type of environment, participants unanimously agreed that they learned how to appreciate differences and work harmoniously as a team. Furthermore, participants and graduate students consistently recognized that these types of social skills are valuable in any environment.

Theme: Programmatic design incorporated community involvement and consequently provided valuable networking opportunities for participating students.

A key goal of the program was to create experiences that would ultimately assist participants in their career pursuits. One way that program administrators aim to accomplish this goal is through providing valuable networking opportunities for participating undergraduate students. One administrator commented: "I think the participation of the professionals in the area…within the horse industry was a very valuable experience that allowed the students to grow, and network with people in industry." The program includes a multitude of field trips and seminars, which provide opportunities for students to interact with individuals in the industry.

A majority of participants also discussed the program's networking opportunities. One participant stated that "…the biggest immediate impact for me was networking – I got to know a lot of different people that I could have contacted for job opportunities." Participants also frequently commented that they benefited from interacting with individuals in so many different facets of the equine industry. This was an eye-opening experience for many participants, as they may not have realized that certain careers existed.

Participants also felt that the program provided a networking opportunity through resume building. Numerous participants felt that equine businesses may recognize the program and give preference to its participants regardless of whether participants had a personal connection to that organization. Students also felt that the program would enhance any resume as unique experience and talking point. One participant stated:

> "I think [the program] is definitely a differentiation factor for me. I'm not sure exactly how many people have gone through the program, but I know there's very few of us. And that's definitely something that will work in my favor on a resume for veterinary school or a job."

Participants also felt that the program provided valuable networking opportunities with the other people who were there. Several participants commented that they knew administrators would do whatever they could to help a student – whether that be gaining admission to a graduate or veterinary school, or finding a job in the equine industry. Participants and graduate students also unanimously recognized that connections with their cohorts and other individuals involved with the program could become beneficial later in life.

Personal Growth

Theme: Experiential aspects of programmatic design fostered personal growth in participants.

Personal growth was a theme that quickly emerged from the interviews. The program's experiential environment and student-centered nature fostered time management, leadership, and confidence in a majority of participants. Many participants mentioned the responsibilities associated with living and working in this type of environment. One student commented, "…the small peer group really forces everyone to take responsibility for everything that happens." Participants unanimously felt that their responsibilities in the program were beneficial in fostering time management skills. One participant reflected on this:

> "I really learned a lot more about balancing my time – especially those weeks when I was on point and responsible for all shifts. So, just learning how to make sure that you get enough sleep and eat enough while still getting all your work and homework done was a challenge. So those time management skills that I was able to work on are very valuable."

Participants also emphasized that the responsibility and time management skills gained have been useful in other contexts since completing the program – especially for the students who have moved on to graduate or veterinary school.

Participating graduate students also reflected on the responsibility and time management skills they gained from the program. Although their experiences are quite different from those of the undergraduate participants, graduate students spoke to similar challenges in terms of organization and time management. Graduate students consistently mentioned time management struggles balancing their responsibilities, but felt that their experiences better prepared them for the future.

By far, the most discussed personal benefit of the program is leadership. The program's student-centered focus and experiential design require small cohorts of students to work closely with their peers, administrators, and participating graduate students in order to accomplish their academic, farm work, and research related responsibilities. Programmatic design incorporates leadership roles for all participants. One administrator stated:

> "So, we drive them to do that – to do more, and to take leadership roles. Sure, you may usually be a follower, and you know, not a confrontational person. But

> this week, you're going to be on point in a leadership role and lead these students."

Participants also emphasized the experiences they gained in a leadership role, with several recounting that they had to step out of their comfort zone to do so. Participants unanimously agreed that their program experiences helped them become more comfortable both in and out of a leadership role. Learning to step out of a leadership role was also an impactful benefit for some students. One participant explained:

> "There was one point in the semester when an administrator told me I was bossy…and I know that's something I've always struggled with – you know, how to be a leader without being abrasive and without turning other people off. So, it was something that I really started to realize and work on then, and it's still something I have to work on now."

Participants unanimously agreed that the leadership experiences they gained in the program were highly beneficial, and numerous individuals mentioned that those types of personal abilities have proved very useful in more recent endeavors.

Participating graduate students also discussed personal benefits in leadership from the program. Graduate students often serve in a supervisory role, and felt that their leadership skills were impacted because of this. One graduate student reflected on this, stating:

> "The leadership and independence and working with younger students is something that really impacted me, and is something I've carried over now as a PhD student interacting with Master's students here."

Graduate students also reflected on personal gains in confidence from their supervisory positions in the program. One graduate student in particular emphasized this:

> "I think I just keep going back to the sort of independence and confidence that it breeds, because like I said, you don't have someone there to check you all the time. You have to be able to make decisions and stand by them and learn from mistakes you make in a very real, immediate setting. I think you don't always get that in an academic setting because there are some pretty real consequences to the decisions you make. So, you just have to make the best decision you can and then be confident in it and learn from it when you mess up."

Though graduate students interact with the program very differently, participants and graduate students alike felt that their experiences with the program stimulated personal growth. Both these groups felt that their gains in time management and leadership have been and will continue to be useful in future endeavors.

Career Aspirations

Theme: Experiences in an experiential learning environment enhanced participant understandings of career aspirations.

A majority of participants felt that their experiences in program allowed them to reassess or confirm their career aspirations. Administrators began to see this trend in student survey responses, and were somewhat surprised. One administrator stated:

> "…a lot of students who have come through – and I don't know if this was really designed or not, but a lot of students have said that as a result of this experience, they figured out what they wanted to do with their lives, or at least discovered what direction they wanted to go in because of something that happened while they were here. So that is certainly a huge long term impact for them."

