

**EFFECTS OF THE TEXAS 4-H LIVESTOCK AMBASSADOR PROGRAM ON
4-H YOUTH AND THE PERCEIVED IMPACT ON LEADERSHIP SKILLS,
LIVESTOCK PRODUCTION KNOWLEDGE AND AGRICULTURAL CAREER
DEVELOPMENT**

A Dissertation

by

WILLIAM FREDRICK ZANOLINI

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2011

Major Subject: Agriculture Leadership, Education and Communications

Effects of the Texas 4-H Livestock Ambassador Program on 4-H Youth and the
Perceived Impact on Leadership Skills, Livestock Production Knowledge and
Agricultural Career Development

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Approved by:

Co-Chairs of Committee,	John Rayfield Christopher Boleman
Committee Members,	Jeffrey Ripley Shawn Ramsey
Head of Department,	John Elliot

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ABSTRACT

Effects of the Texas 4-H Livestock Ambassador Program on 4-H Youth and the Perceived Impact on Leadership Skills, Livestock Production Knowledge and Agricultural Career Development. (December 2011)

William Fredrick Zanolini, B.S.; M.S., Texas Tech University

Co-Chairs of Committee: Dr. John Rayfield
Dr. Christopher Boleman

Selected 4-H youth participated in the Texas 4-H Livestock Ambassador program. Forty six youth attended one of the 2011 Texas 4-H Livestock Ambassador Short Courses held on the campuses of Texas A&M University and Texas Tech University. The three-day short course is an intense introduction of animal science principles delivered by university professors and staff, Texas AgriLife Extension faculty and industry representatives. Upon completing the short course, the students must contribute 30 hours to youth livestock projects and Texas animal agriculture. Two instruments were developed to evaluate the perceptions of the participants regarding their perceived impact of the program on: 1) livestock production knowledge gained, 2) career development, 3) understanding of higher education, and 4) leadership development. The students perceived the Texas 4-H Livestock Ambassador Program to increase their understanding of livestock production knowledge, career development, higher education and leadership development. The results of the study validate the need

for advanced educational opportunities to develop high school aged 4-H members in the state of Texas.

DEDICATION

I dedicate this dissertation to my family.

To my grandfather, Calvin Stephens, he was my inspiration for pursuing a career in agricultural education. A cowboy and a gentleman, you showed me that the agricultural lifestyle is worth preserving and protecting. No words are sufficient to express my gratitude and appreciation for how he lived his life.

To my mother, Jan Zanoline, who provided me all the care, love and encouragement to pursue my dreams. Your morals and values continue to direct me through life. Simply put, you are the most wonderful person I have ever known.

My father, Sam Zanoline, is easily the hardest working person I know. Any work ethic I have is because of you. Your physical and emotional sacrifices for our family are not unnoticed. I also must add your compassion for others has inspired me along the way.

My sister, Christina Ward, you are a great friend and have fueled my competitive spirit. I appreciated the opportunity to follow in your footsteps until it was time to make my own, it made me stronger and I thank you.

My wife, Beth, you, the boys and future children are the reason. You encouraged me to pursue advanced degrees and relentlessly believe in me. You have been chasing Jackson and Jacob around while I have been working on this degree. This has been a team effort and I am so grateful that my best friend and I can now move forward. I love you so very much. February 7th, 2003...changed my life.

Finally, Lord thank you for my family and my many blessings.

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I would like to acknowledge my graduate committee:

Dr. John Rayfield, thank you for your expertise and attention to helping me complete this process. You took a genuine interest in making me a better researcher and writer. It was my good luck that you arrived at Texas A&M University when I started my degree. I am honored to have worked with you.

Dr. Chris Boleman, your visionary leadership pushed me along and gave me confidence this idea might work. You challenged my philosophies and forced me to defend them. I emerge more focused than ever and much of the credit goes to you.

Dr. Jeff Ripley, you are a steady supporter and a man of thoughtful judgment. Your advice and encouragement kept me on track. I appreciate your positive attitude and commitment to the program. I look forward to many more years of collaboration.

Dr. Shawn Ramsey, thank you for your ideas that heavily influenced this project. You invested a great amount of time and resources into the success of this project. We could have never gotten the Texas 4-H Livestock Ambassador Program off of the ground without your support.

Dr. Monty Dozier, you helped me through some stressful times. I sincerely appreciate your understanding of me professionally as well as personally.

The 4-H youth participating in the Texas 4-H Livestock Ambassador Program deserve acknowledgement because without them we would have had nothing to study.

Your commitment to the program is nothing short of extraordinary. Truly you are a special group of young people.

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DEFINITION OF KEY TERMS

4-H – A youth organization within the Cooperative Extension Service, that emphasizes uses of the student’s Head, Heart, Hands and Health to create better citizens of the future.

4-H Livestock Project – A situation where a student takes ownership of a livestock animal and is responsible for its daily maintenance and care, in preparation for a livestock show.

Cooperative Extension Service – Created with the passing of the Smith-Lever Act of 1914, as a division of the United States Department of Agriculture, it is charged with delivering non-biased, and research based information to the public.

County Livestock Show – An event where 4-H and FFA youth exhibit livestock projects among and against others within their county.

Livestock Project Workshop/Clinic – Educational events where 4-H youth and families enhance their livestock production knowledge and showmanship skills. A subject matter expert is usually brought in to provide training and guidance for the 4-H families. This includes livestock clinics at the club, county and regional levels.

Major/State Livestock Shows – A competitive event where 4-H and FFA members exhibit their livestock projects against other exhibitors in the state of Texas. Examples of major shows include: The State Fair of Texas, Houston Livestock Show and Rodeo, San Antonio Livestock Show, Fort Worth Livestock Show, Star of Texas and San Angelo Livestock Show.

Prospect Livestock Show – This is a non-terminal exhibition of the student's animal. The competitive event usually helps the exhibitor and animal prepare for the animal's terminal endpoint.

Texas 4-H Livestock Ambassador (T4HLA) – A 4-H member that has completed a Texas 4-H Livestock Ambassador Short Course, has profound interest in advanced animal science and is motivated to use knowledge and skills gained to share with novice 4-H livestock families. The 4-H Livestock Ambassador is also charged with advocating for Texas AgriLife Extension, Texas 4-H and Texas animal agriculture.

Texas 4-H Livestock Ambassador Program – The program incorporates the Texas 4-H Livestock Ambassador Short Courses, program management, curriculum development, distance learning, online conferencing, social media, resource development, planning committees, online reporting system, interpretation events and advisory boards.

Texas 4-H Livestock Ambassador Short Course – The three-day short course is an intense introduction to college level animal science curriculum instructed by Texas A&M and Texas Tech University professors, Texas AgriLife Extension specialists, livestock industry leaders and county extension agents.

CHAPTER I

INTRODUCTION

Historical Perspective

The world was a different place in 1902. Farmers accounted for 38% of the labor force in the United States, compared to the 2.6% reported in 1990 (Economic Research Service, 2000). A. B. Graham was a school principal and recognized the necessity of youth clubs with meetings, officers to run the meetings, a project to be completed and a record keeping system for the project (National 4-H Headquarters, 2009). In the early 1900's, the United States was mostly rural and agrarian. The Morrill Act of 1862 created land grant universities that conducted research regarding farming techniques. The university researchers and agents were had difficulty convincing farmers to try the research based farming techniques. Agents then turned to the youth that were typically more open-minded to try the new agricultural technologies. Marius Malgren, of Hickory Virginia, was just the right type of youth to try new farming methods. The energetic young man produced 209 bushels of corn on an acre of land. Young Mr. Malgren's 1912 corn project yield crushed the 45 bushel per acre average that adult farmers were achieving with traditional methods (National 4-H Council, 2005-2006). Examples such as this outlined the need for an agency to be the conduit between the university research and the

This dissertation follows the style of *Journal of Extension*.

public. The Smith-Lever Act of 1914 formed the Cooperative Extension Service and in 1916, the Cooperative Extension System adopted the 4-H program.

The Texas AgriLife Extension Service is part of the Cooperative Extension Service that is in partnership with the United States Department of Agriculture. The programming aspect of the Cooperative Extension Service is carried out by the employees and volunteers of the agency. The overall goal of the programming is to receive research based information or knowledge and then disseminates it to the public for the greater good. Programs were extensively studied by Worthen, Sanders, and Fitzpatrick (1997) defining a program as a set of activities that are designed to enhance or change the behavior of the learner. The concept proposed by the researchers holds true for the 4-H livestock projects.

Through the years, the 4-H program has flourished into the largest youth and adult program in the United States (Fiske, 1989). It has been well established that the 4-H program has a rich history of teaching youth life skills and character education. Texas 4-H alumni, who served on the Texas State 4-H Council, reported significant life skills development in areas of oral communication skills, ability to relate to others, working in teams, and building self-esteem (Boleman, Merten, & Hall, 2008). The Texas State 4-H Council is regarded as the most advanced leadership opportunity in the 4-H program. Therefore, it follows that if the same leadership principles are applied to a livestock specific program the youth should gain similar life skills. As previously mentioned there are currently less agriculture production farms than when young Marius Malgren planted

his corn in 1912. Despite this fact, the demand for positive youth programs that provide the opportunity for agricultural leadership and life skills development remains unchanged.

Texas 4-H membership has declined from over 1 million in 1999 (Texas 4-H, 2000) to just over 600,000 in 2008 (Texas 4-H, 2008). Most of the decline in membership can be attributed to a change in the reporting system within Texas AgriLife Extension Service, which no longer counts a facet of the 4-H program as members. Still, maintaining current membership and reaching out to new audiences, to increase educational contacts remains a constant goal. Livestock project clinics, project shows, fairs, major shows and national shows are the settings where the youth learn and complete with his/her project. Undoubtedly, the Texas 4-H program is changing as it now offers 46 project areas (Texas 4-H, 2011) and more are to come. Despite the diversity of projects, livestock projects are still the most recognized by the public. Thus it is of paramount importance for the Texas 4-H Program to provide 4-H youth programs with elevated levels of education for the youth to progress in his/her livestock production knowledge. This has seeded the need for educational quiz bowls, skill-a-thons, veterinary science, method demonstrations, animal science workshops and livestock project clinics. These facets of the 4-H program illustrate opportunities for youth to enhance their knowledge in specified areas of animal production. However, if youth are to remain involved in the program, innovative programs are needed to fuel desired advanced animal science education and leadership skills.

Purpose and Objectives

The purpose of this study was to invest a great deal of advanced educational resources into a group of 4-H youth through a comprehensive short course of advanced animal breeding and genetics, anatomy and physiology, ruminant nutrition, swine, sheep, goat and beef production, livestock project management, animal agricultural advocacy and agricultural career development. The Texas 4-H Livestock Ambassador Short Course will train the students to become livestock project leaders in his/her communities, ultimately assisting novice 4-H youth with their livestock projects.

Specific objectives are as follows:

1. Gain understanding of the student's perceived progression of knowledge as a result of the Texas 4-H Livestock Ambassador Short Course and Program.
2. Determine if the Texas 4-H Livestock Ambassador Program enhanced understanding of careers in agriculture.
3. Evaluate if the Texas 4-H Livestock Ambassador Program increased the students' understanding of higher education.
4. Investigate the students' perceptions of the role of young adult leadership in livestock project education.
5. Investigate the degree of the transfer of training from the Texas 4-H Livestock Ambassador (T4HLA) program to their respective communities.

CHAPTER II

LITERATURE REVIEW

Many studies have been conducted that investigate the value of the 4-H livestock project to the 4-H member. A study by Davis, Kieth, and Frazee (2001) investigated the perceived benefits of competitively exhibiting livestock projects in the state of Texas. The study was qualitative in nature as the researchers interviewed 4-H livestock families at the Houston Livestock Show and Rodeo. The data were collected and processed through the coding and categorization techniques, yielding six distinct benefits to the family. The benefits included: (a) social relations, (b) character, (c) family, (d) competition, (e) learning new cultures and environments, (f) and helping finance youth's education. While these benefits were known to those close to the 4-H program, this study gave credence to theories held by many in the profession. There is little question that the previous study sheds light on the 4-H youth in Texas, but are these findings similar to states other than Texas?

Benefits of the livestock project are not exclusive to the state of Texas. Rusk, Summerlot-Early, Machtmes, Talbert and Balschweid (2003) found that Indiana 4-H Livestock "members who exhibited at the state fair have higher skill levels in the areas of animal health care, animal grooming and animal selection than members who only exhibited only at the county fair" (p. 9). Further, they found that livestock projects develop responsibility in youth that benefit them in completing homework assignments, being punctual at work and caring for younger siblings. The studies listed show

evidence that the livestock project is a powerful tool for developing functional citizens throughout the United States. Further, if the students are gaining understanding of the animal science principles supporting their livestock projects they will then have a more comprehensive knowledge base of livestock production. The previous concepts leads to the question: to what extent has the impact of animal science workshops on 4-H youth been studied?

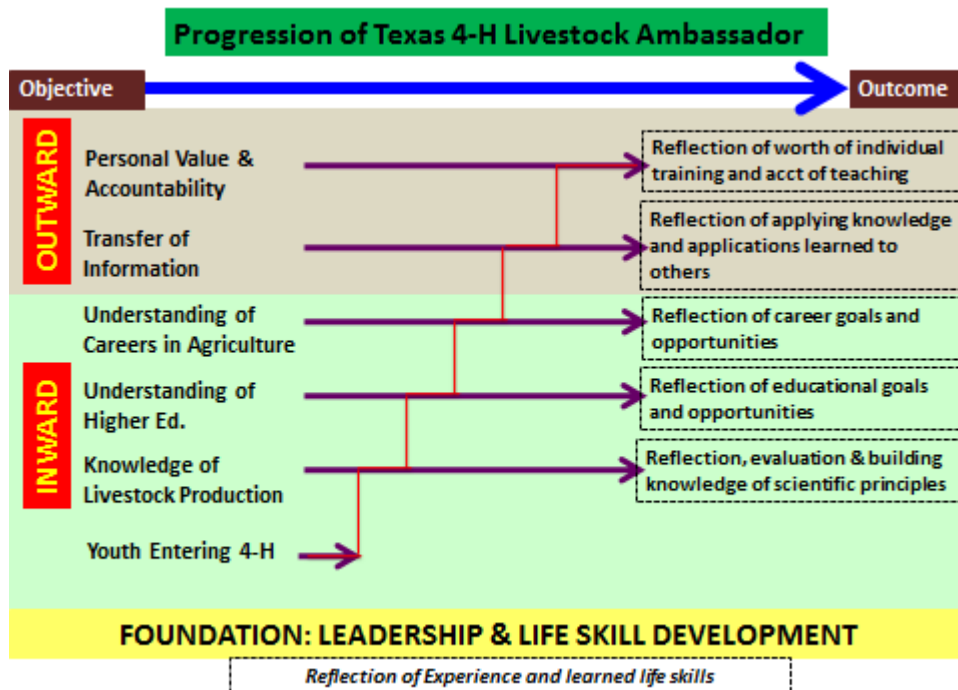
Comparatively, there have been a limited number of studies that evaluated the effects of advanced animal science education to senior aged 4-H youth. Rusk and Machtmes (2002) evaluated the effects of the three-day intensive animal science training at Purdue University. The youth participated in animal science workshops lead by professors in the animal science department at Purdue University. The researchers sought to teach the youth animal science principles and new methods to successfully raise livestock projects. The most compelling objective in the study was the effort to prepare the youth to share what they learned at the workshop back in their respective communities. The results indicated that 78% of the youth were motivated to share the information learned with others in their communities. While a follow up study to determine what the youth actually did in their communities was not conducted, the data can be utilized as a foundational research for future studies. More investigation is needed to evaluate the effects of advanced animal science curriculum on 4-H youth. The Rusk and Machtmes (2002) study indicated youth are interested in gaining expertise in animal science. Therefore it follows that students in the livestock project are at varying levels of expertise.

Students that complete the livestock exhibiting experience, navigate through his/her career at differing levels of expertise. Dreyfus and Dreyfus (1980) suggested that an individual progresses through different stages of the novice-to-expert model. The model included six transitional stages of the development of a professional. The stages include: novice, advanced beginner, competent, proficient, and expert. Dreyfus asserted that the novice professional has little experience to draw from and rely heavily on predetermined rules. Daley (1999) purports that novice professionals “have little experience with real situations; they must rely on the rules they have learned in their preparatory education to function” (p.134). The rule oriented behavior allows the new professional the ability to work within a set of guidelines. The professionals with time gain understanding of organizational processes and become savvy regarding their work. At the completion of the progression; the professional ‘has an intuitive grasp of the situation and zeros in on the accurate region of the problem without wasteful consideration of a large range of unfruitful possible situations” (Benner, 1982, p.406).

Dreyfus and Dreyfus (1985) further elaborated that in order to move from novice-to-expert there will be three observed changes in performance. First the professionals move from the reliance of abstract principles to then relying on concrete past experiences. Second the professional moves from viewing situations as being composed unrelated parts to then seeing the comprehensive understanding of how the parts contribute to the whole. Third the professional’s move from watching things happen to making things happen as an informed performer. The previous body of literature outlines the possible avenues that livestock exhibitors travel throughout their

professional career exhibiting livestock. Figure 1 presents how a student gains expertise through involvement in the program.

Figure 1. Progression of Texas 4-H Livestock Ambassador



Further, the proposed theories may contribute to the understanding of how experienced teen leaders can draw on concrete past experiences in teaching peers with less experience.

The National Research Council (2000) expanded on the concept of expertise in educational situations. The focus of the discussion was centered on how experts differ from novices with respect to learning and more importantly teaching. Experts have the ability to “notice features and meaningful patterns of information not noticed by

novices...acquired a great deal of content knowledge that is organized in ways that reflect a deep understanding of their subject matter...knowledge cannot be reduced to sets of isolated facts or propositions...able to flexibly retrieve important aspects of their knowledge (p.31). The previous quote outlines contributing factors to the value of expertise in education. The National Research Council (2000) is in agreement with Dreyfus and Dreyfus (1985) concerning the efficiency of expertise. Experts are adept in accessing important information that is applicable to the situation presented in the educational environment. Professionals regardless of age or title benefit from quick and applicable exercise of his/her expertise. Students in the T4HLA Program achieve varying levels of expertise depending on his/her level of involvement. The goal however should be to expose them to a quality learning experience that incorporates all three all domains of Bloom's Taxonomy.

Benjamin Bloom (1956) created taxonomy of learning domains. The domains focus of the types of learning; cognitive, affective and psychomotor. A student successfully exhibiting a livestock project and participating in advanced leadership activities likely would have the benefit of experiencing all of the domains.

Livestock project workshops and clinics are designed to improve the mental skills of overall knowledge of the student. 4-H and FFA youth receive publications as well as instruction from experts in his/her given specie. The previous focuses squarely on the cognitive domain. Further, the student might be stimulated by the educative experience and explore additional resources concerning his/her specie of interest. Bloom categorized the domain into six areas: (a) knowledge, (b) comprehension,

(c) application, (d) analysis, (e) synthesis and (f) evaluation. Later, Anderson and Krathwohl (2001) revised Bloom's terminology to make it more applicable for current learners. The revised categories include: a) remember, b) understand, c) apply, d) analyze, e) evaluate and f) create. Regardless of the terminology used, students selected to be Texas 4-H Livestock Ambassadors pass through each category in the path of completing his/her commitment to complete their ambassadorship.

The Texas 4-H Livestock Ambassador Short Courses rely heavily on building the content knowledge of the students. University professors provide college level, animal science curriculum to the students. The students are required to recall the information learned in quiz bowl competitions, pre/post tests and a final exam. To comprehend the material, the potential Livestock Ambassadors are asked to defend certain livestock production practices. The students also have to distinguish and translate information presented in the classroom into a hands-on activity. The staff also challenges the students to restate learned meanings based on the audience the information is presented to. A major objective T4HLA Short Course is for the student to use and apply the information learned in the classroom to help novice livestock exhibitors with their projects.

Application of the concepts presented in the curriculum to new experiences help the students build connections between what is learned and what can be practically applied. The act of assisting novice youth with livestock projects is in fact a demonstration of the students' understanding of learned concepts. Participation in the T4HLA Program demands the student to analyze his/her beliefs about animal agriculture

and youth development. Through the curriculum the students are provided with the science supporting livestock production practices. As the students learn the material he/she may begin to distinguish between research based information and common misconceptions. The synthesis of the material learned and real-life situations provide the opportunity for the student to create and combine his/her experiences with new information. The students are offered the chance to gain a more holistic understanding of exhibiting livestock through the connections between the show ring and commercial production. The aforementioned holistic understanding of animal agriculture provides the student the ability to evaluate experiences and defend or criticize certain livestock production practices. Evaluation is paramount in the learning process of a Texas 4-H Livestock Ambassador.

Bloom (1956) stressed the importance of emotional considerations in the learning process through the affective domain. The T4HLA Program and similar leadership programs develop and extract an emotional component to the curriculum and mission of the program. The program is designed to provide the platform and tools for youth to express and defend agricultural values. The community service requirements also appeal to the greater good concept that is intrinsic to many of the students in service learning. Schwartz, Lin, Brophy & Bransford (1999) agree with the value of emotion in the motivation to learn. The feeling that one is helping or assisting others is a powerful method of a student's motivation to contribute. "Hands for larger service" is a portion of the 4-H pledge and outlines the dedication of the organization to community service. Community service by its very nature has strong emotional attachments. Youth who

exhibit livestock projects also have the responsibility for the care and maintenance of his/her animal; the hands-on learning component of the previous activity falls centrally into Bloom's (1956) psychomotor domain.

Youth that exhibit livestock must train his/her animal to show, groom, feed, water and are partly responsible for the overall health of the livestock project. Trial and error and other variables contribute to a successful livestock project. The student's ability work to with and manipulate his/her animal's behavior, diet, health and appearance are accomplished with physical contact with the livestock project. The same principles can be transferred to the T4HLA Program. The program design incorporates the learn-by-doing model that is commonplace in experiential learning. Students are offered the opportunity to experience many aspects of livestock production. The instructors lectured on a topic and then the understanding is reinforced through psychomotor methods.

Each year the T4HLA Program trains approximately 50 new students on the campuses of Texas Tech University and Texas A&M University. The short course and program facilitates and encourages the use of community based learning. The program used many methods to create a learning community. The idea of learning for the benefit of a community has been well established. Bransford, Brown & Cocking (2000) proposed "Learners of all ages are more motivated when they can see the usefulness of what they are learning and when they can use that information to do something that has an impact on others-especially their local community" (p.61). Given the previous statement, it follows that the Livestock Ambassadors are motivated to learn as is helps

their immediate needs as learners, but also can recognize the impact the training will have on novice livestock exhibitors when they return to his/her respective communities. Further, the students are part of a larger community as members and ambassadors for the animal agriculture community. The T4HLA Program spends considerable effort to build the connection of what the students are learning to the high impact work of mentoring youth people and advocating for animal agriculture. The literature supports the program's efforts as it shows the students the real importance and function of the work they are doing.

John Dewey (1938) discussed the role of an educator and states "...education is essentially a social process. This quality is realized in the degree in which individuals form a community group" (p. 78). The provided theory of community group is in line with the (T4HLAP) effort to encourage the students to form community learning group. The program has created a Texas 4-H Livestock Ambassador Facebook page for transfer of information and a virtual learning environment where the students can communicate. The page provides a forum for discussion of learning and experiences. Recent T4HLA are combined with past graduates in the program in the online learning community. Educators are also part of the community and are available to assist throughout the student's ambassadorship. Dewey also theorized the educator must be part of the community. "It is absurd to exclude the teacher from membership in the group. "As the most mature member of the group he has a peculiar responsibility for the conduct of interactions and the intercommunications which are the very life of the group as a community" (p.78). Dewey's statement validates the need for the learning community

with the addition of faculty. The program utilizes faculty to introduce material and assist in the learning process in the student's year-long ambassadorship. In truth, John Dewey was not familiar with social networking in his writings; however the fundamentals of his community of learners are satisfied in the discussed online community. The previous discussion of technology in the learning environment outlines the generational differences found in teen/peer leaders opposed to many adult leaders.

Most 4-H youth and more specifically T4HLA are members of the millennial generation. The importance of understanding generational differences between millennials and older generations is important in the educational process. The millennials, according to Howe and Strauss (2000) appear to be extremely optimistic about life. Further, the generation is concerned with community service and social causes. The preceding findings contribute to the explanation of extraordinary service completed by students in the T4HLA Program. The students recognize the importance of helping others and the overall preservation of animal agriculture. The program seeks to provide a vehicle for the movement of their cause. The Millennial generation gets criticism by some regarding lack of direction and sense of entitlement, however they are young and want to accomplish meaning success.

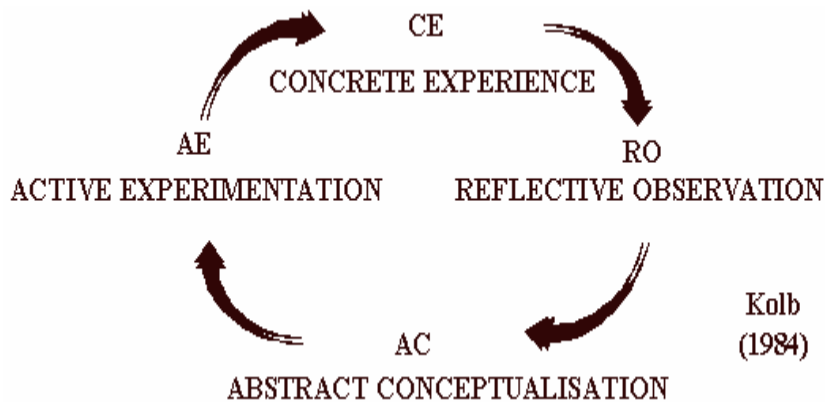
With the youth of the millennials comes energy. Knowles, Swanson & Holton (2005) commented on the notion that human beings contain a certain amount of energy. The mark of a good leader can be his/her talent for drawing this energy out. Knowles, Swanson & Holton (2005) inquired; What is the sum total of the human energy available in the system? What proportion of this energy is now being used? Where is the unused

energy located? Why is it not being tapped? What kinds of energy (physical, intellectual, psychic, moral, artistic, technical, social) are represented? What might be done to release this energy for accomplishing greater goals for the system and the individuals in it? (p.255).

The question Knowles, Swanson & Holton (2005) presents carrying the most weight is the final of the quote. In essence what conditions can teachers or leaders create to stimulate the release of energy in volunteers. As previously established in the evaluation of the work of Bloom, (1956) the affective or emotional domain is important in the learning process. Therefore the assumption can be made; if educators are to tap into and release the energy of our young leaders an effort must be made to intrinsically appeal to their emotions. The student must understand the value and become affectively motivated towards the youth movement. At the heart of intrinsic motivation is the presence of experiential learning experiences to bring abstract principles to real people thus making a genuine impact.

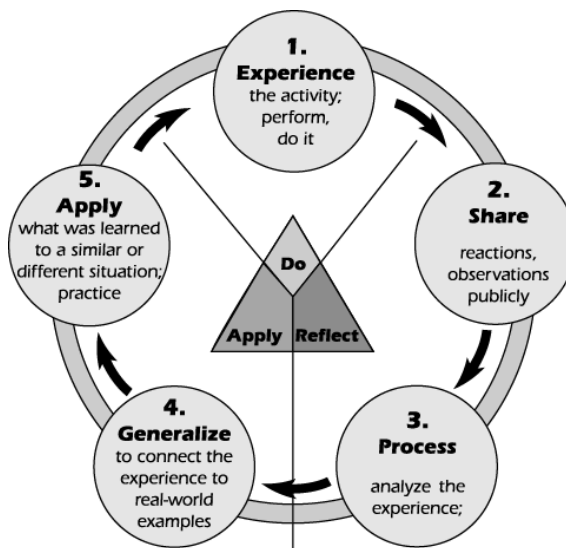
Texas 4-H currently has 46 project areas (Texas 4-H, 2011) and consists of at least five learning experiences and is supervised by an adult leader. The common theme of most of these projects is experiential learning. Kolb (1984), created an experiential learning model that outlined the following separate elements: (a) concrete experience, (b) reflective observation, (c) the abstract conceptualization and (d) testing in new situations (See Figure 2).

Figure 2. Kolb's Experiential Learning Cycle (Kolb, 1984)



Diem (2001) developed an experiential learning model that is more compatible with the 4-H program. The terminology is adjusted; however the fundamentals seem to be based on Kolb's Experiential Learning Cycle (See Figure 3).

Figure 3. The National 4-H Experiential Learning Model (Diem, 2001)



Students that exhibit a livestock project in the 4-H program, experience all of the previous elements. The act of raising and acquiring responsibility for an animal's care serves as the concrete experience in Kolb's model. Secondly, at the conclusion of the livestock project, the exhibitor completes a 4-H record book. In the book the student reports the expenses and profits the project incurred. Moreover, the reflections of the project experience and observations are also documented. These actions satisfy the requirements in the model for reflective observation. The act of completing the project and reflecting on experiences create the formation of concepts. The concepts obtained from the experience can then be transferred to future projects. Often a previous learned experience will affect future decisions concerning the livestock project. Therefore, the students who have gained valuable understanding of abstract conceptualization will then have the ability to apply said concepts to new situations. The active testing or experimentation starts the cyclical learning process again.

The concept of Kolb's model is congruent with the previously outlined findings of Rusk, Summerlot-Early, Machtmes, Talbert and Balschweid (2003) which found that concepts learned throughout the livestock project translated into improved performance in the classroom. Further, many of the successes of young people in 4-H is well documented and parallels the findings of Klienfled and Shrinkwin which stated that youth who participated in organized clubs or groups are more likely to have increased contact with a positive role model (Klienfled & Shrinkwin, 1983). In Texas AgriLife

Extension, with respect to livestock projects, “Livestock Mentors” are adult volunteers charged with the responsibility of taking research based information and disseminating it to the people of his/her community. Livestock mentors are essential to extension programming; however the use of teen/peer livestock leaders could very well be equally as important.

The potential success of teen volunteers mentoring novice 4-H and FFA members is not surprising. Rogers (2003) proposes the idea of homophily playing a vital role in the diffusion of innovation. The concept is that when the student and teacher “...share common meanings and a mutual subculture language, and are alike in personal and social characteristics, the communication of new ideas is likely to have greater effects in terms of knowledge gain...When homophily is present, communication is therefore likely to be rewarding to both participants” (p. 19). The preceding concept can be applied to the methods that the T4HLA Program effectively utilizes teens in agricultural education. Following the logic of Rogers, the junior 4-H members should receive more effective instruction from teens. The teens share similar meanings, gestures and understandings with the novice 4-H youth. The experienced youth are also not as far removed from the novice classification, thus having greater understanding of the novice’s knowledge level and potential barriers to learning than the adults. Simply stated, the teens are more like the novice youth. Students completing the T4HLA Short Course indicated they would contribute 30 hours of community service to the T4HLA Program. This study was interested in to what degree the students would transfer his/her training to actually assisting novice 4-H youth.

Students in the Purdue study (Rusk & Machtmes, 2002) indicated that they were motivated to help others in their respective communities. The idea of taking education gained during training and then applying that training is referred to by (Baldwin and Ford, 1988) as transfer of training. Baldwin and Ford identified three major categories that influence the transfer of training: (a) training inputs, including trainee characteristics, training design, and work environment; (b) training outputs, consisting of learning and retention; and (c) conditions of transfer, which focus on the generalization and maintenance of training.

Advanced animal science curriculum invested in 4-H youth and the intensity of a comprehensive learning environment could be considered as training inputs in this study. Follow up learning activities online and repetition of application of advanced animal science principles meet the demand outlined in the model for training outputs. Generalization of training could be accomplished as the student applies concepts and principles learned in an intense learning environment to different contexts in his/her life. An example of this could be applying nutritional concepts learned about swine and having the ability build connections between swine and human nutrition. To add to this theoretical framework Rogers (1971, 1983) outlines how students/professionals change in practice occurs after the learner adopts a new idea and then shows the ability to transfer that idea in practice. The practice in the context of peer leadership development would be sharing the new idea in the form of a livestock project visit, workshop, educational presentation and animal agriculture advocacy.

The preceding research and theoretical framework was present in the development of the T4HLA Short Course and T4HLA Program. The thoughts and findings of those presented in the literature review are quite applicable to the research and treatment design.