Administrators shared that a majority of program participants have since moved on to graduate or veterinary school, but some chose to change disciplines or foci because of their experiences in the program.

Participant interviews further highlighted this phenomenon. A majority of participants did not change their career aspirations as a result of their experiences, but many felt that they had been able to reaffirm their aspirations. One student stated:

> "It just allowed me to reassess and confirm that I wanted to be a veterinarian and enter that type of field within the equine industry."

However, other participants had more drastic realizations because of their experiences in the program. One participant in particular shared this realization:

> "So, even right after I came out of the program, I thought I still wanted to breed horses full time. But I kept finding myself going back to the research and human comparison, and I decided that I wanted to go into biomedical research for grad school. So now I'm taking my MCAT to hopefully move forward with that."

Other participants felt that their experiences were a good way to experience certain requirements of their future careers. Several students interested in pursuing industry or veterinary careers commented that the program was a good way to evaluate the responsibilities and demands of their chosen career field. One participant in particular expressed this:

> "I guess [the program] was the deciding factor for me of whether I wanted to work in industry or go to grad school. It just – it really never ends. You don't get to take vacations, you don't get to turn your phone off, you don't get to take weekends – none of that. So that was – that was kind of it for me. I decided that I wasn't really cut out for that."

Although unexpected by program administrators, participant experiences in an experiential setting allowed students empowering realizations about the real-world expectations of certain careers.

Discussion

The Equine Studies Program at the Middleburg Agricultural Research and Extension Center was implemented in 2010 to provide students with an authentic, hands-on experience in equine science. Program participants are immersed in the day-to-day aspects of working in the equine industry while also participating in research projects and simultaneously completing a full load of equine specific coursework. The program aims to prepare students to become leaders in the equine industry, academia, or the veterinary sciences. This study aimed to determine the Equine Studies Program's structure and objectives, and assess the extent to which program objectives were met by participant experiences.

The first research objective of this study was to determine the program's objectives through the eyes of program administrators. Interviews with program administrators revealed six key program objectives:

1. Increase student knowledge pertaining to the equine sciences.
2. Provide opportunities for students to develop hands-on skills.
3. Creating an environment where students can apply the knowledge and hands-on skills they have gained.
4. Provide opportunities for students to become involved in undergraduate research.
5. Provide networking opportunities for participating students
6. Stimulate personal growth in participating undergraduate students.

Administrators aimed to incorporate these goals in program design. The program's coursework provide equine specific knowledge that builds upon the equine curriculum on the main campus. Program facilities provided a 420 acre farm setting with 50-60 horses on-site at any time. This real-world setting provided ample opportunities for students to gain hands-on skills and apply classroom knowledge. Furthermore, the facility provided a basic scientific laboratory, equine treadmill, and an equine hot walker. These resources allow students to participate in scientific research, which provides additional opportunities for applied knowledge.

The program also incorporates community and industry involvement through numerous field trips and seminars. This creates networking opportunities for participants, and often expands student perspectives by exposing them to novel segments of the equine industry. By immersing students in this type of environment, the program aims to stimulate personal growth, especially in the areas of communication, critical-thinking, teamwork, and adaptability.

The second research objective of this study was to assess the program's immediate impacts on participating undergraduate students. A majority of participants felt that the most significant short-term impacts from their experiences were in regards to hands-on skills and social abilities. Participants were exposed to a great deal of new hands-on opportunities that were unanimously considered to be beneficial. Students also described the program's research opportunities as a beneficial method for applied knowledge. These described impacts are consistent with programmatic goals to provide students with knowledge and hands-on skills. Furthermore, the program provides numerous opportunities for applied knowledge and undergraduate research experiences.

Participants also experienced immediate impacts to their social abilities by learning to live, work, and learn in a small peer cohort. Though social conflicts were often discussed in the interviews, participants felt they benefited greatly from learning to work as a team despite differences in personalities and backgrounds. These impacts partially fulfill the programmatic desire to stimulate personal growth in undergraduate students, and were considered to be highly valuable by participants.

It was more difficult to assess the program's residual impacts on participants, as many struggled to answer this question. Most commonly, participants responded by discussing networking opportunities and career aspirations. Participants unanimously discussed gaining valuable networks from their experiences in the program – with individuals involved in the program, and also with members of industry. Students gained valuable contacts that could help them pursue a career in any facet of the equine industry, including graduate or veterinary studies.

This supports the programmatic aim of providing students with networking opportunities within higher education and the equine industry.

A majority of participants also felt that their experiences in the program allowed them to reassess or confirm their career aspirations. Some reassessed career goals based on new perspectives or academic interests. Others affirmed their aspirations as a result of program experiences. Either way, participants described these realizations as very valuable, as they impact long-term career related goals.

It was also difficult to fully ascertain any impacts the program might have on participating graduate students, as this was the smallest participant group in the study. However, the graduate students who were willing to participate focused on two impacts in particular: teaching experiences and resulting personal growth. Graduate students assist in supervising and teaching the program's undergraduate participants, and felt the teaching experiences they gained were highly valuable. However, the graduate students also benefited from increased confidence and leadership abilities by serving as mentors for the undergraduate participants. Graduate students unanimously agreed that these skill sets have proven very useful in more recent endeavors. Although programmatic objectives are not directed at participating graduate students, these impacts further support goals to provide valuable opportunities for applied knowledge, as well as stimulating personal growth.