CHAPTER III

METHODOLOGY

2009 Pilot Study

In July of 2008, the first 4-H Livestock Ambassador Short Course was conducted on a multi county level. In a customer satisfaction survey issued at the conclusion of the course, students indicated the course impacted their: 1) understanding of college level curriculum, 2) advanced livestock production principles, 3) leadership development and 4) youth mentorship. The results of the 2008 4-H Livestock Ambassador Short Course were positive and revealing, yet a more systematic approach was needed for the validation of the findings. Therefore a qualitative pilot study was conducted on the Extension District 9 2009 4-H Livestock Ambassador Short Course. The purpose of the study was to investigate in more depth the possible impacts, listed above, to the participants.

Methods/Procedures of Pilot Study

The selection process was conducted by Texas County Extension Agents with 4-H responsibilities. The agents were utilized as gatekeepers in the study because they have first-hand knowledge of the qualifications of potential Texas 4-H Livestock Ambassador Short Course participants. Given the exploratory nature of this qualitative

research it was necessary to use a non-probability sample type (Merriam, 2009). More specifically, the study used the criterion-based selection, a term coined by LeCompte and Preissle (1993). Merriam stated that “LeCompte and Preissle prefer the term criterion-based selection to the terms purposive or purposeful sampling” (p. 77). The term criterion-based selection had favor in this study as the definition more closely followed the objectives previously set. Lecompte and Preissle (1993) stated that the researcher may “create a list of attributes essential” to address the research problem and then the researcher is able to “proceed to find or locate a unit matching the list” (p. 70). The agents received the selection-based criterion in a promotional letter sent from the Madison County Extension Office. The selection criterion for the research participants were: (a) senior aged (14-18) 4-H youth that have exhibited a superior level of ambition regarding their livestock projects, (b) students with a profound interest in animal science and animal production, (c) students have shown advanced leadership qualities and the a willingness to help others. The County Extension Agents yielded 25 participants for the study. The selected youth attended the 2009 Texas 4-H Livestock Ambassador Short Course, held in Navasota, Texas.

At the conclusion of the Texas 4-H Livestock Ambassador Short Course all 25 participants were part of a focus group interview. The overriding objective of the study was to investigate the perceptions of the impacts that the short course had on the 4-H members. According to (Berg, 2001) the nature of a focus groups tends “...to encourage subjects to speak freely and completely about behaviors, attitudes, and opinions they possess” (p. 111). Time and logistical constraints prevented the researchers from

reducing the size of the focus group to approximately 10 as suggested by many writers. A research assistant recorded handwritten field notes. A moderator asked the predetermined questions from the list approved by the panel of experts. A video recorder was in the room to evaluate nonverbal communication as well as fill in the gaps of the field notes. Data were categorized and coded to establish meanings and themes as recommended by (Creswell 2008).

Results of Pilot Study

Demographic data were collected at the conclusion of the course and yielded the following information: 17 females and 8 males, an average of 7 years in the 4-H Program, and an approximate mean grade point average of 3.85 on a 4 point scale. Upon arrival the youth were observed to be reserved and timid. The effects of teen aged youth spending 16 hours a day with each other were noticeable by the time the focus group interview took place at the conclusion of the short course. The students easily visited with one another and the reservation observed at the onset of the course was absent.

Prior to the interview the students had a break in the program. They were sitting, scattered about the room laughing and joking about some of the events that transpired during the course. The students had just finished an intensive three-day short course, which featured instruction from Texas A&M University professors and graduate students, Texas AgriLife Extension Service specialists and county extension agents, and industry representatives. The curriculum was college level and the professors were

asked to teach the students as if they were students at Texas A&M University. In all, the students had 31 hours of classroom and field instruction.

The interview was executed in a large banquet hall at the Grimes County Fairgrounds. The participants were seated in chairs in a general classroom structure. The moderator was seated at the front of the students and was on the same level.

The students revealed a great deal about themselves and the program. The participants were asked questions about the effectiveness of the short course, his/her perceptions of the 4-H livestock experience and what he/she hoped to accomplish as a Texas 4-H Livestock Ambassador. From the data, it was determined that five separate themes emerged. The themes in the highest frequency order to lowest were: a) newfound ability or qualification, b) importance of teen/peer leaders, c) better understanding of career aspirations, d) teaching providing leadership e) and understanding of higher education. Each theme will be investigated in relation to the objectives of the study. Additionally, to maintain confidentiality, students were assigned random codes that divided them into two groups.

Many of the students participating in the course were selected by a county extension agent because he/she felt that the young adult was helping others or had that capability. However, the students reported that the course provided the opportunity for them to hone their livestock production skills. The course made them more qualified to assist others with a livestock project. "The course made me feel more capable of helping" (B2). The youth were already doing the work to help their communities, the short course authenticated these young people as organized youth volunteers. "I feel it

[short course] will enable me to feel more comfortable helping others with their livestock projects” (B17). The students were helping others in their respective communities, many times answering questions about animal health, nutrition and showmanship. The short course put them face-to-face with subject matter experts in their given field and provided them with research based information. The results of this gave the students the confidence to speak about advanced animal science principals. “...The course made me feel more mature, because of the knowledge ...” (B16). The participants came into the course with one main species they either liked or showed. The short course sought to broaden their knowledge in all major livestock species. “I focus on sheep because that’s my favorite species, but the course brought a better understanding and appreciation of the other [livestock] species” (B8). A major objective of the study was to gain understanding of the knowledge gained by the students. The responses received that fell into the newfound ability or qualification was the result of the advanced curriculum taught. The participants felt that they were now more qualified to help novice 4-H families and that they (as teen/peer leaders) could connect with the novice youth.

Past experiences with livestock project clinics were discussed. The youth talked about how they were organized and what they thought was effective and what was not. The question was then proposed to them concerning the use of teen/peer leaders at the livestock project clinics. The group seemed to have agreement that clinics would be well served to include the use of teen leaders. “The teen leaders are important...because they [novice 4-H youth] learn better from their peers” (A1). The youth also indicated

that the novice youth would be more comfortable asking the teen leaders questions rather than adults. The line of reasoning complements the previous discussion of homophily (Rogers, 2003) stating that two parties that are more alike will have more effective communication. “I think that kids are fearful to ask questions to doctors [PhD’s and DVM’s] or important people leading the clinics. We [teen/peer leaders] connect better with the children to answer their questions” (B8). The preceding quotes show a strong feeling of purpose expressed by the potential ambassadors. The focus group interview room was filled with a great passion and pride as the students discussed the importance of teen leaders, in livestock project educational settings. The participants became noticeably excited concerning the matter. The moderator noticed an overwhelming non-verbal agreement among the youth that the teen/peer leader was under used and they could make a real impact. One did not get the sense that the youth thought they could instruct alone, however felt their role in the process should be increased. With increased teen/peer assistance, the youth leaders will advance the educational experience of the novice 4-H youth. As leaders the youth will have the ability to transfer the knowledge gained in the short course and apply it as they teach and mentor the novice 4-H youth.

Another objective of the study was to investigate what the participants’ perceptions were regarding what they hoped to accomplish as Texas 4-H Livestock Ambassadors. The theme that emerged from the data was the idea that the Livestock Ambassadors would be teachers and leaders. The atmosphere in the room was one of transformation as the students were discussing their role in the educational process. The students were graduating from a learner from elders to teacher of novice youth. “...we

need to use this knowledge to help little kids and older kids with their livestock” (B7). It was obvious that the students understood the challenge of teaching the novice youth; however they seemed eager to meet the challenges with enthusiasm. “We have poor showmanship at the county level and I hope to take my knowledge to challenge the youth to be better showman” (B10). This quote begins to cultivate a sub-category within the leader/teacher category, revealing a sense of advancement of the novice youth because of the instruction of the Livestock Ambassadors. “Kids might learn more and go further with their [livestock] projects as a result” (B8). The participants were distinctly motivated to teach and lead not only the novice youth but also the adults in their respective counties. “... We should use knowledge to help the adults have a better understanding [of livestock projects] so they can help us, help the kids” (B20). The students were in agreement that the course dramatically improved their knowledge of animal science principles; however another focus of the study was to capture the students’ career aspirations.

Granted, the sample was criteria-based and the participants were selected for the program based on an interest in an agricultural career, still there is a need to determine if the program impacted or changed their career decisions. When the issue was presented to the youth, their responses yielded the theme of a better understanding of career aspirations in agriculture. “I feel that there are more [career] choices available in agriculture than I originally thought” (B17). “I [now] realize there are other doors in agriculture besides just being a veterinarian” (B19). The youth articulated the expansion of options they have with a degree in the college of agriculture and life sciences. The

other interesting aspect of the theme was the students' perceptions that the course did not change their career paths, but enhanced their ability to succeed in pursuing that career through contacts made. "...It has helped establish contacts to further career aspirations...helped hone the process" (B19). "...Opened opportunities to easily find people to help us make career decisions" (A4). Many of the contact the students were referring to were the faculty and staff of Texas A&M University. The same individuals that provided the youth with a unique glimpse of what was expected with college level classes.

The final emergent theme was the students' new understanding of higher education. The students throughout the short course were in awe of the technology and capabilities in a university setting. The course opened their eyes and caused them to "expect more in college and [see] that there will be more hands on education" (B7). "...Helped me adjust to college level professors at a more complex level" (B4). The course also motivated the youth to attend college because of the exciting university curriculum and professors. The youth seemed to be bored or uninterested in some subjects in high school, but because of the short course they were reinvigorated to learn. "I don't like school...I now look forward to college because I realize I will be learning something...I am interested in" (B2). Following the focus group interview there was little doubt of the weighty affect the course influenced the participants understanding of higher education.

Summary and Discussion of 2009 Pilot Study

In 2009, the 4-H Livestock Ambassador Program is still in the developmental stages as a Texas AgriLife Extension program. The evaluation of the short course through the focus group interview provided some great data to analyze. The data suggests that the short course: a) provided the youth a newfound ability or qualification to help others, b) extrapolated sentiment from the teen/peers that their involvement in educational events is important and essential to the success of the 4-H livestock project, c) facilitated a better understanding of his/her career aspirations, d) motivated the senior 4-H youth to apply knowledge and skills through teaching and providing leadership to the novice livestock exhibitor e), and delivered insight of what the higher education institution requires for acceptance and student responsibility.

A substantial finding of the qualitative pilot study was the Texas 4-H livestock program already has teen leaders that want to assist novice 4-H youth in their counties. In theory the positive results of a Texas 4-H Livestock Ambassador doing community service in a county will be twofold: the student will satisfy intrinsic needs to make a difference in another person's life and serve as a mentor/advisor to the most fragile exhibitor, the novice 4-H youth.

The pilot study provided the researcher with program and research design to be evaluated. However, most importantly, the qualitative study generated themes that were transformed into the research objectives for this study. The objectives are as follows:

1. Gain understanding of the student's perceived progression of knowledge as a result of the Texas 4-H Livestock Ambassador Short Course.

2. Determine if the Texas 4-H Livestock Ambassador program enhanced understanding of careers in agriculture.
3. Investigate the students' perceptions of the role of young adult leadership in livestock project and animal agriculture advocacy.
4. Evaluate if the Texas 4-H Livestock Ambassador Program increased the students' understanding of higher education.

2010 Study Selection of Participants

As in the pilot test study the selection process of Texas 4-H Livestock Ambassadors was conducted by County Extension Agents with 4-H responsibilities. The agents were utilized as gate keepers in the study because they had first-hand knowledge of the qualifications of potential T4HLA Short Course participants. Further, in 2010, selection committees were formed for each respective university. The reasoning behind the change was generally the students apply for the courses resided regionally around each university. County extension agents and Extension specialist surrounding the universities had greater knowledge of potential Livestock Ambassadors qualifications due to the student proximity to the campuses. Given the exploratory nature of this study, it was necessary to use a non-probability purposive sample. According to Fraenkel and Wallen (2009), purposive sampling is necessary when previous knowledge of the population and the specific purpose of the research is known. Fraenkel and Wallen (2009) go on to state that purposive sampling is different than convenience sampling in that researchers do not simply study whoever is available but

rather use their judgment to select a sample that they believe, based on prior information, will provide the data they need.

More specifically, the study used the criterion-based selection, a term coined by LeCompte and Preissle (1993). LeCompte and Preissle (1993) stated that the researcher may “create a list of attributes essential” to address the research problem and then the researcher is able to “proceed to find or locate a unit matching the list” (p. 70). The agents received the selection-based criterion in a promotional letter. The selection criterion for the research participants was: (a) senior aged (14-18) 4-H youth that have exhibited a superior level of ambition regarding their livestock projects, (b) students with a profound interest in animal science and animal production, (c) students who have shown advanced leadership qualities and the a willingness to help others.

The educational program treatment was the 4-H Livestock Ambassador Short Course. The short course is an intensive, college level animal science educational event. The youth received instruction Extension specialists, university animal science professors, veterinarians, County Extension Agents, industry representatives, elected officials and major livestock show professionals. Additionally, youth were trained on in depth livestock project management with specie specialists. The course designed focused on presenting advanced information compacted into a rigorous schedule. The students were challenged intellectually as well as tested on their stamina. The research objective of preparing students for life in college was executed through long days, late evenings and early mornings. Tables 1, 2 and 3 outline the educational activities of the T4HLA Short Course.

Table 1

Texas 4-H Livestock Ambassador Short Course Schedule – Day 1

Time	Topic	Description
9:15-10:00 am	Pre-test Written Examination/ Pre-Test Expertise	The exam was 85 questions. The response options were short answer and multiple choice. Questions were provided in advance by the presenters. The pre-test expertise measured the self-reported expertise of each livestock species in the study
10:00-11:00 am	Introduction to Sheep and Goat Reproduction	University professor lectured on the reproductive anatomy and function of hormones. The benefits of artificial insemination were discussed.
11:00-12:00 pm	Breeding Soundness Exam, Laparoscopic Artificial Insemination, Semen Collection and freezing	Professor demonstrated how to conduct a breeding soundness exam and live laparoscopic artificial insemination. Students collected, evaluated and froze semen.
1:00-3:00 pm	Parasites in Small Ruminants	Professor lectured on species, damage, prevention and treatment of internal parasites. Students evaluated fecal floats under microscope and identified parasite eggs
3:15-3:30 pm	Quiz Bowl Competition	Students were separated into four teams and competed as a group. Reflective exercise to reinforce learning.
3:45-4:15 pm	Importance of Helping Novice Livestock Exhibitors	County extension agent led discussion on the reasons new exhibitors leave the 4-H program
4:15-4:45 pm	Importance of Livestock Evaluation	University Livestock Judging Coach explained the history and need for accurate evaluation of livestock
5:00-6:00 pm	Running a Major Livestock Show	Director from the Houston Livestock Show and Rodeo lectured on the mission of the show and internship opportunities.
6:00-6:30 pm	Opportunities in Agriculture Education	Professor lectured on degree plans, majors and career goals with a degree from Agricultural Leadership, Education and Communications
8:30-9:30 pm	College Life	Representative Texas A&M University Students discussed the challenges of college and how to be a successful student

Note. Table reflects only educational components of schedule

Table 2

Texas 4-H Livestock Ambassador Short Course Schedule – Day 2

Time	Topic	Description
8:30-9:30 am	Introduction to Beef Cattle Production and Reproduction	Lecturer covered differences in types of cattle and breeding systems. Reproductive anatomy of cow, function of hormones, artificial insemination and embryo transfer
9:30-10:30 am	Injection Site Demonstration and Beef Quality	State Extension Beef Specialist lectured on the importance of injection site location and producing a quality product for human consumption
10:30-11:00 am	Career Opportunities with a Degree in Agriculture and Life Sciences	A representative from the university career center discussed possible career paths and internships with an agricultural degree.
11:15-12:00 pm	How to get into Vet School	Professor in the Dean's office met with the students and discussed opportunities and self-inflicted barriers in acceptance into vet school.
1:00-1:30 pm	Texas A&M University Recruitment to the College of Agricultural and Life Sciences	Professor from the Deans office explained the application process and answered students questions
1:30-2:30 pm	Animal Agricultural Issue Research	Each team was designated an issue to research in the computer lab of the animal science building. The research was in preparation for the final presentation
2:30-4:00 pm	Beef Cattle Palpation and Artificial Insemination	Lecturer led discussion on proper cattle palpation. Students palpated a cow and performed a mock artificial insemination.
4:00-4:30 pm	Quiz Bowl Competition	Students were separated into four teams and competed as a group. Reflective exercise to reinforce learning.
4:30-5:00 pm	Show Cattle Trends	Graduate student presented on the history and logic of show cattle trends over the past 75 years.
6:00-7:00 pm	Being a Livestock Ambassador	Current Livestock Ambassadors and graduates of the program visited with the 2010-2011 class on experiences and opportunities in the program.
10:00-12:00 am	Animal Agricultural Issue Research	Each team presents the findings from their topic in the following ways: 1) Informational talk, 2) Argue Pro/Against Topic or 3) a skit.