Recommendations for Practice

The findings of this study provide adequate evidence that student-centered experiential learning opportunities provide invaluable experiences for undergraduate students. The program

presents a unique learning environment for students, and creates a myriad of opportunities for students to gain hands-on skills and apply classroom knowledge. Answering the National Research Council's (2009) call for educational reform, the Middleburg Equine Studies Program better prepares undergraduate students for careers in the agricultural industry.

As previously discussed, the majority of the literature has focused on Kolb's (1984) model of Experiential learning. Unfortunately, Kolb (1984) neglects to address the pervasive social nature of educational environments. The findings of this study highlight the importance of recognizing the impacts created by a learner's social environment. Although participants occasionally struggled to cope with social challenges, they unanimously felt that they benefited from the experience. Students not only felt that the opportunity to learn from one another's differences was helpful, but also discussed experiencing personal growth from learning to live and work in such an environment. These findings support the need for recognition of social interactions by educators in any environment. By facilitating social interactions amongst students and administrators in educational environments, educators can enhance learning experiences and contribute to personal growth in students. Continued consideration of this perspective in future research would be highly beneficial in the development of a more holistic perspective of experiential education.

The findings of this study also focused on the program's ability to create a tailored educational environment for each cohort of students. Although administrators had pre-established hands-on competencies and learning objectives for the program, additional projects, research opportunities, and learning activities were developed to specifically address the self-reported learning objectives of each cohort. Students recognized this effort, and appreciated the

program's ability to fill any perceived gaps in knowledge. These findings support the need for more learner-centered environments in higher education, as originally proposed by Dewey (1938). Educators must assume the role of facilitator more frequently, allowing students to identify additional learning objectives, and consequently encouraging more self-directed learning. In order to adequately prepare our students to tackle the challenges presented by the modern agricultural industry, it is vitally important that we teach students *how* to learn. Allowing students to identify and pursue learning objectives with faculty supervision can foster problem solving and critical thinking abilities while simultaneously encouraging students to take responsibility for their own learning.

Lastly, the findings of this study convey the vital importance of providing students with opportunities for applied knowledge instead of simply teaching hands-on skills. Students were empowered when realizing the connections between their hands-on activities and prior knowledge. Many students also felt that the program's opportunities for applied knowledge helped them make sense of their overall education– an empowering realization for many. Although several students had previously participated in internships or capstone projects, they often felt that this program provided a more complete Capstone perspective – allowing them to utilize their education and personal experiences in a different way. It is vitally important that educators recognize the importance of providing students with opportunities to actually apply what they have learned – not just regurgitate it for testing purposes. Without realizing the relevance and importance of their education, some students may become disengaged and unmotivated, creating dire consequences to future endeavors. Although it is important for undergraduate students to be taught the hands-on skills they need, it is even more imperative that educators help students recognize the relevance of their education in the real-world.

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Chapter Four

Conclusions

Study Summary

Many colleges and universities have responded to calls for educational reform by turning to experiential learning environments. Though experiential learning is well established in the literature, a great deal of the research neglects to make ties between program outcomes and educational theory. This creates an unfortunate gap in knowledge regarding how participating students truly experience a program. Though it is important to determine what students gain from participating in a program, it is equally important to know how they have learned, so that programs can be modified and strengthened accordingly. This qualitative study examined the lived experiences of program administrators, undergraduate participants, and participating graduate students in an experiential learning environment. Study participants shared their experiences in their own words through open-ended interviews.

The Equine Studies Program at the Middleburg Agricultural Research and Extension Center began in 2010, with seven cohorts having completed the program since its inception. Following each semester-long experience program participants are given a survey, which is used to assess participant perceptions of program quality and efficacy. At this time, however, no study has been conducted to gain a thorough understanding of the program's purpose, nor assess if programmatic impacts align with its objectives. Consequently, this study is dually purposed with assessing the Equine Studies Program's structure and objectives, as well as determining the extent to which program objectives were met by participant experiences.

The objectives of this study were:

1. Determine the program's objectives through the eyes of program administrators.
2. Assess the program's immediate impacts on participants.
3. Assess the program's residual impact on participants.
4. Assess the program's impacts on participating graduate students.
5. Compare and describe common program impacts amongst these unique groups with the program's objectives.

Findings from the interviews highlighted the various opportunities for applied knowledge created by the program, the social benefits and challenges associated with participation, as well as aspects of personal growth. Seven themes emerged from data analysis:

1. Program resources allowed administrators to maintain a student centered learning environment.
2. Experiential learning opportunities allowed participants to apply knowledge in a real-world context.
3. Ongoing research projects provided additional experiential opportunities for program participants.
4. Relationships amongst administrators, graduate students, and peer cohorts influenced participant experiences in an immersive environment.
5. Programmatic design incorporates community involvement and consequently provided valuable networking opportunities for participating students.
6. Experiential aspects of programmatic design foster personal growth in participants.

7. Experiences in an experiential learning environment enhance participant understandings of career aspirations.

Although participants came into the program with a variety of backgrounds and skill levels, they repeatedly emphasized the program's value, and consistently felt that their experiences were both valuable and worthwhile.

Discussion

Research Question One: Determine the program's objectives through the eyes of program administrators.

Interviews with program administrators revealed six key program objectives:

1. Increase student knowledge pertaining to the equine sciences.
2. Provide opportunities for students to develop hands-on skills.
3. Creating an environment where students can apply the knowledge and hands-on skills they have gained.
4. Provide opportunities for students to become involved in undergraduate research.
5. Provide networking opportunities for participating students
6. Stimulate personal growth in participating undergraduate students.

These objectives demonstrate administrative acknowledgement of experiential learning programs, and provide support for the *a priori* proposition that progressive educational settings help students connect classroom knowledge with hands-on experience in a real-world context (Dewey, 1938; Kolb, 1984; NRC, 2009; Splan et al., 2009). Emergent themes for this research

question were 1) program resources allowed administrators to maintain a student-centered learning environment, 2) experiential learning opportunities allowed participants to apply knowledge in a real-world context, and 3) ongoing research projects provide additional experiential opportunities for program participants.

Administrators aimed to incorporate these objectives in program design, staying true to the tenants of experiential learning in creating an environment where students not only acquire new knowledge, but also learn how to apply it. The program is situated on a 420 acre facility with 50-60 horses on-site at any time, creating an ideal experiential learning environment. The program's equine science courses were built on coursework taught on the main campus. Basic hands-on competencies were established by administrators and integrated into the coursework, encouraging students to engage in meaningful learning. Participants were also given farm work responsibilities while in the program, pushing students to apply their skills and knowledge to solve problems on the fly in a realistic context.

Administrators also worked to create individualized opportunities based on student-reported learning objectives. This was often accomplished through undergraduate research projects. Participants were particularly appreciative of this effort, especially those who had not previously been exposed to scientific research procedures. Research experiences allow students to assist in generating knowledge, and learning how to then disseminate and make use of said knowledge. This skill was considered especially beneficial by students planning to attend graduate or veterinary school, as research skills are mandatory in those settings.

Research Question Two: Assess the program's immediate impacts on participants.

Participants described significant immediate impacts to their hands-on skills and social abilities, reinforcing the *a priori* propositions that participant experiences are unique and impact learning outcomes (Bandura, 1977, 1982, 1986, 2001; Kolb, 1984; NRC, 2009; Schunk, 2008), and that personal and academic growth is stimulated by the program's progressive nature, exposing students to often atypical social interactions, along with intrapersonal and interpersonal strengths and weaknesses (Bandura, 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; NRC, 2009; Splan et al., 2009). Emergent themes for this research question were: 1) experiential learning opportunities allowed participants to apply knowledge in a real-world context and 2) relationships amongst administrators, graduate students, and peer cohorts influenced participant experiences in an immersive environment.

Participants were exposed to a great deal of new hands-on opportunities that were unanimously considered to be beneficial. The program's unique combination of academic and farm work responsibilities allowed administrators to design cumulative course projects. Participants frequently discussed a semester-long herd health project, where they were responsible for managing a subset of the farm's horses. Students were expected to monitor the health of their assigned herd, diagnose concerns, and develop and implement treatment plans. Although participants were supervised and administrators had final approval, the participants felt this was the best way to master hands-on competencies. Participants also discussed gains in confidence, critical thinking abilities, and problem solving abilities as a direct result of these projects, which were recognized as valuable skills for any career.

Participants also experienced immediate impacts to their social abilities in learning to live, work, and learn in a small peer cohort. Though social conflicts were often discussed in the interviews, participants felt they benefited greatly from learning to work as a team despite differences in personalities and backgrounds. Participants acknowledged value in learning from cohorts, and were introspective in analyzing the strengths and weaknesses of the team, most especially recognizing their own. These impacts partially fulfill the programmatic desire to stimulate personal growth in undergraduate students, and were unanimously considered to an integral aspect of the program.

Research Question Three: Assess the program's residual impacts on participants.

It was more difficult to assess the program's residual impacts on participants, as many struggled with this question. However, participants most commonly responded by discussing networking opportunities and career aspirations, supporting the *a priori* proposition that program impacts on social abilities, hands-on skills, and general knowledge can impact future successes of program participants (Bandura 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; Splan et al., 2009; Schunk, 1989; Zimmerman & Schunk, 2004). Emergent themes for this research question were: 1) programmatic design incorporates community involvement and consequently provided valuable networking opportunities for participating students, and 2) experiences in an experiential learning environment enhanced participant understandings of career aspirations.

Participants unanimously discussed gaining valuable networks from their experiences in the program – with individuals involved in the program, and also with members of industry. Students felt that these contacts could assist them in pursuing a career in any facet of the equine industry, including graduate or veterinary studies. Participants also felt that the program's

networking opportunities sometimes exposed new facets of the equine industry, broadening student perceptions of the equine industry.

Participants also felt that their experiences in the program allowed them to reassess or confirm their career aspirations. Reflecting on program experiences encouraged students to evaluate personal goals and abilities. A majority of program participants have since gone on to graduate or veterinary school, but many changed focus or discipline as a result of their experiences. Other students affirmed pre-existing career aspirations and discussed feeling more confident entering their chosen career field because of their experiences in the program. Regardless, participants consistently described career related realizations as very valuable long-term impacts.

Research Question Four: Assess the program's impacts on participating graduate students.

It was difficult to fully ascertain any impacts the program might have on participating graduate students, as this was the most limited participant group in the study. However, the graduate students who were willing to participate focused on two impacts in particular: teaching experiences and personal growth. These findings support the *a priori* proposition that the experiences of participants in the program are unique and impact learning outcomes (Bandura, 1977, 1982, 1986, 2001; Kolb, 1984; NRC, 2009; Schunk, 2008). Emergent themes supporting this research question were: 1) experiential learning opportunities allowed participants to apply knowledge in a real-world context, and 2) experiential aspects of programmatic design fostered personal growth in participants.