Note. Table reflects only educational components of schedule

Table 3

Texas 4-H Livestock Ambassador Short Course Schedule – Day 3

Time	Topic	Description
8:00-10:00 am	Managing Show Pig Projects	County extension agent explained the factors that contribute to a successful project. Instructor also discussed the importance of ethics and helping others
10:00-10:30 am	Tour of University Meat Science Facility	Graduate students explained the processes stages of market hog processing and the research behind the stages.
10:30-12:00 am	Market Hog Feeding Trial Results	Graduate Students discussed the carcass evaluation procedures, reading carcass data and pork meat quality evaluation. Students graded meat from the hogs in the feeding trial.
12:00-1:00 pm	Consumption of Hogs in the Feeding Trial	Students ate portions from each hog in the trial and ranked them based on the quality of his/her eating experience.
1:30-2:30 pm	Importance of the Youth Voice in Agriculture	The Director of the Texas 4-H Program discussed the power of the youth voice in protecting agriculture. Additionally the use of technology was outlined as a great opportunity to educate the public.
2:30-3:00 pm	Online Reporting	Extension program specialist demonstrated to the students how to report educational activities to the online reporting system. The use of Facebook for communication was also discussed.
3:00-4:00 pm	Communicating with Elected Officials	Texas 4-H Staff and a U.S. Congress Aid led the discussion of effectively communicating ideas or causes to elected officials
4:30-5:30 pm	Post-test Written Examination/Post-Test Expertise	The exam was 85 questions and identical to the Pre-test. The post-test expertise measured the self-reported expertise of each livestock specie in the study

Note. Table reflects only educational components of schedule

Following the T4HLA Short Course participants were sent a 150 question final exam. The exam was distributed to the student via email. The take home, short answer

and multiple choice assessment were composed of questions sequestered from the curriculum. The students could use all available resources from their respective T4HLA Short Course to answer questions. The students were given one week from receipt to complete and return the exam via email. To remain in the T4HLA Program students were required to pass the exam with a score of 80% or greater. The exam was used as a tool to assess the student's commitment to the program. Participants who completed and passed the final exam were officially considered 2010-2011 T4HLA.

The students are required to contribute 30 hours to their community through continued education opportunities, assisting 4-H families and online conferencing. The 4-H Livestock Ambassador staff remains in contact with ambassadors to provide guidance and track progress through an online reporting system.

Data Collection and Instrumentation

The collection of data took place on site of the 2010 Texas 4-H Livestock Ambassador Short Courses and at the conclusion of one year of service as a Texas 4-H Livestock Ambassador.

Upon arrival at the T4HLA Short Course the students completed the self-assessment instrument regarding his/her overall expertise on the following livestock species: 1) Cattle 2) Goat 3) Swine and 4) Sheep. The instrument was administered by a Madison County Extension Intern on the Texas A&M University Campus and by an Extension Program Specialist at the Texas Tech University site. The self-reported scale ranged from scores 1-7. 1=Novice- Limited understanding of breed differences,

nutrition, health, reproduction and no showmanship knowledge. 4=Intermediate- Basic understanding of breed differences, nutrition, health, reproduction and some showmanship knowledge. 7=Expert- Advanced understanding of college level animal science principles: cross breeding systems, specie specific nutrition, diseases and vaccinations, reproductive cycles and gestation and could teach others to show specie with ease. Twenty four of the 26 participants at the Texas A&M University T4HLA Short Course completed the instrument while the Texas Tech University students yielded 20 completed instruments from all 20 participants.

At the conclusion of the short courses an identical posttest instrument investigating the levels of livestock expertise was distributed by the same individuals listed above. Twenty six of the 26 participants at the Texas A&M University T4HLA Short Course completed the instrument while the Texas Tech University site yielded 20 completed instruments from all 20 participants. The second instrument was administered at the conclusion of the courses. The purpose of the instrument was to gain understanding of the student's perceptions regarding his/her overall experience exhibiting livestock in the Texas 4-H Program with the influence of the T4HLA Short Course. More specifically, the statements contained in the instrument were focused on assessing the young adult's insights in: 1) advanced leadership development, 2) understanding of higher education and 3) career development. The survey utilized a five point Likert-type scale with responses ranging from "Strongly Disagree =1, Disagree =2, Neutral =3, Agree =4 and Strongly Agree =5".

A pilot test was conducted on junior livestock exhibitors at the Houston Livestock Show and Rodeo. Participants who completed the pilot test instrument met the following criteria: 1) Member of Texas 4-H, 2) Exhibiting specie evaluated in the study and 3) Age 14-18. Thirty students completed the pilot instrument. Cronbach's alpha (1951) was used to test the reliability of instrument and was calculated to be $\alpha = .93$. No adjustments were made to instrument based on the reliability analysis.

A follow up survey (Appendix) was distributed to the 4-H Livestock Ambassadors at the end of their year of service to investigate student's progress as a T4HLA as well as perceptions of their overall experience as a T4HLA. The survey utilized a five point Likert-type scale with responses ranging from "Strongly Disagree =1, Disagree =2, Neutral =3, Agree =4 and Strongly Agree =5". A panel of experts, composed of university faculty and extension specialists reviewed the instrument for content and face validity. The instrument was divided into three constructs: 1) career goals, 2) higher education, and 3) leadership.

An extension program specialist obtained the email list of the students serving as 2010-2011 T4HLA from the online reporting database. A pre-notice email was sent on May 25, 2011 to alert the T4HLA that they would be receiving an online survey on May 27, 2011. The pre-notice email was sent by a Texas AgriLife Extension Specialist in the Organizational Development Unit. On May 27, 2011 the online survey was emailed to the 2010-2011 T4HLA class in the data base. The students were instructed to complete the survey in one week. The researcher did not code the respondent to assure anonymity of those who responded and also those who did not. Two follow up emails were sent

thanking those who had completed the survey. The second purpose of the follow up emails was to remind the students to complete the survey if he/she had yet to complete it. The survey expired and data collection discontinued on June 27, 2011.

Data Analysis

Quantitative data were analyzed using the Statistical Package for Social Science (SPSS) version 17. Descriptive statistics were used to describe demographic characteristics of 4-H youth livestock ambassadors as well as perceptions of their experience during their year of service. Descriptive statistics used to describe the data were as follows: 1) frequency 2) measures of central tendency, 3) percentages and 4) variability. The independent variables were identified as the T4HLA Short Course or T4HLA Program. The dependent variables were the research questions regarding change in perception in: 1) career goals, 2) leadership development and 3) understanding of higher education.

CHAPTER IV

FINDINGS AND DISCUSSION

The purpose of this study was to invest a great deal of advanced educational resources into a group of 4-H youth through a comprehensive short course of advanced animal breeding and genetics, anatomy and physiology, ruminant nutrition, swine, sheep, goat and beef production, livestock project management, animal agricultural advocacy and agricultural career development. However, from a practical standpoint, if more is understood about what type of student is entering the T4HLA Program extension professionals can recruit future students based on criteria set forth in the study.

Demographics of Livestock Ambassadors

This study used the frequencies and percentages to describe the participants in the study: Gender of the students selected for the 2010-2011 class was heavily in favor of females 65% ($n=30$) and males 35% ($n=16$) respectively.

Forty five participants responded to the level of livestock project involvement with regard to the species exhibited by the participants. The results are as follows: Goats 67% ($n=30$), Cattle 60% ($n=27$), Sheep 56% ($n=25$), Swine 38% ($n=17$), Rabbits 18% ($n=8$) and Poultry 11% ($n=8$). The study also evaluated the number of species the students had exhibited: One Specie 13% ($n=6$), Two Species 38% ($n=17$), Three Species 36% ($n=16$), Four Species 9% ($n=4$) and Five Species 4% ($n=2$).

Forty three completed “leadership experience” portion of the instrument investigating the student’s level of involvement in 4-H leadership positions. The levels

of positions included: 1) Club, 2) County, 3) District and 4) State. Forty five students completed this section of the instrument: Club 100% ($n=43$), County 63% ($n=27$), District 14% ($n=6$) and State 2% ($n=1$).

Forty five participants completed the 4-H age portion of the instrument at the time of their respective T4HLA Short Course. The students had the option to select the following: 1) Fourteen, 2) Fifteen, 3) Sixteen, 4) Seventeen and 5) Eighteen. The breakdown of age is as follows: Fourteen 11% ($n=5$), Fifteen 31% ($n=14$), Sixteen 29% ($n=13$), Seventeen 27% ($n=12$) and Eighteen 2% ($n=1$). The mean age of the students at the time of the short courses was 15.78 years.

Forty four students completed the plans after high school portion of the instrument. Potential responses included: 1) Enter the workforce, 2) Attend a trade school, 3) Attend a junior college and 4) Attend a four-year university. Participants identified mostly attending a four-year university with 86% ($n=38$) of the responses. Attending a junior college was a distant second with 11% ($n=5$) followed by entering the workforce at 2% ($n=1$). Attending a trade school did not have any responses.

A total of 20 T4HLA completed the self-assessment portion of the instrument at the campus of Texas Tech University. The results indicate that all students experienced increased expertise across all four species evaluated. Perceived swine expertise showed the largest change (1.85) followed by Cattle (1.35), Sheep (1.20) and Goat (.75) respectively. Table 4 contains the means and standard deviations for the responses.

Table 4

Texas Tech University Perceptions of Species Expertise (N=20)

Species	Pre-Mean	Pre-SD	Post-Mean	Post-SD
Beef	3.55	2.28	4.90	1.59
Goat	4.55	1.64	5.30	1.59
Swine	2.60	1.98	4.45	1.57
Sheep	3.60	1.64	4.80	1.47

Note. 1=Novice- Limited understanding of breed differences, nutrition, health, reproduction and no showmanship knowledge. 4=Intermediate-Basic understanding of breed differences, nutrition, health, reproduction and some showmanship knowledge. 7=Expert- Advanced understanding of college level animal science principles: cross breeding systems, specie specific nutrition, diseases and vaccinations, reproductive cycles and gestation and could teach others to show specie with ease.

A total of 24 T4HLA completed the self-assessment portion of the instrument at the campus of Texas A&M University. The results indicate that all students experienced increased expertise across all four species evaluated. Perceived Sheep expertise showed the largest change (1.58). The remaining species Cattle (1.25), Swine (1.25) and Goat (1.25) all showed identical increases based on the students' responses. Table 5 contains the means and standard deviations for the responses.

Table 5

Texas A&M University Perceptions of Species Expertise (N=24)

Species	Pre-Mean	Pre-SD	Post-Mean	Post-SD
Beef	4.13	1.57	5.38	1.17
Goat	3.88	1.68	5.13	1.26
Swine	3.08	1.59	4.33	1.09
Sheep	3.71	1.52	5.29	1.20

Note. 1=Novice- Limited understanding of breed differences, nutrition, health, reproduction and no showmanship knowledge. 4=Intermediate- Basic understanding of breed differences, nutrition, health, reproduction and some showmanship knowledge. 7=Expert- Advanced understanding of college level animal science principles: cross breeding systems, specie specific nutrition, diseases and vaccinations, reproductive cycles and gestation and could teach others to show specie with ease.

To reinforce the change in knowledge research objective, a written exam was given pre and post to the 2010 participants at the T4HLA Short Course at Texas A&M University. This could be accomplished at Texas A&M University as the course was held there in 2009 as well. The researcher and staff had experience at this location and requested questions for the exam from the presenters in advance of the 2010 T4HLA Short Course. The exam of 85 questions concerning material cover in the course was given to the students at the beginning and the conclusion of the T4HLA Short Course at Texas A&M University. Table 6 below reflects the grand means of the exam scores.

Table 6

Texas A&M University Written Pre/Post Exam Results (N=24)

Written Pre/Post Exam	Mean	SD	Range-min	Range-max
Pre-test	49.17	12.10	25	74
Post-test	73.42	11.71	45	95

Note. Mean scores reflect a percentage out of 100

A total of 46 participants completed the 4-H Livestock Exhibiting Experience portion of the instrument. The instrument was administered at the conclusion of the student's respective T4HLA Short Course. This portion of the instrument focused on accessing the perceptions of the student overall experience exhibiting livestock in the Texas 4-H Program. The statements were focused on assessing the young adult's insights in career, higher education and leadership development.

With regard to career development, the statements that garnered the highest level of agreement at both universities are as follows: 1) The livestock showing experience will benefit me if the future no matter what career I choose ($m= 4.92$ and 4.9), 2) I have met people that will help me in my career ($m= 4.88$ and $M=4.80$), 3) 4-H has played a major role in my career development ($m= 4.85$ and $m= 4.80$). Low levels of agreement is not reported in this construct due to the mean values >4.5 . Table 7 reflects the student's perceptions of career development.

Table 7

*Texas A&M University and Texas Tech University Perceptions of Career Development
(TAMU n=26, TTU n=20, Total N=46)*

Statement	TAMU		TTU	
	Mean	SD	Mean	SD
The 4-H program has prepared me in career development.	4.69	.47	4.50	.51
I will use skills gained in the livestock showing experience in my career.	4.81	.40	4.80	.41
4-H has played a major role in my career development.	4.85	.37	4.80	.41
I can see myself in an agricultural career.	4.73	.72	4.45	1.05
The livestock showing experience will benefit me if the future no matter what career I choose.	4.92	.27	4.90	.31
I have met people that will help me in my career.	4.88	.33	4.80	.52
Construct Mean	4.81		4.71	
Grand Mean			4.76	

Note. *Item reversed coded. Responses: 1=Strongly Disagree 2=Disagree 3=Neither Agree or Disagree 4=Agree 5=Strongly Agree

Table 8 contains the means and standard deviations for the understanding of higher education construct. The statement with highest level of agreement was 1) The Texas 4-H program has provided college level animal science ($m=4.80$ and $m= 4.65$). The statement with the lowest level of agreement was 1) 4-H can do more to prepare me for what college classes will be like ($m= 3.96$ and $m= 3.65$).

Table 8

*Texas A&M University and Texas Tech University Perceptions of Higher Education
(TAMU n=26, TTU n=20, Total N=46)*

Statement	TAMU		TTU	
	Mean	SD	Mean	SD
The Texas 4-H program has provided college level animal science.	4.65	.49	4.80	.41
4-H has prepared me for college level curriculum.	4.42	.58	4.58	.51
4-H can do more to prepare me for what college classes will be like.	3.96	.92	3.65	.81
The 4-H program has offered me advanced livestock educational opportunities.	4.65	.56	4.80	.41
Because of the Short Course my opinion of Texas A&M/Tech University has improved.	4.73	.53	4.25	.85
Construct Mean	4.48		4.42	
Grand Mean		4.45		

Note. *Item reversed coded. Responses: 1=Strongly Disagree 2=Disagree 3=Neither Agree or Disagree 4=Agree 5=Strongly Agree

The Leadership development construct contained the most statements.

Statements garnering the highest level of agreement were statements like: 1) The 4-H program has prepared me to assist others with livestock projects ($m= 4.77$ and $m=4.84$) and 2) I have something to offer in the education of novice youth about livestock ($m= 4.50$ and $m= 4.7$) Statements with the lowest level of agreement were statements like: 1) I am not qualified to help novice 4-H families with their livestock projects ($m= 1.65$)

and $m= 1.65$) and 2) The 4-H Program overuses teen leaders at livestock clinics ($m= 1.96$ and $m=2.05$). The statements listed above can be found in Table 9.