Graduate students assisted in supervising and teaching the program's undergraduate participants, and felt the experiences they gained in those capacities were highly valuable. Though stepping in to supervisory roles was somewhat intimidating, graduate students appreciated the opportunity to interact with undergraduates in that capacity. Furthermore, graduate students unanimously felt they gained increased confidence and leadership abilities in those roles. Graduate students described these impacts as lifelong skills that have proven very useful in more recent endeavors. Although programmatic objectives are not directed at participating graduate students, the impacts described further support programmatic goals to provide valuable opportunities for applied knowledge, as well as stimulating personal growth.

Research Question Five: Compare and describe common program impacts amongst these unique groups with the program's objectives.

The Middleburg Equine Studies program was designed as a method of academic enrichment for undergraduate equine science students. Administrators developed core academic and skill competencies based on the prior knowledge of students. Additional research projects and learning opportunities are tailored to each cohort, creating a progressive student-centered learning environment. While administrators recognize the value in facilitating independent learning, they also acknowledge the value of students learning from cohorts and participating graduate students in a supervised environment.

Undergraduate students recount their experiences as tremendously beneficial on personal and professional levels. Students recognized the novelty of the program's progressive experiential nature, and were fiercely supportive of it. Students recognized the value of applying classroom knowledge in a realistic context, and felt empowered and motivated by their abilities

to master and apply knowledge outside the traditional classroom. Several students described their experiences as the culmination of their undergraduate pursuits, and unanimously felt more adequately prepared to pursue academic and professional aspirations.

Undergraduate participants emphasized the program's ability to foster personal growth, especially in terms of responsibility and leadership. The program's social setting fostered the growth of these traits, and was unanimously recognized as challenging but highly beneficial. Participants learned to handle program requirements by juggling academic, personal, and work related responsibilities. Though many struggled to balance these obligations, students unanimously appreciated the time-management skills fostered by this challenge. Participants emphasized the experiences they gained in a leadership role, with several recounting that they had to step out of their comfort zone to do so. Participants unanimously agreed that their program experiences helped them become more comfortable both in and out of a leadership role. Although learning to step in or out of a leadership role presented an extraordinary challenge for participants, it proved to be an impactful and lasting benefit for some all.

As a whole, undergraduate participants described their experiences in the program in an overwhelmingly positive light. The vast majority of students described their overall experience as the culmination of their undergraduate curriculum. Students felt their experiences created an invaluable link between their undergraduate education and the real-world – a capstone experience that provided them with the perspectives and abilities to successfully move forward in their chosen career fields.

Implications

Practice Recommendations

As previously discussed, the majority of the literature has focused on Kolb's (1984) model of Experiential learning. Unfortunately, Kolb (1984) neglects to address the pervasive social nature of educational environments. The findings of this study highlight the importance of recognizing the impacts created by a learner's social environment. Although participants occasionally struggled to cope with social challenges, they unanimously felt that they benefited from the experience. Students not only felt that the opportunity to learn from one another's differences was helpful, but also discussed experiencing personal growth from learning to live and work in such an environment. These findings support the need for recognition of social interactions by educators in any environment. By facilitating social interactions amongst students and administrators in educational environments, educators can enhance learning experiences and contribute to personal growth in students. Continued consideration of this perspective in future research would be highly beneficial in the development of a more holistic perspective of experiential education.

The findings of this study also focused on the program's ability to create a tailored educational environment for each cohort of students. Although administrators had pre-established hands-on competencies and learning objectives for the program, additional projects, research opportunities, and learning activities were developed to specifically address the self-reported learning objectives of each cohort. Students recognized this effort, and appreciated the program's ability to fill any perceived gaps in knowledge. These findings support the need for more learner-centered environments in higher education, as originally proposed by Dewey

(1938). Educators must assume the role of facilitator more frequently, allowing students to identify additional learning objectives, and consequently encouraging more self-directed learning. In order to adequately prepare our students to tackle the challenges presented by the modern agricultural industry, it is vitally important that we teach students *how* to learn. Allowing students to identify and pursue learning objectives with faculty supervision can foster problem solving and critical thinking abilities while simultaneously encouraging students to take responsibility for their own learning.

Lastly, the findings of this study convey the vital importance of providing students with opportunities for applied knowledge instead of simply teaching hands-on skills. Students were empowered when realizing the connections between their hands-on activities and prior knowledge. Many students also felt that the program's opportunities for applied knowledge helped them make sense of their overall education– an empowering realization for many. Although several students had previously participated in internships or capstone projects, they often felt that this program provided a more complete Capstone perspective – allowing them to utlize their education and personal experiences in a different way. It is vitally important that educators recognize the importance of providing students with opportunities to actually apply what they have learned – not just regurgitate it for testing purposes. Without realizing the relevance and importance of their education, some students may become disengaged and unmotivated, creating dire consequences to future endeavors. Although it is important for undergraduate students to be taught the hands-on skills they need, it is even more imperative that educators help students recognize the relevance of their education in the real-world.

Research Recommendations

The findings of this study provide adequate evidence that student-centered experiential learning opportunities provide invaluable experiences for undergraduate participants. The program presents a unique learning environment for students, and creates a myriad of opportunities to gain hands-on skills and apply classroom knowledge. Answering the National Research Council's (2009) call for educational reform, the Middleburg Equine Studies Program better prepares undergraduate students for careers in the agricultural industry.

This study was, however, limited in assessing programmatic impacts on participating graduate students, as very few were available to be interviewed. Though graduate education is traditionally more centered on applied knowledge, additional research evaluating graduate interactions in this setting would be beneficial, and may present points of reform to consider in graduate education. Additionally, a more complete perspective of the social interactions amongst graduate and undergraduate students in this context would provide more complete knowledge of social impacts on participant experiences.