Table 9

Texas A&M University and Texas Tech University Perceptions of Leadership Development (TAMU n=26, TTU n=20, Total N=46)

Statement	TAMU		TTU	
	Mean	SD	Mean	SD
The 4-H program has taught me to Identify issues that threaten livestock showing.	4.69	.47	4.45	.69
I am confident that I have the right response if questioned by an animal activist.	4.12	.52	4.15	.67
The 4-H Program overuses teen leaders at livestock clinics.*	1.96	1.18	2.05	1.36
Peer/teen leaders can teach novice 4-H youth to show.	4.77	.51	4.40	.99
The 4-H program has prepared me to assist others with livestock projects.	4.77	.43	4.84	.37
The 4-H Program overuses teen leaders at livestock clinics.*	1.84	1.12	1.80	1.20
I am not qualified to help novice 4-H families with their livestock projects.*	1.65	1.09	1.65	.93
Novice 4-H youth respond better to teen leaders rather than adult leaders.	4.08	.84	4.45	.67
I have something to offer in the education of novice youth about livestock.	4.50	.51	4.70	.47
Adults should do the teaching of novice youth because they are more qualified.*	2.27	.92	2.15	.93
Teen leaders helped me when I started showing livestock.	3.85	1.19	3.95	1.00
Some adults in the 4-H program should learn from the teen leaders.	4.04	.77	4.40	.60
4-H needs a training ground for teen leaders with livestock interests.	4.08	.74	4.20	.83
Teens are too busy to help novice youth with their projects.*	1.64	.95	1.45	.60
Construct Mean	4.25		4.32	
Grand Mean		4.29		

Note. *Item reversed coded. Responses: 1=Strongly Disagree 2=Disagree 3=Neither Agree or Disagree 4=Agree 5=Strongly Agree

Table 10 provides a summary of the construct means as well as the overall grand mean of the posttest. The student showed the highest level of agreement with the career development ($m = 4.76$) construct while leadership had the lowest level of agreement ($m = 4.29$). However, it is important to note that leadership even at the lowest level of agreement is greater than 4 on the Likert type scale. The grand mean of the instrument ($M = 4.5$) indicates that overall the students have a high level of agreement across all constructs with regard to the Texas 4-H program.

Table 10

<i>Texas A&M University and Texas Tech University Construct and Grand Means (N=46)</i>			
Construct	Texas A&M University	Texas Tech University	Grand
Career Development	4.81	4.71	4.76
Higher Education	4.48	4.42	4.45
Leadership	4.25	4.32	4.29
Overall Grand Mean			4.50

Note. Scale 1=Strongly Disagree 2=Disagree 3=Neither Agree or Disagree 4=Agree 5=Strongly Agree

Reflection of Survey

Forty three of 45 participants completed the online survey that was administered after one year of service as a T4HLA for an overall response rate of .96 or 96%. The objective of the survey was to assess the perceived impact of serving as a T4HLA with regard to career goal development, leadership development and understanding of higher education. Each objective was separated and evaluated individually.

The statements that generated the highest level agreement were as follows: 1) I have met people that will help me in my career ($m= 4.80$, 2) Even if I don't choose a career in animal agriculture, I will use skills gained in the program ($m= 4.73$) and My experiences in the program will benefit me in agriculture or any other career ($m= 4.73$). Statements with the lowest level of agreement were: 4-H will produce more qualified future leaders in Agriculture ($m= 4.37$) and I have met faculty members that will assist me in my career ($m= 4.45$). However, it is important to note that the lowest level of agreement still greater than four on a five point scale. Table 11 outlines the means and standard deviations regarding the statements listed.

Table 11

Texas 4-H Livestock Ambassadors' Perceptions of Career Goals (N=43)

Career	Mean	SD
I have met people that will help me in my career.	4.80	.44
Even if I don't choose a career in animal agriculture, I will use skills gained in the program.	4.73	.45
My experiences in the program will benefit me in agriculture or any other career.	4.73	.45
I am energized to consider a career in animal agriculture.	4.68	.65
I will definitely use my experiences as a Texas 4-H Livestock Ambassador in pursuing my career.	4.68	.47
When I apply for a job, I will explain my role as a Texas 4-H Livestock Ambassador to show my leadership qualities.	4.67	.72
My Participation in this program will reveal to employers my leadership.	4.66	.48
I will have a more competitive resume.	4.63	.54
I am more aware of career opportunities in animal agriculture.	4.61	.54

Table 11 continued.

Career	Mean	SD
The experience as a 4-H Livestock Ambassador has developed me into more of a professional in animal agriculture.	4.61	.54
4-H will generate more advocates for animal agriculture as they enter the workforce	4.54	.51
This program really made me consider what career I wanted to pursue after college.	4.51	.75
I have a clearer understanding of what my career goals are.	4.50	.55
I have been exposed to aspects of animal agriculture that I could not have found anywhere else in the Texas 4-H program.	4.48	.71
I am more aware of the diverse career opportunities in animal agriculture.	4.46	.60
I have met faculty members that will assist me in my career.	4.45	.67
4-H will produce more qualified future leaders in Agriculture.	4.37	.45

Note. *Item reversed coded. Scale 1=Strongly Disagree 2=Disagree 3=Neither Agree or Disagree 4=Agree 5=Strongly Agree

Table 12 contains the responses to the statements regarding the students understanding of higher education. Statements that produced the highest level of agreement based on mean scores: 1) The program allowed me to meet with university professionals and make valuable contacts for the future ($m = 4.73$), 2) I felt privileged to be on a university campus and have the preview of what it will be like ($m = 4.65$) and 3) I realize that other 4-H members not in the Texas 4-H Livestock Ambassador Program do not have the same opportunities as I have had to meet university professors and staff ($m = 4.63$). The statement that produced the lowest level agreement was the statement: I thought the higher education component of the program was overrated and we could have learned the same stuff in my county ($m = 1.78$).

Table 12

Texas 4-H Livestock Ambassadors' Perceptions of Higher Education (N=45)

Higher Education	Mean	SD
The program allowed me to meet with university professionals and make valuable contacts for the future.	4.73	.45
I felt privileged to be on a university campus and have the preview of what it will be like.	4.65	.59
I realize that other 4-H members not in the Texas 4-H Livestock Ambassador Program do not have the same opportunities as I have had to meet university professors and staff.	4.62	.59
I had a unique opportunity to get an inside look at college level courses and labs.	4.61	.49
I am more interested in an agricultural major now more than ever.	4.49	.69
Being on campus and seeing the technology and quality of education got me excited about attending a university.	4.49	.61
The experience of being on campus and treated as a student was beneficial to me.	4.49	.56
The program helped solidify my commitment to attend a four year university.	4.46	.84
I am more prepared for the rigor and challenges of my college career.	4.41	.69
I am not as intimidated by a four year university campus.	4.41	.64
I got a feel for what the professor and student relationship will be like.	4.38	.68
I now have a more favorable opinion of the university that hosted my short course.	4.35	.86
I feel comfortable contacting a university professor or staff member to ask questions about my college career.	4.30	.62
I am more aware of different degree plan options within the College of Agriculture and Life Sciences.	4.17	.65
I feel that I have an edge over other potential college students because I have already been in a university classroom and taught college level curriculum by a professor.	4.14	.92
I feel that the university wants me to attend their university because I was part of a unique group of 4-Her's.	3.84	.80
This was the first time that 4-H has made a real effort to prepare me for college.	3.19	1.37
I thought the higher education component of the program was overrated and we could have learned the same stuff in my county. *	1.78	1.25

Note. *Item reversed coded. Scale 1=Strongly Disagree 2=Disagree 3=Neither Agree or Disagree 4=Agree 5=Strongly Agree

Table 13 contains the statements and responses to the leadership development portion of the online instrument. This section of the instrument had more statements presented to the participants; therefore the researcher will present an increased number of statements which achieved high levels of agreement. The statements are as follows: 1) The program has challenged me to become a better leader ($m = 4.78$), 2) I will continue to use leadership skills gained in the program past my time in 4-H ($m = 4.75$), 3) The youth voice is a powerful tool for advocating and promoting animal agriculture ($m = 4.70$), 4) I have learned to be an advocate for animal agriculture ($m = 4.68$) and 5) This is the most valuable leadership role that I have ever had in the 4-H program ($m = 4.6$). In contrast, the statements with the lowest level of agreement were: 1) I do not feel that the novice 4-H youth look up to me ($m = 1.78$), 2) Teens are not qualified to teach novice youth ($m = 1.84$), 3) Teen leaders are good at teaching showmanship but should leave the feeding, health, and selection to the adults ($m = 2.22$) and 4) Texas AgriLife Extension Service should leave the discussions with elected officials about animal agriculture to the adults ($m = 2.2$)

Table 13

Texas 4-H Livestock Ambassadors' Perceptions of Leadership (N=45)

Leadership	Mean	SD
The program has challenged me to become a better leader.	4.78	.42
I will continue to use leadership skills gained in the program past my time in 4-H.	4.75	.44
I have great pride that 4-H trusts me to be a leader and mentor to novice youth with livestock projects.	4.72	.45
The youth voice is a powerful tool for advocating and promoting animal agriculture.	4.70	.46
I have learned to be an advocate for animal agriculture.	4.68	.47
Serving the past year made me realize that teens have something to offer in educating and supporting novice 4-H families.	4.68	.47
Leaders like me will assure that Texas junior livestock shows continue for years to come.	4.62	.55
I feel that I am more qualified to help other youth with livestock projects.	4.62	.49
This is the most valuable leadership role that I have ever had in the 4-H program.	4.60	.69
Ambassadors will be future leaders in state and national animal agriculture.	4.57	.55
Made me realize that teen leaders are valuable in training and supporting novice 4-H families.	4.57	.50
The Texas 4-H program will grow the 4-H livestock project with the leadership and help of the Texas 4-H Livestock Ambassadors.	4.51	.51
In this leadership role I have felt like I am making a real difference.	4.49	.69
I am a valuable educator for the Texas 4-H program.	4.46	.61
I have had more opportunities to be a leader than ever before.	4.46	.56
The program trusts teens to lead discussions and lessons on complex topics.	4.46	.56
The support system the program provides for the ambassadors shows me that 4-H values my service as a leader.	4.43	.77
The online reporting pushed me to record my leadership efforts as an ambassador.	4.39	.84

Table 13 continued

Leadership	Mean	SD
I have more skills to assist novice youth with their projects than other teens that are not in the program.	4.38	.76
In some cases teen leaders have better skills to teach novice youth adults.	4.32	.71
Texas AgriLife Extension Service needs me to assist in the support of novice 4-H families.	4.30	.66
I feel that my opinion is valued more by others since becoming a livestock ambassador.	4.27	.73
I realize that without the help of teen leaders, novice families are more likely to leave our program.	4.17	.93
I feel that the 4-H program and people in the livestock project see me as professional.	4.11	.70
I now realize the 4-H program should be using more of us to teach and mentor novice families.	4.05	.83
The program makes me feel like a professional.	4.05	.74
The curriculum at the short course was the most difficult of any 4-H program that I have attended in my career.	4.03	.93
Texas AgriLife Extension Service should leave the discussions with elected officials about animal agriculture to the adults. *	2.22	1.42
Teen leaders are good at teaching showmanship but should leave the feeding, health, and selection to the adults. *	2.22	1.21
Teens are not qualified to teach novice youth. *	1.84	1.42
I do not feel that the novice 4-H youth look up to me. *	1.78	.93

Note. *Item reversed coded. Scale 1=Strongly Disagree 2=Disagree 3=Neither Agree or Disagree 4=Agree 5=Strongly Agree

The study was also interested in the comparison of the students' perceptions of the T4HLA Program as it relates to overall mean scores per construct and a grand mean. The following table contains the mean scores of each construct by university as well as the combined grand mean of the construct.

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Table 14

Texas 4-H Livestock Ambassadors' Perceptions by Construct (N=42)

Construct	Texas A&M University	Texas Tech University	Construct Mean
Career Goals	4.59	4.68	4.58
Higher Education	4.40	4.31	4.36
Leadership	4.39	4.45	4.40
Overall Grand Mean			4.43

Note. Scale 1=Strongly Disagree 2=Disagree 3=Neither Agree or Disagree 4=Agree 5=Strongly Agree

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V focuses on the summary of the findings, conclusions and recommendations for this dissertation project. Further connection of findings to the theoretical framework will be established when appropriate. The implications of this study are applicable to the Texas 4-H Program, Texas AgriLife Extension Service, Texas A&M University and Texas Tech University.

Summary

The purpose of this study was to invest substantial advanced educational resources into a group of 4-H youth through a comprehensive short course of advanced animal breeding and genetics, anatomy and physiology, ruminant nutrition, swine, sheep, goat and beef production, livestock project management, animal agricultural advocacy and agricultural career development. Further, guidance, support and resources were provided to the students through the Texas 4-H Livestock Ambassador program staff during the program year after the T4HLA Short Course. The researcher sought to measure the impact of said resources on the participants as it relates to: 1) Gaining understanding of the student's perceived progression of knowledge as a result of the Texas 4-H Livestock Ambassador Short Course, 2) Determining if the Texas 4-H Livestock Ambassador program enhanced understanding of careers in agriculture, 3) Investigating the students' perceptions of the role of young adult leadership in livestock project, 4) Evaluating if the Texas 4-H Livestock Ambassador Program increased the

students' understanding of higher education. 5) Examining the Texas 4-H Livestock Ambassadors overall 4-H livestock exhibiting experience and 6) Investigating the degree of the transfer of training from the T4HLA Short Course to their respective communities.

Research Questions

Research Question 1

Did the participants perceive a change in their livestock production knowledge that can be attributed to the T4HLA Program?

The researcher used two research measures to determine if the above occurred: the pre/post self-assessment instrument and the written pre/post exam administered at Texas A&M University. The self-assessment model was used to gauging the student's perceived gain in knowledge. The criteria for the differing levels of expertise were based nearly exclusively on knowledge levels regarding the given species. The levels of knowledge or expertise were presented to the students in the following format:

1=Novice- Limited understanding of breed differences, nutrition, health, reproduction

and no showmanship knowledge. 4=Intermediate- Basic understanding of breed differences, nutrition, health, reproduction and some showmanship knowledge.

7=Expert- Advanced understanding of college level animal science principles: cross breeding systems, specie specific nutrition, diseases and vaccinations, reproductive cycles and gestation and could teach others to show specie with ease. The self-

assessment ladder ranged in scores from 1-7. Observations of increased expertise means

were noted across all species from pretest to posttest evaluations. The changes in means were: Texas Tech University perceived Swine expertise showed the largest change (1.85) followed by Cattle (1.35), Sheep (1.20) and Goat (.75) respectively. The student mean scores at Texas A&M University also show increases: perceived Sheep expertise showed the largest change (1.58) while Cattle (1.25), Swine (1.25) and Goat (1.25) all showed identical increases based on the students' responses. Collectively the consistent change in mean scores on two separate groups, on two separate university campuses indicates that the students perceived their knowledge and expertise of livestock production to positively change as a result of the T4HLA Short Course.

The theoretical framework supporting the student's perceived progression on the novice-to-expert model could be explained by the National Research Council (2000). Experts have the ability to "notice features and meaningful patterns of information not noticed by novices...acquired a great deal of content knowledge that is organized in ways that reflect a deep understanding of their subject matter...knowledge cannot be reduced to sets of isolated facts or propositions" (p.31). The research suggests that the students progressed in their expertise as they were acquiring new content knowledge. This scientific knowledge could be connected with practical situations with livestock projects. Therefore the students were progressing in expertise because they were gaining a deeper understanding of the scientific principles supporting livestock production practices.

The second method of answering the initial research question is concerning the written pretest and posttest exam administered solely to the participants at the 2010

T4HLA Short Course at Texas A&M University. As previously outlined, the 85 questions on the exam were provided in advance of the T4HLA Short Course. Results from the exam indicate a drastic improvement in scores from pretest to posttest. The pretest mean for twenty four participants was 49.17%. The pretest range of scores was a low score of 25% to a high of 74%. The same twenty-four students also completed the posttest and showed marked improvement. The posttest mean was observed at 73.42%. Posttest range of scores also showed improvement to a low score of 45% to a high of 95%. The preceding data reflects the substantial change in scores and ultimately an increase in knowledge. A limitation of this method of evaluation is the instrument was only used at Texas A&M University. The researcher did not have access to the curriculum used for the 2010 T4HLA Short Course at Texas Tech University as it was the first year. For future research, researchers will develop a standardized and reliable assessment to be used at both locations.

The treatments to increase the animal science knowledge of the students were the T4HLA Short Course and T4HLA Program. The perceived and measured gains in knowledge can be connected to the programs adherence to Bloom's (1956) taxonomy of learning. Student participating in the program go through the three learning domains as they gained knowledge. The cognitive development was present as they listened and visualized the instruction from the instructors. The affective domain was instituted through helping the students understand the meaning and larger purpose behind their work. The psychomotor domain was utilized in the hands-on laboratory experience thus reinforcing the lecture from the instructor. The support system of the program as the

students were deployed to their communities was designed to reinforce learning from the T4HLA Short Course. The quiz bowl competitions, agricultural issues presentations and exams evaluated the students as they reflected and applied knowledge gained. Why were the participants driven to learn complex, college level curriculum?