Furthermore, this study provides insights on participant experiences in one particular experiential context. Colleges and universities across the nation have implemented programs with similar goals to those of the Middleburg Equine Studies program – providing opportunities for students to gain hands-on skills, apply classroom knowledge, and become better prepared for future careers. However, not all programs are created equal, and a more in-depth understating of additional experiential approaches would prove very valuable in considering future reforms. By gaining a more complete perspective of different experiential approaches, educators will be able to more effectively design and implement beneficial undergraduate opportunities.

Continued research should also be pursued to determine how this type of experiential opportunity may impact undergraduate curricula as a whole. The scope of this study was limited in considering the program as an isolated educational opportunity. However, additional knowledge of how participant experiences in this type of environment impact overarching curricula would undoubtedly provide valuable insight as to how educators can more holistically approach educational reforms.

Lastly, future research should give greater consideration to the pervasive social aspects of these learning environments. The findings of this study indicate that student experiences were strongly impacted by the environment's pervasive social interactions. Although additional insight of varying experiential approaches is still needed, continued research should work towards identifying a more holistic perspective of experiential education. Providing this perspective will undoubtedly assist educators in designing these valuable experiences so desperately needed in undergraduate education today.

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Appendix A

Alignment Tables of Research Questions, Interview Questions, Propositions, and Supporting Literature

As approved by IRB, August 28, 2013

Administrator Interview Questions

Interview Question	Research Question	Proposition	Related Literature
Please share with me your perspective of why the Middleburg Equine Science Program was created.	RQ1 – Determine the program's objectives through the eyes of program administrators	Progressive educational settings help students connect classroom knowledge with hands-on experience in a real-world context.	Dewey, 1938; National Research Council, 2009; Splan et al., 2009; Program Materials retrieved from www.equine.vt.edu
Please describe for me any short or long term objectives of the Middleburg Equine Science Program.	RQ1 – Determine the program's objectives through the eyes of program administrators	Today's students need more transferable skills, problem solving abilities, and critical thinking strategies for success.	Estepp & Roberts, 2011; National Research Council, 2009; Program Materials retrieved from www.equine.vt.edu
Please describe any immediate impacts that the program aims to have on participating students?	RQ2 – Assess the program's immediate impacts on participants.	The experiences of participants in the Middleburg Equine Science Program are unique and impact learning outcomes.	Bandura, 1977, 1982, 1986, 2001; Kolb, 1984; National Research Council, 2009; Schunk, 2008; Splan et al., 2009
Could you please describe any long-term impacts that the program aims to have on participating students?	RQ3 – Assess the program's residual impacts on participants.	The experiences of participants in the Middleburg Equine Science Program are unique and impact learning outcomes.	Bandura, 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; Schunk, 1989c, 1998; Splan et al., 2009; Zimmerman & Schunk, 2004
Please tell me about any ways that the objectives of the Middleburg Equine Science Program have changed since the program's inception in 2010.	RQ1 – Determine the program's objectives through the eyes of program administrators	Educational programs and pedagogies must be updated to adequately meet the needs of students.	Dewey, 1938; National Research Council, 2009; Program Materials retrieved from www.equine.vt.edu

Participant Interview Questions

Interview Question	Research Question	Proposition	Related Literature
Please describe a typical day as a participant in the Middleburg Equine Science Program.	RQ5 – Compare and describe common program impacts amongst these unique groups with the program's objectives.	Daily course and farm work requirements directly influence participant experiences and should align with program objectives.	Program Materials retrieved from www.equine.vt.edu
Please tell me about any immediate impacts you may have experienced due to your participation in the program.	RQ2 – Assess the program's immediate impacts on participants.	The experiences of participants in the Middleburg Equine Science Program are unique and impact learning outcomes.	Bandura, 1977, 1982, 1986, 2001; Kolb, 1984; National Research Council, 2009; Schunk, 2008
Please tell me about any long-term impacts you may have experienced due to your participation in the program.	RQ3 – Assess the program's residual impacts on participants.	The experiences of participants in the Middleburg Equine Science Program are unique and impact learning outcomes.	Bandura, 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; Schunk, 1989c, 1998; Zimmerman & Schunk, 2004
Please describe your overall experience as a participant in the Middleburg Equine Science Program?	RQ2 – Assess the program's immediate impacts on participants. RQ3 – Assess the program's residual impacts on participants.	Personal and academic growth is stimulated by the program's progressive and immersive nature, exposing students to often atypical social interactions, along with intrapersonal and interpersonal strengths and weaknesses.	Bandura, 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; National Research Council, 2009; Program Materials retrieved from www.equine.vt.edu; Splan et al., 2009
Please tell me about any ways that you feel your participation in the program could impact your future.	RQ3 – Assess the program's residual impacts on participants.	Program impacts on social abilities, hands-on skills, and general knowledge can impact future successes of program participants.	Bandura, 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; Program Materials retrieved from www.equine.vt.edu; Splan et al., 2009; Schunk, 1989c, 1998; Zimmerman & Schunk, 2004
If you were put in charge of the Middleburg Equine Science Program, is there anything that you would change? Is there anything that you would keep the same?	RQ5 – Compare and describe common program impacts amongst these unique groups with the program's objectives.	The lived experiences of program participants provide a unique, in-depth understanding of program strengths and weaknesses that can assist with future programmatic reforms.	Dewey, 1938; National Research Council, 2009; Program Materials retrieved from www.equine.vt.edu

Grad Student Interview Questions

Interview Question	Research Question	Proposition	Related Literature
Please describe a typical day as a graduate student working with the Middleburg Equine Science Program.	RQ5 – Compare and describe common program impacts amongst these unique groups with the program's objectives.	Day to day coursework and farm work requirements directly influence participant experiences and should align with program objectives.	Program Materials retrieved from www.equine.vt.edu
Please tell me about any immediate impacts you may have experienced due to your interactions with the program.	RQ4 – Assess the program's impacts on participating graduate students.	The experiences of participants in the Middleburg Equine Science Program are unique and impact learning outcomes.	National Research Council, 2009; Kolb, 1984; Bandura, 1977, 1982, 1986, 2001; Schunk, 2008;
Please tell me about any long-term impacts you may have experienced due to your interactions with the program.	RQ4 – Assess the program's impacts on participating graduate students.	The experiences of participants in the Middleburg Equine Science Program are unique and impact learning outcomes.	Bandura, 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; Schunk, 1989c, 1998; Zimmerman & Schunk, 2004
Could you please describe your overall experience as a graduate student interacting with the Middleburg Equine Science Program?	RQ4 – Assess the program's impacts on participating graduate students.	Personal and academic growth is stimulated by the program's progressive and immersive nature, exposing students to often atypical social interactions, along with intrapersonal and interpersonal strengths and weaknesses.	Bandura, 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; National Research Council, 2009; Program Materials retrieved from www.equine.vt.edu; Splan et al., 2009
Please tell me about any ways that you feel your participation in the program could impact your future.	RQ4 – Assess the program's impacts on participating graduate students.	Program impacts on social abilities, hands-on skills, and general knowledge can impact future successes of program participants.	Bandura, 1977, 1982, 1986, 2001; Dewey, 1938; Kolb, 1984; Program Materials retrieved from www.equine.vt.edu; Splan et al., 2009; Schunk, 1989c, 1998; Zimmerman & Schunk, 2004
If you were put in charge of the Middleburg Equine Science Program, is there anything that you would change? Is there anything that you would keep the same?	RQ5 – Compare and describe common program impacts amongst these unique groups with the program's objectives.	The lived experiences of program participants provide a unique, in-depth understanding of program strengths and weaknesses that can assist with future programmatic reforms.	Dewey, 1938; National Research Council, 2009; Program Materials retrieved from www.equine.vt.edu

Appendix B

IRB Protocol Approval Document

VirginiaTech

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

MEMORANDUM

DATE: April 29, 2014

TO: Donna Westfall-Rudd, Rick Rudd, Jessica Lynn Tussing

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires April 25, 2018)

PROTOCOL TITLE: The Critical Need for Experiential Learning Programs in Animal Agriculture

IRB NUMBER: **13-636**

Effective April 28, 2014, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the Amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As:	**Expedited, under 45 CFR 46.110 category(ies) 6,7**
Protocol Approval Date:	**August 28, 2013**
Protocol Expiration Date:	**August 27, 2014**
Continuing Review Due Date*:	**August 13, 2014**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
An equal opportunity, affirmative action institution

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

Appendix C

Interview Guides as approved by IRB, August 28, 2013

Administrator Interview Guide:

1. Please share with me your perspective of why the Middleburg Equine Science Program was created.
    - Tell me about your considerations during program development.
    - Were any educational models or educational theories considered in the development of this program?
2. Please describe for me any short or long term objectives of the Middleburg Equine Science Program.
    - What about any participation related objectives of the program?
    - What about any course related objectives of the program?
    - What about any hands-on skill related objectives of the program?
3. Please describe any immediate impacts that the program aims to have on participating students?
    - How might the program impact a student's hands-on skills during their participation?
    - How might the program impact a student's knowledge during their participation?
    - How might the program impact a student's social abilities during their participation?
4. Please describe any long-term impacts that the program aims to have on participants?
    - *Probing questions will be asked based on participant responses.*
5. Please tell me about any ways that the objectives of the Middleburg Equine Science Program have changed since the program's inception in 2010.
    - What do you think may have caused these changes to occur?
6. Is there anything else about the program that you would like to share with me, or that would be helpful for me to know?

Participant Interview Guide:

1. Please describe a typical day as a participant in the Middleburg Equine Science Program.
    - Tell me about any coursework you did.
    - Tell me about any hands-on experiences you had.
    - Were your coursework and farm work activities tied together in any way?
2. Please tell me about any immediate impacts you may have experienced due to your participation in the program.
    - Were your hands-on skills impacted in any way?
    - Was your personal knowledge impacted in any way?
    - Were your social skills impacted in any way?
3. Please tell me about any long-term impacts you may have experienced due to your participation in the program.
    - *Probing questions will be asked based on participant responses.*
4. Please describe your overall experience as a participant in the Middleburg Equine Science Program?
    - Was there anything you struggled with?
    - Was there anything you excelled at?
    - Did your peers impact your experience in any way?
    - Did the program's immersive nature impact your experience?
5. Please tell me about any ways that you feel your participation in this program could impact your future.
    - *Probing questions will be asked based on participant responses.*
6. If you were put in charge of the Middleburg Equine Science Program, is there anything that you would change? Is there anything that you would keep the same?
    - *Probing questions will be asked based on participant responses.*
7. Is there anything else that you would like to tell me about your experience as a participant in this program?