The answer to the previous question may be embedded in the following articulation from Bransford, Brown & Cocking (2000): “Learners of all ages are more motivated when they can see the usefulness of what they are learning and when they can use that information to do something that has an impact on others-especially their local community” (p.61). The participants knew from the application process; service of community was a central tenet of the T4HLA Program. The students understood they would be expected to apply knowledge gained back into his/her respective community. Selected participants also possessed the willingness to help others characteristic and had an intrinsic desire to do good things for people and animal agriculture.

Research Question 2

Do T4HLA perceive the T4HLA Program to have enhanced their understanding of career development in agriculture?

Career development was evaluated through the use of the posttest instrument and the reflection survey. The posttest was completed by the students at the conclusion of the T4HLA Short Course. The statement with the highest level of agreement was: The livestock showing experience will benefit me if the future no matter what career I choose ($m= 4.92$ and 4.90). The Texas A&M University and Texas Tech University construct

mean for career development was ($m = 4.81$) and ($m = 4.71$) respectively. The overall career development construct mean was ($m = 4.76$). The previous data was gathered before the student completed his/her yearlong ambassadorship. To investigate the lasting effects of career development due to the T4HLA Program the reflection survey was used.

The reflection survey was used to determine the students' perceptions of the program following a year of service. Kolb (1984) and Diem (2001) both recognized the value of reflection in the learning process. As indicated in the results the career development construct the students were observed to have a high level ($m = 4.6$) of agreement. Statements generating the highest level of agreement were as follows: 1) I have met people that will help me in my career ($m = 4.80$), 2) Even if I don't choose a career in animal agriculture, I will use skills gained in the program ($m = 4.73$).

The first statement represents the networking aspect of the T4HLA Program. Students agreed with the statements concerning meeting people that would help them in his/her career in the future. Students in the program had the opportunity to spend significant time with university professors and staff, livestock industry professionals, elected officials, Texas AgriLife Extension Administration and specialists, Major Livestock Show Directors and distinguished livestock breeders. The program made efforts to make the students aware of the diverse opportunities in the College of Agriculture and Life Sciences. After the students had a year to reflect on the programs influence of career goals they indicated the network they built upon was substantial. The

students were interested in a career in agriculture and the T4HLA Program offered the opportunity for them to have meaningful contact with leaders in Texas agriculture.

The second statement listed above with respect career development allows insight into the idea of life skill development. Explanations for this high level of agreement can be attributed to the T4HLA Program focus on speaking, networking, advocating, defending ideas, service and pursuit of knowledge contribute to the students perceptions of career development skills gained. The findings of this study agree with the findings Boleman, Merten and Hall (2008) regarding the long term life skill development. Participants recognized skills gained in the program being useful tools in a career in agriculture or any other career.

The T4HLA Program required the student to contribute 30 hours of service to Texas 4-H, Texas AgriLife Extension Service and Texas Animal Agriculture. The T4HLA can obtain their hours by the following methods: 1) helping novice 4-H families with livestock projects, 2) disseminating research based information to youth livestock exhibitors, actively engaging the public and advocating for animal agriculture, 3) continued livestock production education, 4) working youth livestock workshops, 5) attending state meetings and 6) reporting to the online accountability system. Skills gained by experientially participating in the process undoubtedly contributed to the reported agreement that the T4HLA Program enhanced the students' development of skills that will be beneficial in their respective careers.

The posttest instrument focused on the student's perceptions of the role that Texas 4-H and the T4HLA Short Course had in his/her career development. Further the

reflection survey specifically investigated the role of the T4HLA Program had on the advancement of his/her career development. The grand construct means of both instruments were calculated the posttest instrument at ($m = 4.76$) and the reflective survey at ($m = 4.58$). Collectively the T4HLA perceptions of career development are not surprising due to the programs commitment to broadening the students understanding of careers available following the completion of a degree in the College of Agriculture and Life Sciences.

Research Question 3

Do T4HLA perceive the T4HLA Program to have enhanced their understanding of higher education?

An objective of this study was to evaluate the student perceptions of the T4HLA Program role in understanding of higher education. Would the programs effort to place the student in actual university setting with the instruction from actual university professors increase understanding of higher education? The study was also concerned if the previous would better prepare high school students for the rigors of college life. The posttest instrument was used to determine the initial perception of the participants as they exited the T4HLA Short Course.

A portion of the posttest was designated as higher education and the statements presented to the student aimed to gauge their perceptions regarding the role that Texas 4-H and the T4HLA Program had in preparing the student for higher education. The statement with highest level of agreement was 1) The Texas 4-H program has provided

college level animal science ($m = 4.80$ and $m = 4.65$). The aforementioned statement outlines essential findings in the research. The high level of agreement statement indicates that the students realize that the Texas 4-H Program is offering college level animal science through the T4HLA Program. The second method of accessing understanding of higher education was the reflection survey.

Forty two students completed the online reflective survey. The survey revealed the students' perceptions regarding the impact the T4HLA Program had on their understanding of higher education. The statements on the survey garnering the highest level agreement are as follows: 1) The program allowed me to meet with university professionals and make valuable contacts for the future ($m = 4.73$), 2) I felt privileged to be on a university campus and have the preview of what it will be like ($m = 4.65$) and 3) I realize that other 4-H members not in the Texas 4-H Livestock Ambassador Program do not have the same opportunities as I have had to meet university professors and staff ($m = 4.63$). Collectively these statements purport the theme that the T4HLA perceive their experiences on the campus to be valuable in developing their understanding of higher education.

To further analyze the impact the T4HLA Program has had on the students perceptions of higher education development; the construct mean scores can be evaluated. The posttest construct mean score ($m = 4.45$) and the reflection survey mean score ($m = 4.36$) yielded high levels of agreement for the impact of the T4HLA Program on the development of increased understanding of higher education. These finding can be explained by Kolb's Experiential Learning Cycle (1984) where he outlines the value

of concrete experience aiding in the learning process. The concrete experience in this instance would be sitting in the same classroom and instructed by the same professors as they would if they attended one of the host universities. The T4HLA Program provided a collegiate learning environment equipped with cutting edge tools to help the students prepare for the college experience. The program purposefully designed the educational activities to run from early morning until late in the evening. The reasoning behind this method was to provide a preview of staying out late and then attending class in the early morning. The previous exercise challenged the student to remain focused on college level curriculum with little rest. To further support the challenges of college life the students were guided with advice from university faculty, staff and students becoming a productive college student. The understanding of higher education is also supported by novice-to-expert models.

Daley (1999) proposed novice professionals simply do not have experience in real situations to draw on for understanding. Prior to the student's involvement with the T4HLA Program he/she had little to no experience in an authentic university setting. After a year as a T4HLA the students had the ability to reflect on their experience in the classroom and use them as a foundation for new experience as they progress from novice students towards achieving expertise. Additionally supporting the novice-to-expert model is a student's motivation to learn.

An essential part of the T4HLA Short Course was to build connections between livestock production practices and the scientific basis for said practices. Further, the students were trained to be advocates for animal agriculture and its preservation. The

preceding aspect of the course ties emotion to the learning environment and illuminates the student's involvement in a larger cause. Bransford, Brown & Cocking (2000) propose: "Learners of all ages are more motivated when they can see the usefulness of what they are learning and when they can use that information to do something that has an impact on others-especially their local community". A strong possibility for the students' willingness to endure intense college level instruction was their ability to see the usefulness of the curriculum taught.

Research Question 4

What are the perceptions of T4HLA regarding the role of young adult leadership in livestock projects?

The posttest survey was administered at the conclusion of the T4HLA Short Course and was concerned with evaluating the participants' perceptions of the role of teen/peer leadership in agricultural education. Statements on the instrument were focused on fleshing out if the study thought they should have a place in the education of novice 4-H youth and the public in general. The results of the posttest mirrored the theme of the importance of teen/peer mentorship emerging from the 2009 pilot test study. Statements on the posttest that cultivated the highest level of agreement were as follows: 1) The 4-H program has prepared me to assist others with livestock projects ($m= 4.77$ and $m=4.84$) and 2) I have something to offer in the education of novice youth about livestock ($m= 4.50$ and $m= 4.7$). Students were adamant that they were useful resources in the educational process. The previous observations were also reflected in

the statements with the lowest level of agreement: 1) I am not qualified to help novice 4-H families with their livestock projects ($m= 1.65$ and $m= 1.65$) and 2) The 4-H Program overuses teen leaders at livestock clinics ($m= 1.96$ and $m=2.05$). The negative statements validated the students' realization that they are qualified and useful. The above assertions were evaluated immediately after intense training in leadership development at the respective T4HLA Short Course. Would the students still retain strong perception of teen/peer leadership after a year of service as a T4HLA?

Forty two participants completed the leadership portion of the instrument. The leadership construct offered the student the highest frequency of statements to extrapolate his/her perceptions of leadership and development. The researchers were interested if the student's positive perceptions of leadership would be marginalized after a year of service. Statements that elevated the level of agreement were: 1) The program has challenged me to become a better leader ($m =4.78$), 2) I will continue to use leadership skills gained in the program past my time in 4-H ($m =4.75$), 3) The youth voice is a powerful tool for advocating and promoting animal agriculture ($m =4.70$), 4) I have learned to be an advocate for animal agriculture ($m =4.68$) and 5) This is the most valuable leadership role that I have ever had in the 4-H program ($m =4.6$). The above statements validate the students' commitment and deep seeded perceptions of the power of youth leaders in animal agriculture. In the reflective survey the students, had the opportunity to reflect on his/her experiences and how they will transcend their time 4-H. The statements garnering the lowest levels of agreement were: 1) I do not feel that the novice 4-H youth look up to me ($m=1.78$), 2) Teens are not qualified to teach novice

youth ($m = 1.84$), 3) Teen leaders are good at teaching showmanship but should leave the feeding, health, and selection to the adults ($m = 2.22$) and 4) Texas AgriLife Extension Service should leave the discussions with elected officials about animal agriculture to the adults ($m = 2.2$). The aforementioned negative statements generated the similar disagreement to that of the posttest instrument given one year before. The researcher attributes this to the passion and dedication of the T4HLA with regard to animal agriculture.

The theory of mentorship is present in nearly the entire leadership construct. The negative statements merely triggered the student's perceptions of the role of teen/peer leadership in Texas AgriLife Extension's effort to educate novice youth in the livestock project. A resentment of under appreciation is almost palpable. The student's said as much "... We should use knowledge to help the adults have a better understanding [of livestock projects] so they can help us, help the kids" (B20) qualitatively in the 2009 pilot study and after evaluating the construct means in the posttest ($m = 4.29$) and reflective survey ($m = 4.40$) the sentiment is solidified. The students feel strongly about their possession of essential and important leadership skills thus advancing the educational experience of all involved.

Rogers (2003) theory of homophily can aid in the explanation of the observed phenomenon. The student's concrete experiences helping novice youth provide the foundation of understanding of the importance of teens in the educational process for the T4HLA. The students, serving as Livestock Ambassadors have witnessed the growth and development of the people they helped. The Ambassador, as a teacher, has built

connections to the novice youth because of a recent understanding of what novice expertise feels like with a livestock project. The peer teacher/mentor can relate with the novice youth better than the adult because they "...share common meanings and a mutual subculture language, and are alike in personal and social characteristics, the communication of new ideas is likely to have greater effects in terms of knowledge gain...When homophily is present, communication is therefore likely to be rewarding to both participants" (p. 19). The Livestock Ambassador observes a change in the growth in the people he/she is helping but also in their growth as a leader. Statements on the reflective survey that investigated the impact of the T4HLA Program: 1) Made me realize that teen leaders are valuable in training and supporting novice 4-H families ($m = 4.57$) and 2) I am a valuable educator for the Texas 4-H program ($m = 4.46$). A sub-construct of leadership is the youth voice or advocacy.

This idea has strong connections to the motivation to learn component previously discussed. The participants perceived their role as advocates to be extremely important in preserving animal agriculture and junior livestock projects. Evidence of this observation can be found in the results of the reflective survey. The following statements and their corresponding levels of agreement highlight the theme: 1) The youth voice is a powerful tool for advocating and promoting animal agriculture ($m = 4.7$) and 2) I have learned to be an advocate for animal agriculture ($m = 4.46$). Serving as a Livestock Ambassador made them aware they possessed unique power in the youth movement to advocate for animal agriculture. Why do the T4HLA perceive the youth

voice to have such an impact? It may be because of the authentic leadership opportunities offer in the T4HLA Program.

Serving as a Livestock Ambassador the students had opportunities to teach, lead and speak on important agricultural issues. Some students communicated with elected official on these issues. Additionally, this community of learners might have been experiencing the effects of being part of a larger cause or youth movement. Strauss & Howe (2000) purported the millennial generation as being usually committed to community service and social causes. The social causes concerning the Livestock Ambassadors could possibly be the preservation of animal agriculture and livestock showing. The youth voice and passion themes are found in the 2009 pilot study focus group interview and have been present in the data ever since. There is a present energy and passion found in the type of participant that is selected for the T4HLA Program.

Knowles, Swanson & Holton (2005) asserts that humans have a certain amount of energy to expend. From an educational standpoint he was concerned about what conditions are conducive to focus the energy on learning. “What might be done to release this energy for accomplishing greater goals for the system and the individuals in it? (p.255). To answer this question in the context of this study: create a course and program that serves as a vehicle and tool to extract energy focused on accomplishing goals central to the culture which one belongs. The T4HLA Program appears to be providing an avenue for the millennial participants to be heard and have a voice. The result is a group of community learners contributing exceptional amounts of community service to Texas AgriLife Extension, Texas 4-H and Texas animal agriculture. These

results should not be surprising because service is intertwined into the application process.

Major criteria for the selection of potential T4HLA were: (a) senior aged (14-18) 4-H youth that have exhibited a superior level of ambition regarding their livestock projects, (b) students with a profound interest in animal science and animal production, (c) students who have shown advanced leadership qualities and the a willingness to help others. So it follows that the youth selected to be T4HLA have an increased interest and emotional attachment for the preservation of a culture that has apparently served them well. The power of the youth voice is likely supported and propagated by the student's experiences as a T4HLA. In addition to advocacy, the study was interested in the student's commitment to the T4HLA Program. This can be investigated through the transfer of training.

The idea of taking education gained during training and then applying that training is referred to by Baldwin and Ford (1988) as transfer of training. Baldwin and Ford (1988) identified three major categories that influence the transfer of training: (a) training inputs, including trainee characteristics, training design, and work environment; (b) training outputs, consisting of learning and retention; and (c) conditions of transfer, which focus on the generalization and maintenance of training. In the above context the training inputs would be the T4HLA Short Course and continued education. Training outputs are accomplished as the T4HLA serve and apply their gained skills and knowledge. The repetition and frequency of applying learned behaviors may translate into retention. Contact with participants through distance technology as well as provided

support materials aid in the maintenance of training. The students committed to the program when they completed and passed the 150 question final exam following the T4HLA Short Course.

The participants were required to contribute at least 30 hours of service through assisting novice 4-H families, continued education and advocating for animal agriculture. Forty six of the 46 trained in 2010 completed and passed the final exam with a score of 80% or greater. Through the 4-H program year the T4HLA reports his/her educational efforts to the online reporting system. The accountability system was created and maintained by a Texas AgriLife Extension Program Specialist in Organizational Development. The reports were compiled and reviewed to investigate the degree of transfer of training. Forty two of the original 46 (91%) completed the yearlong ambassadorship. The previous finding is substantial in that it validates the only other study concerning animal science based workshops.

Students evaluated in the Rusk and Machtmes (2002) indicated that they were motivated to help others in their respective communities. A high percentage (78%) stated they planned to share the skills and knowledge gained back at home. The limitation of the Purdue University study was there was not a method to evaluate what the students actually accomplished assisting other junior livestock families. The high percentage of transfer of training in the evaluation of the (T4HLAP) supports the findings of the Purdue study in that when students leave animal science workshops they are motivated to help others. While the results for these two studies are similar, caution is warranted in that the program designs vary wildly. The Purdue University animal

science workshop is invitational and does not require participants to contribute service. Still the need to serve and transfer training is present and in both studies.

Conclusions

Knowledge

This study inquired about the impact of the T4HLA Program on the student's perception of gained expertise and knowledge. The study measured this objective through a self-assessment pretest and posttest novice-to-expert instrument and an 85 question written pretest and posttest exam (Texas A&M University). A limitation of this research objective is the written exam was not administered on the Texas Tech University campus.

As indicated in the results, students reported growth in knowledge expertise in all of the four species measured. The mean values on the scale increased showing the students perceived their livestock production knowledge to be enhanced by the treatment of the T4HLA Short Course. The results are expected as the students are placed in collegiate learning environments, instructed by accomplished educators and are learning about topics they are interested in. The program design also stresses the practical use of the curriculum. The students understood the information they were learning could directly impact them and their communities. The students were observed to be challenged by the advanced curriculum, yet through reflective learning activities and group work they were able to push through the material. The team concept of community based learning was promoted in the T4HLA Short Course.

Students selected for the program were active 4-H members in their respective counties. The collection of these driven, intelligent and well-spoken individuals in the same program generated a synergistic effect. The students appeared to feed off of the others energy and expertise. The result was advanced learning environments filled with students with similar interests. The participants worked in teams to digest and make sense of the rigorous curriculum presented to them.

Career Development

This study was interested if the T4HLA Program helped the students in career development. The treatment of the program exposed the youth to a diverse array of career opportunities in degree programs from the college of agriculture and life sciences at Texas A&M and Texas Tech Universities. The T4HLA Short Course made focused efforts to enlighten the students on past successes of people that completed similar degrees. Testimonials were given regarding the power of a degree in agricultural education with respect to job interviews, placement and competition. The students were able to make valuable contacts with people that offered insistence in career development. Industry representatives provided contact information to students in the program. The participants were granted unique access to leaders in Texas Agriculture through T4HLA Short Course and program activities. Further, strong evidence was present in the data regarding skills gained in the T4HLA Program transferred into the participant's career.

The posttest construct mean score ($m = 4.76$) and the reflective construct mean score ($m = 4.58$) suggest strong agreement among participants with respect to career

development. The career development construct garnered the highest level of agreement of constructs measured on the five point Likert type scale. The results are purely descriptive of the students' perceptions within the confines of this study. The study did not place the mean scores of the participants juxtaposed to an alternate leadership group. The conclusions drawn from the data are exclusively applied to the 2010-2011 class of T4HLA.

Higher Education

Do students who have gone through the T4HLA Program gain a better understanding of higher education? The theoretical framework behind the construct is that the treatment of providing the opportunity of authentic collegiate experiences in the classroom aid in the preparation for college. The students are placed in classrooms and are instructed by university professors. The presentations and educational methods were taken from undergraduate and graduate courses offered in the animal science departments. High school students often visit universities to determine if he/she would like to attend. The student may get a tour of campus, facilities and possibly meet with faculty. Texas 4-H has never placed students in authentic collegiate learning environments. Professors teaching sections in the T4HLA Program are asked to maintain the rigor of material and challenge the students to learn complex animal science principles. The previous contributes to the understanding of curriculum and rigor, however the T4HLA Program took directive action in the setting and demands of college life.

Table 1, 2 and 3 were utilized to outline the rigor and demands of the T4HLA Short Course. The treatment schedule purposely designed educational activities to run late into the evening and then begin early the following morning. The idea behind the design was based on a realistic understanding of college life. Students may have activities that run late into the evening but must be productive students in the morning.

The impact of the T4HLA Program on the participants perceptions of career development can be evaluated through the construct mean scores of the posttest instrument ($m = 4.45$) and the reflective survey ($m = 4.36$). The high level of agreement found in this construct can be explained by all of the reason outlined above. Still, it is important to note that the results found in this research objective can only be applied to students participating in this study. This study ,as mentioned in the purpose, invested a great deal of advanced educational resources into a group of active 4-H youth through a comprehensive short course of advanced animal breeding and genetics, anatomy and physiology, ruminant nutrition, swine, sheep, goat and beef production and livestock project management. The program, evaluated in the study is unique in the educational experience offered to the participants and therefore may be difficult to replicate.

Leadership

The leadership construct was the most complex to measure. Contributing factors to the observed leadership development of participants are twofold: 1) Students experience intensive leadership training at the T4HLA Short Course and 2) Students

developed advanced leadership skills through experiential learning activities in his/her ambassadorship.

The T4HLA Short Course takes substantive action to illuminate the students understanding that they have a significant role in the education of others. As mentioned in the selection of participants section, a major criterion for admittance into the program was a willingness to help others. Speakers addressed the importance of peer leadership and provided methods to execute said leadership. Students leaving the T4HLA Short Course were aware of the critical need for peer mentorship in Texas 4-H and Texas AgriLife Extension.

Participants' experiences as a T4HLA undoubtedly contributed to the perceived impact in leadership development. The accountability reports indicate the T4HLA have presented topics in agriculture advocacy, nutrition, selection, daily maintenance and care, showmanship, preparing new 4-H families for show, and management of show animals during a livestock exhibition. Additionally, the T4HLA teach livestock ethics and animal care. Further, the students participated in interpretive event speaking to such individuals and groups as: members of the Texas House of Representatives and Senate, Texas Agriculture Commissioner and Deputy Commissioner, County Commissioners Courts, Livestock Show Management and 4-H families. Perhaps the most impactful experience listed above is helping the novice families.

“One of my younger 4-hrs asked me to help him pick out a goat...it was so rewarding to help” (personal communication, July 29, 2010). The preceding quote encapsulates the theme of service and caring exemplified in the observations of the

T4HLA. The 2009 pilot study cultivated the question of effectively using peer leaders in the educational process. The focus group interview revealed teens perceived their services were conservatively used in the educational process and felt like they had something to offer. This study sought to investigate this through quantitative research methods.

The leadership construct mean score for the posttest instrument ($m = 4.29$) and the reflective survey ($m = 4.40$) are evidence that the T4HLA Program had an impact on the perceptions of leadership development. The participants were: 1) formally trained to be a professional support to county extension agents, 2) trusted to organize and conduct meetings of novice youth, 3) qualified as professional livestock project volunteers and 4) charged with protecting and preserving animal agriculture through advocacy. Collectedly the researcher refers to the preceding leadership activities as genuine and authentic. The preceding terminology is used to describe the leadership skills gained because the T4HLA were used as legitimate educators.

High expectations were placed on the participants in this study. The students were held accountable through the online reporting system. The T4HLA Program demands performance and challenges the students to enhance their leadership development. The statement offered in the reflective survey that generated the highest level of agreement of any item was: The program has challenged me to become a better leader ($m = 4.78$). This group of participants engaged the challenges and delivered. The students were given the tools and educational opportunities provided by county extension agents or the T4HLA Program to be successful leaders. Genuine or authentic

leadership opportunities allowed T4HLA to showcase leadership skills displaying content knowledge and credibility. Caution should be noted regarding the challenge of youth leaders. Participants for this study were purposively selected based on the exceptional nature displayed by the student with regard to livestock projects. As addressed in the review of literature Rusk et. al. (2003) found that Indiana 4-H Livestock “members who exhibited at the state fair have higher skill levels in the areas of animal health care, animal grooming and animal selection than members who only exhibited only at the county fair” (p. 9). So it follows results of this study should not be generalized to all Texas 4-H youth that show exhibit livestock projects as not all are at the elevated level of leadership and expertise found in students selected to the T4HLA Program.

Evidence in the data suggests the participants in the 2010-2011 T4HLA Program perceived growth in livestock production knowledge and expertise, career development, understanding higher education and leadership development. The study is not advancing a claim that student changes are significantly different than other leadership programs. All results merely describe the student’s perceptions of his/her involvement in the program. However, the results are revealing as they are evidence of the positive yield of aggressive input of advanced educational resources into active 4-H youth.

Implications of the Study

The researcher investigated the merit of the Texas 4-H Livestock Ambassador Program on the youth that were members of the 2010-2011 class. The hope is that the

findings will illuminate the perceived impact on livestock production knowledge and expertise, career development, understanding of higher education and genuine leadership development. Implications of this study will be evaluated concerning Texas AgriLife Extension and Texas 4-H, Texas animal agriculture, participants and program expansion.

Texas AgriLife Extension and Texas 4-H

Recently, Texas AgriLife Extension has been implementing a reduction in force due to state appropriated budget cuts. The reduction in force has been felt by county extension agents across the state. Further, many of the positions eliminated were positions that had 4-H responsibilities. Therefore, Texas AgriLife Extension was faced with the hardship of the same number of clientele to serve while having reduced faculty to needs of 4-H families in the communities. The agency has been actively investigating methods for increasing and developing a competent volunteer base to execute the Extension mission. The Livestock Mentor program was developed to train adults to assist county extension agents in livestock programming efforts. While the previous program is a good start to meeting the needs of county 4-H programs, more investment needs to be made into teen/peer leaders. The participants in this study indicated the need to better utilize peer leaders in livestock project educational activities. In some cases the students even advance the idea that they were more qualified to teach than the adults.

There are many possible contributing factors explaining the limitations of adult volunteers: 1) many adult leaders have children, 2) full time jobs, 3) other volunteer roles in the community and 4) are burdened with the general responsibilities of an adult.

The teen leaders on the other hand are hungry, daily scratching out ways to build reputation and social status. They are still progressing through school and trying to figure out who they are. The T4HLA Program provides youth the opportunity to fully use their potential. Instead of being an assistant in the instruction, they serve as the facilitator and instructor. The youth have flourished in the previous role. The T4HLA are not as polished as some of the adult speakers, but the novice youth relate to them better. As the T4HLA grapple with their new leadership role, they are gaining lifelong leadership skills. The use of T4HLA along with Livestock Mentors has the potential to drastically improve the livestock project programming across the state.

Texas AgriLife Extension and Texas 4-H should continue to invest substantial educational resources into the T4HLA Program. The T4HLA Program is providing the Texas 4-H with a highly trained and skilled volunteer force. The students are actively engaging in the educational process and thus increasing the effectiveness of county extension agents across the state.

Texas Animal Agriculture

Forty two of 46 trained at the T4HLA Short Course completed the requirements of the program. Consequently, 42 youth were out in their communities teaching, leading, educating, learning and serving to gain the required 30 hours of service to complete the program. By their actions the T4HLA were: 1) protecting and growing 4-H youth livestock programs, 2) advocating for animal agriculture and 3) disseminating the research base behind livestock production methods. The effects of their efforts are

difficult to measure; still the value of a highly trained, motivated and educated volunteer force is far reaching.

Program Expansion

The researcher is taking extreme caution in suggesting the results of this study could be replicated in other states. Extension programs vary wildly in terms of structure and the roles county extension agent has with respect to junior livestock projects. In expanding the program from one university, Texas A&M University, and applying the T4HLA Program model to a second university, Texas Tech University, concerns were raised about the experience of the participants varying greatly. The results, however, indicate students on both responded similarly even though some of the content was delivered differently. Additionally, the courses took place in different regions of the state. Despite many observable differences in the youth, the results on measurable instruments were similar. Admittedly, there were many differences in the T4HLA Short Course and in the T4HLA Program; however there are some key aspects that must be present for success. These aspects are listed below:

1. Cooperating Extension Agency
 - a. Allows program leaders, County Extension Agents and Extension Specialists, time to devote to plan, conduct and run the program

2. Cooperating University
 - a. Exceptional staff
 - b. Cutting edge facility
 - c. Access to hands-on activities
3. Commitment to training youth
4. Selecting elite participants
5. Provide youth genuine or authentic leadership opportunities
6. Maintain contact with participants
7. Funding

Recommendations

The following is a list of potential research topics recommended for future studies:

1. With the T4HLA Short Course being held on the Texas Tech University campus for the 2010 and 2011 program years, a written test should be developed to test the livestock production knowledge gained at both universities.
2. Many close to the livestock project believe students exhibiting livestock use critical thinking skills. A critical thinking survey should be administered to the T4HLA and an active group of youth with similar characteristics but do not show livestock. The results should be compared to investigate if differences exist.

3. Technology was used by the T4HLA Program to execute distance education, communication and online learning communities. Facebook was used to assist in this process. A study should be conducted to investigate the frequency of social media use for educational purposes.
4. Advocacy had a strong presence in the data in this study. However it was a sub-construct of leadership and was not measured independently. A study should be conducted on future classes of the T4HLA Program to investigate animal agricultural advocacy.
5. Participants in this study perceived advancement of livestock production knowledge, career development, understanding of higher education and leadership development. A study should be conducted to survey the parents or guardians of the T4HLA and compare the perceptions of the student juxtaposed to the parents or guardians.
6. A longitudinal study should be conducted to follow up with T4HLA five years following graduation from high school. Participants should be evaluated on long term life skills developed, career choice, career development and educational choice as a result of the T4HLA Program.
7. This study should be replicated in an alternate state. The T4HLA Program model should be used to develop the treatment.

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APPENDIX A
LIVESTOCK AMBASSADOR MEMBER SURVEY



Livestock Ambassador Member Survey

Career Goals

For each statement, please provide your level of agreement.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I have a clearer understanding of what my career goals are	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have met people that will help me in my career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. 4-H will generate more advocates for animal agriculture as they enter the workforce	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. 4-H will produce more qualified future leaders in Agriculture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am more aware of career opportunities in animal agriculture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am energized to consider a career in animal agriculture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I have been exposed to aspects of animal agriculture that I could not have found anywhere else in the Texas 4-H program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I have met faculty members that will assist me in my career.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. When I apply for a job, I will explain my role as a Texas 4-H Livestock Ambassador to show my leadership qualities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Even if I don't choose a career in animal agriculture, I will use skills gained in the program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. This program really made me consider what career I wanted to pursue after college.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I will definitely use my experiences as a Texas 4-H Livestock Ambassador in pursuing my career.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

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13. I am more aware of the diverse career opportunities in animal agriculture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. The experience as a 4-H Livestock Ambassador has developed me into more of a professional in animal agriculture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. My experiences in the program will benefit me in agriculture or any other career.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I will have a more competitive resume.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. My Participation in this program will reveal to employers my leadership.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Livestock Ambassador Member Survey

Higher Education

For each statement, please provide your level of agreement.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I am more aware of different degree plan options within the College of Agriculture and Life Sciences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I got a feel for what the professor and student relationship will be like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I am more prepared for the rigor and challenges of my college career.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I am more interested in an agricultural major now more than ever.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am not as intimidated by a four year university campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I felt privileged to be on a university campus and have the preview of what it will be like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The program allowed me to meet with university professionals and make valuable contacts for the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

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8. I realize that other 4-H members not in the Texas 4-H Livestock Ambassador Program, do not have the same opportunities as I have had to meet university professors and staff.

9. I thought the higher education component of the program was overrated and we could have learned the same stuff in my county.

10. I feel that I have an edge over other potential college students because I have already been in a university classroom and taught college level curriculum by a professor.

11. This was the first time that 4-H has made a real effort to prepare me for college.

12. I feel comfortable contacting a university professor or staff member to ask questions about my college career.

13. The experience of being on campus and treated as a student was beneficial to me.

14. Being on campus and seeing the technology and quality of education got me excited about attending a university.

15. The program helped solidify my commitment to attend a four year university.

16. I now have a more favorable opinion of the university that hosted my short course.

17. I feel that the university wants me to attend their university because I was part of a unique group of 4-Her's.

18. I had a unique opportunity to get an inside look at college level courses and labs.

Livestock Ambassador Member Survey

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Leadership

For each statement, please provide your level of agreement.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I feel that I am more qualified to help other youth with livestock projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have great pride that 4-H trusts me to be a leader and mentor to novice youth with livestock projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I do not feel that the novice 4-H youth look up to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I now realize the 4-H program should be using more of us to teach and mentor novice families.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The youth voice is a powerful tool for advocating and promoting animal agriculture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Texas AgriLife Extension Service should leave the discussions with elected officials about animal agriculture to the adults.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The program has challenged me to become a better leader.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I feel that the 4-H program and people in the livestock project see me as professional.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I have had more opportunities to be a leader than ever before.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. The online reporting pushed me to record my leadership efforts as an ambassador.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Texas AgriLife Extension Service needs me to assist in the support of novice 4-H families.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I will continue to use leadership skills gained in the program past my time in 4-H.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. The program trusts teens to lead discussions and lessons on complex topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. The Texas 4-H program will grow the 4-H livestock project with the leadership and help of the Texas 4-H Livestock Ambassadors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

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- | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------|
| 15. This is the most valuable leadership role that I have ever had in the 4-H program. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16. Made me realize that teen leaders are valuable in training and supporting novice 4-H families. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17. Teens are not qualified to teach novice youth. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18. I realize that without the help of teen leaders, novice families are more likely to leave our program. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 19. Teen leaders are good at teaching showmanship but should leave the feeding, health, and selection to the adults. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 20. In this leadership role I have felt like I am making a real difference. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 21. The curriculum at the short course was the most difficult of any 4-H program that I have attended in my career. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 22. I have learned to be an advocate for animal agriculture. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 23. I feel that my opinion is valued more by others since becoming a livestock ambassador. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 24. The program makes me feel like a professional. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 25. I have more skills to assist novice youth with their projects than other teens that are not in the program. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 26. The support system the program provides for the ambassadors shows me that 4-H values my service as a leader. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 27. In some cases teen leaders have better skills to teach novice youth adults. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 28. I am a valuable educator for the Texas 4-H program. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 29. Leaders like me will assure that Texas junior livestock shows continue for years to come. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 30. Ambassadors will be future leaders in state and national animal agriculture. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 31. Serving the past year made me realize that teens have something to offer in educating and supporting novice 4-H families. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |

Livestock Ambassador Member Survey

Personal Information

Please provide the following information about yourself.