Graduate Student Interview Guide:

1. Please describe for me a typical day as a graduate student working with the Middleburg Equine Science Program.
    - Tell me about any coursework you did.
    - Tell me about any hands-on experiences you had.
    - Were your coursework and farm work activities tied together in any way?
2. Please tell me about any immediate impacts you may have experienced due to your interactions with the program.
    - Were your hands-on skills impacted in any way?
    - Was your personal knowledge impacted in any way?
    - Were your social skills impacted in any way?
3. Please tell me about any long-term impacts you may have experienced due to your interactions with the program.
    - *Probing questions will be asked based on participant responses.*
4. Please describe your overall experience as a graduate student interacting with the Middleburg Equine Science Program?
    - Was there anything you struggled with?
    - Was there anything you excelled at?
    - Did your peers impact your experience in any way?
    - Did the program's immersive nature impact your experience?
5. Please tell me about any ways that you feel your participation in this program could impact your future.
    - *Probing questions will be asked based on participant responses.*
6. If you were put in charge of the Middleburg Equine Science Program, is there anything that you would change? Is there anything that you would keep the same?
    - *Probing questions will be asked based on participant responses.*
7. Is there anything else that you would like to tell me about your experience as a graduate student interacting with this program?

Appendix D

Initial Recruitment Email, as approved by IRB, August 28, 2013

Hello!

I'd like to ask you to consider participating in the study I am conducting for my thesis research. My research interests focus on immersive and experiential learning programs in animal agriculture, and how these types of programs can impact participating students. I have chosen to use the Middleburg Equine Science Program for my research, and would like to learn about your experiences as a participant in the program.

Please consider my request. Your participation is entirely optional, and any information that you choose to share with me will be confidential, and no identifying information will be included in any publications or reports. Your experiences are not only important to me, but are also important to the program as a whole and other entities with similar programs. Anything that you share with me will not impact your studies or career, and will not be shared with anyone else. This will be promised to you in writing if you choose to participate in this study.

I hope that you will agree to be a part of this study. I would like to spend approximately one hour interviewing you. After that, I will share a copy of our discussion for your review. Please know that you will have the option of withdrawing from the study at any time, in which case all records of our conversations would be destroyed.

Please feel free to contact me with any questions you may have.

Regards,

Jessica L. Tussing

Appendix E

Participant Consent Form (initial content approved by IRB, August 28, 2013). Amended consent form below depicts project title change as reapproved April 28, 2014.

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants
in Research Projects Involving Human Subjects

Title of Project: The Critical Need for Experiential Learning Programs in Animal Agriculture

Investigator(s):	**Jessica L. Tussing**	**jessit07@vt.edu**	**231-6345**
	Name	E-mail	Telephone
	Dr. Rick D. Rudd	**rrudd@vt.edu**	**231-6836**
	Name	E-mail	Telephone

I. Purpose of this Research Project
The purpose of this study is to learn more about the experience of participating in the Middleburg Equine Science Program. Your experience with this program is unique and will help provide a valuable understanding of this type of educational program. You have been asked to participate in this research study due to your participation in the Middleburg Equine Science Program. Please read this form carefully and do not hesitate to contact me with any questions you may have prior to your participation in this study. This study is being performed as part of a Masters Thesis requirement, and results may be published.

II. Procedures
If you agree to participate in this study, the researcher will interview you either in person or electronically depending on your location and availability. The interview will be scheduled at your convenience. Interviews will be digitally recorded, transcribed, and ultimately destroyed by the researcher. Following each interview, study participants will be given their interview transcript to read and comment on.

III. Risks
We do not anticipate any risks to participants in this study. Your choice to or not to participate will not impact your academics or career in any way. You will be provided with a copy of the study results upon request, and all information that you choose to share with the researcher will be kept anonymous and confidential.

IV. Benefits
There are no direct benefits to you as a participant in this study, and no promise or guarantee of benefits has been or will be made to encourage your participation. However, your personal experiences will benefit the program and will help other similar programs regardless of location. Your personal experiences are very valuable and can only be expressed by you, in your words.

V. Extent of Anonymity and Confidentiality
The content of the interviews will be held in strict confidence by the researcher, and no identifying information will be included in any resulting publications or reports. No other participants or administrators of the Middleburg Equine Science Program will know who has decided to participate in the study. Study participants will only see results after all interviews have been coded and grouped into overall themes by the researcher. You will have the opportunity to choose a pseudonym, and this pretend name will be used in all transcribed and

published materials to ensure confidentiality. Only the researcher will know who you are, and all consent forms and documentation of your identity will be kept in a secure location by the researcher. Once the study is complete, the researcher will destroy all documentation of your true identity. Interviews will be recorded with a digital recorder, and all copies of interview recordings and interview transcriptions will be kept digitally on the researcher's password protected computer. At no time will the researcher release identifiable results of the study to anyone other than individuals working on the project without your written consent. The Virginia Tech (VT) Institutional Review Board (IRB) may view the study's data for auditing purposes. The IRB is responsible for oversight of the protection of human subjects involved in research. The researcher does, however, reserve the right to break confidentiality if an interview reveals instances of abuse or threat to a participant's self or others. Under no other circumstances will confidentiality be broken.

VI. Compensation
There will be no compensation for your participation in this study, aside from personal satisfaction.

VII. Subject's Consent
I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above by giving my verbal consent.

VIII. Freedom to Withdraw
It is important for you to know that you are free to withdraw from this study at any time without penalty. You are free not to answer any questions that you choose or respond to what is being asked of you without penalty.

Please note that there may be circumstances under which the investigator may determine that a subject should not continue as a subject.

Should you withdraw or otherwise discontinue participation, you will be compensated for the portion of the project completed in accordance with the Compensation section of this document.

IX. Questions or Concerns
Should you have any questions about this study, you may contact one of the research investigators whose contact information is included at the beginning of this document.

Should you have any questions or concerns about the study's conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the VT IRB Chair, Dr. David M. Moore at moored@vt.edu or (540) 231-4991.