To which types of organizations do you currently belong:

Select all that apply

- 4-H Club
- County/District 4-H Council
- FFA
- FFA Chapter Officer
- Area FFA Officer
- Texas Junior Livestock Association
- Junior Breed Organizations
- Student Council
- Athletics
- Other (please specify)

Please estimate the number of hours that you devoted to the Livestock Ambassador Program in the past year. (enter as a whole number)

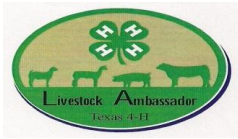
Select the University that hosted your Livestock Ambassador Short Course:

- Texas A&M University
- Texas Tech University

APPENDIX B

4-H LIVESTOCK AMBASSADOR SHORT COURSE 2010

EXAM



4-H Livestock Ambassador Short Course 2010
Exam

- 1) What are 2 advantages of embryo transfer in Cattle?
- 2) How old is the embryo at the time of transfer?
 - a. 7 days
 - b. 1 month
 - c. 3 days
 - d. 7 hours
- 3) Which disease causes the most abortions in sheep?
 - a. Vibriosis
 - b. Overeating
 - c. Roundworms
- 4) All of the items listed below are used in fecal count evaluation except?
 - a. Microscope
 - b. Slides
 - c. Feces
 - d. Electric Fecal Egg Counter
- 5) What is a benefit of monitoring internal parasites in sheep and goats?
- 6) Sheep and goats have teeth on upper and lower jaw.
 - a. True
 - b. False
- 7) What internal parasite has the largest economic impact on sheep and goat production in Texas?
 - a. Flukes
 - b. Bots
 - c. Roundworms
 - d. Tapeworms

- 8) How many times should we de-worm a show sheep in a year's time?
- 1
 - 2
 - 8
 - 3
- 9) The fecal sample used for fecal floats can be up to a few days old for optimum counts.
- True
 - False
- 10) Name 3 sources of parasite resistance in sheep and goat production.
- 11) Name the urinary problem that is prevalent in show goats.
- 12) Humans can contract Club Lamb Fungus.
- True
 - False
- 13) A ewe is to a ram as a doe is to a _____?
- 14) The condition that ewes may suffer from at the time of lambing is referred to as?
- Parasite overload
 - Sore mouth
 - Periparturient rise
- 15) My lamb has bloody scours what could it be?
- Vibriosis
 - Club Lamb Fungus
 - Sore Mouth
 - Coccidia
- 16) All are symptoms of internal parasite infection except
- Pot bellied
 - Depressed
 - Decreased appetite
 - Increased energy

- 17) What is the common name for Enterotoxemia?
- Lockjaw
 - Ringworm
 - Tetanus
 - Overeating
- 18) How long is the average gestation period for sheep?
- 123 days
 - 5 months
 - 147 days
 - Two of the above
- 19) Where is the semen deposited Laparoscopic AI in sheep?
- Ovary
 - Uterine horn
 - Placenta
 - Vaginal Vault
- 20) What is the major anatomical hindrance to AI in sheep?
- 21) What is the total volume of semen frozen in pellet form and will be used in AI in sheep?
- 22) What is the major health problem that affects reproductive health in male sheep?
- Trich
 - Vibriosis
 - Arthritis
 - Epididymitis
- 23) Identify the expensive portion of a goat's carcass.
- Loin
 - Neck
 - Shoulder
- 24) Name the 4 stomachs of the ruminant in order.

- 25) On what side of the ruminant does bloat occur?
- Left
 - right
- 26) My lamb is scouring what can I do to get him to eat?
- Contact a veterinarian
 - Reduce textured feed intake
 - B12 shot
 - Feed him grass hay
 - All of the above
- 27) What is the common form of non-protein nitrogen in cattle feed?
- 28) A bull deposits semen in the cow's...
- Volva
 - Uterine Body
 - Ovary
 - Vaginal Vault
- 29) In Artificial Insemination of a cow the semen should be deposited in the...
- Volva
 - Uterine Body
 - Ovary
 - Vaginal Vault
 - All of the above
- 30) Which of the following is a function of the cervix?
- Produces eggs
 - Ovulates eggs
 - Site of fertilization
 - Keeps external contaminants out of the uterine body
- 31) The blister type structure that forms on the ovary is called the...
- Uterus
 - Follicle
 - spermatozoa

- 32) What is the length of the cow's estrous cycle?
- 29 days
 - 3 days
 - 18-24 Hours
 - 21 days
- 33) What is wrong with a tall cow patty?
- Too much protein in diet
 - Too little protein in diet
 - Difficult to drive over
- 34) What is the single most important factor to remember when trying to get a calf to gain weight efficiently?
- Feeding him as much as possible and "pushing" him
 - Being as consistent in your management and feeding of him as possible
 - Following the latest show fads and trends
 - Feeding him the right brand of feed
- 35) How many "true" stomachs does a ruminant animal have?
- 1
 - 2
 - 3
 - 4
- 36) You are at a showmanship clinic and a novice 4-Her shows you their calf. The calf has not been eating and you notice that there is a watery substance on top of his feces. What could the calf be suffering from?
- Acidosis
 - Vibriosis
 - Ringworm
 - BSE
- 37) _____ is another term for belching or burping
- 38) Elevated respiration with fast shallow breaths can be symptoms of what respiratory disease?
- Pneumonia
 - Overeating
- 39) The gland in short day breeders responsible for monitoring daylight length is the _____.

- 40) Seasonally poly-estrous refers to animals that...
- Periods of estrous cycle all year long
 - Estrous is seasonal
 - Cycle during Christmas
- 41) Name two functions of the ovaries.
- 42) What is the name of the hormone released from the hypothalamus that is referred to as the clocking mechanism?
- PMSG
 - FSH
 - GNRH
- 43) Name an ingredient and its function in extenders for semen?
- 44) What is wrong with egg whites in semen?
- Kills it
 - Reproduces it
 - Changes the sex of semen
- 45) Light and cold shock kills semen.
- True
 - False
- 46) What is the term for a single stomach?
- Polygastric
 - Doublegastric
 - Mono-gastric
- 47) A human dissecting a dead human is an autopsy, a human dissecting another animal is called a...
- Biopsy
 - Necropsy
 - Triopsy
- 48) Large pelvic areas or girdles in heifers help with...
- Eating roughages
 - Standing heat
 - Having larger calves

- 49) Show cattle in the last 10 years have gotten,
- Bigger and shallower
 - More moderate and bigger bodied
- 50) All are roughages except...
- Corn
 - Barley
 - Soybean meal
 - None of the above
- 51) AIJ refers to what in cattle
- Sounds cool
 - The process of digestion
 - Site of fertilization
- 52) Dead bulls can not have calves.
- True
 - False
- 53) What is the basic unit of inheritance?
- Sperm
 - Embryo
 - Gene
- 54) How many sets of ribs do cattle have?
- 13
 - 12
 - 2
 - 11
- 55) The term used to describe increased production as a result of breeding two different types of cattle.
- Septicemia
 - Ilium
 - Heterosis
- 56) What is the main function of progesterone?
- 57) Feeding too much crude protein to a large show hog can...
- Cause joint problems
 - Make them fat

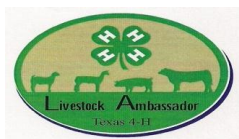
- 58) Proper name for Paylean®.
- Sodium Chloride
 - Ammonium Chloride
 - Ractopamine Hydrochloride
- 59) Name a benefit of Paylean® to the 4-H family.
- 60) How can an exhibitor break the internal parasite cycle?
- Deworm every six months
 - Feed grain and hay on the ground
 - Rotate feeding pens and pasture
- 61) What does a feminine heifer look like?
- Bold shouldered
 - Course headed
 - Big Joints
 - Refined head and flat neck
- 62) A terminal sire is used to create replacement females.
- True
 - False
- 63) Clean water is one of most important nutrients for show animals.
- True
 - False
- 64) Brahman cattle are well adapted for the state of Montana.
- True
 - False
- 65) What will be listed on a feed tag that will keep you and 4-H families out of trouble?
- Protein
 - Fiber
 - Withdrawal times on medicated feed
- 66) Hogs should be no lighter than 200 lbs before you start working with them?
- True
 - False
- 67) Name one benefit of Artificial Insemination.

- 68) Name two reasons why Brahman influenced cattle do well in Southeast Texas.
- 69) Genotype can be changed by the environment.
- True
 - False
- 70) The boar penis is characterized as a ...
- Spike
 - Plunger
 - Corkscrew
- 71) What does BSE stand for?
- Bovine Stomach Entry
 - Bovine Soundness Exam
 - Breeding Soundness Exam
- 72) What is the function of glycerol in the semen extender?
- Food
 - Displaces water
 - Keep ice crystal from forming during freezing
 - Two of the above
- 73) _____ is the act of increasing an animal's nutrition in an effort to ovulate more eggs.
- Flushing
 - Finish feeding
 - Fecal Counts
- 74) Semen is thawed at 150 degrees
- True
 - False

- 75) What % of semen dies with the freezing process?
- 23
 - 25
 - 76
 - 50
- 76) The Barber Pole worm doesn't cause much damage to sheep and goat producers
- True
 - False
- 77) How many days out from breeding should a BSE be conducted?
- 23
 - 34
 - 60
 - 80
- 78) Purebred cattle breeders sell by the head and commercial breeders sell by the....
- Acre
 - Pound
 - Calf
- 79) Brahman cattle reach sexual maturity later than British breeds.
- True
 - False
- 80) What is the function of FSH in flushing cattle?
- 81) Do you breed on standing heat when flushing
- Yes
 - No
- 82) When synchronizing donor and recipient you have a ___ day window.
- 1
 - 5
 - 3
 - 12
- 83) When fabricating a pork carcass, which of the following is one of the 4 lean cuts?
- Ham
 - Leg
 - Jowl
 - Ribs

- 84) What is the expected pH value of a pork carcass with PSE quality?
- 4
 - 5.3
 - 4.5
- 85) What is the device called that suspends a pork carcass on the rail?
- 86) Between which ribs is a pork carcass ribbed?
- 12 and 13
 - 1 and 2
 - 10 and 11
 - 7 and 8
- 87) Provide two reasons why pork carcasses have one of the highest dressing percentages among livestock.

APPENDIX C
TEXAS 4-H LIVESTOCK EXPERIENCE
EVALUATION



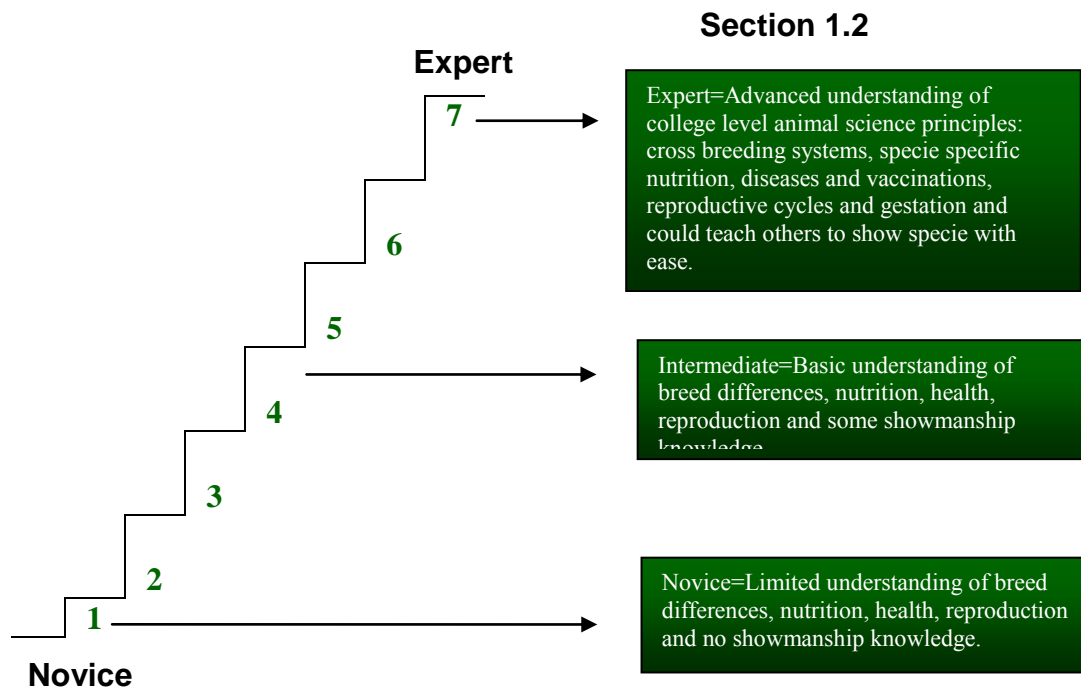
Texas 4-H Livestock Experience

Evaluation

Section 1. Self-Assessment in Livestock Production Knowledge A major objective of this study is to investigate the gained advanced animal science knowledge

Rate your livestock production knowledge on a scale of 1-7. **1** being **Novice** knowledge and **7** having **Expert** knowledge. Guidelines for livestock production knowledge are outlined below in Section 1.2. Circle **one** knowledge level for each species.

Beef Production	1	2	3	4	5	6	7
Goat Production	1	2	3	4	5	6	7
Swine Production	1	2	3	4	5	6	7
Sheep Production	1	2	3	4	5	6	7



Section 2. Future in Agriculture A second objective of the study is to assess the degree that the Texas 4-H Program has prepared you for a future in agriculture. Check the box which represents your answer to the following questions.

Future in AG	Strongly Disagree	Disagree	Neither Agree Disagree	Agree	Strongly Agree
The 4-H program has prepared me in career development.					
The Texas 4-H program has provided college level animal science.					
4-H has prepared me for college level curriculum.					
4-H can do more to prepare me for what college classes will be like.					
The 4-H program has offered me advanced livestock educational opportunities.					
I will use skills gained in the livestock showing experience in my career.					
The 4-H program has taught me to identify issues that threaten livestock showing.					
I am confident that I have the right response if questioned by an animal activist.					
4-H has played a major role in my career development.					
I can see myself in an agricultural career.					
The livestock showing experience will benefit me if the future no matter what career I choose.					
I have met people that will help me in my career.					
Teen Leaders in Agricultural Education	Strongly Disagree	Disagree	Neither Agree Disagree	Agree	Strongly Agree
The 4-H Program overuses teen leaders at livestock clinics.					
Peer/teen leaders can teach novice 4-H youth to show.					
The 4-H program has prepared me to assist others with livestock projects.					
The 4-H Program overuses teen leaders at livestock clinics.					

I am not qualified to help novice 4-H families with their livestock projects.					
Novice 4-H youth respond better to teen leaders rather than adult leaders.					
I have something to offer in the education of novice youth about livestock.					
Teen Leaders in Agricultural Education	Strongly Disagree	Disagree	Neither Agree Disagree	Agree	Strongly Agree
Adults should do the teaching of novice youth because they are more qualified.					
Teen leaders helped me when I started showing livestock.					
Some adults in the 4-H program should learn from the teen leaders.					
4-H needs a training ground for teen leaders with livestock interests.					
Teens are too busy to help novice youth with their projects.					
Because of the Short Course my opinion of Texas A&M University has improved.					

Section 3. Demographic Information

Please circle all that apply.

Gender :
Male Female

Livestock species you have shown:
Cattle Sheep Swine Goats Poultry Rabbits

What leadership positions have you held in 4-H?
Club Level County Level District Level State Level

Age:
14 15 16 17 18

After high school I plan to

A. go into the workforce.
B. attend a trade school.
C. attend junior college.
D. attend four year university.

VITA

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