

Equine Subject Matter In Virginia's Secondary Agricultural Education Programs: Course Offerings Compared to Career Development Event Participation

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Abstract

Agricultural education has to alter its curriculum in order to remain in step with the changes in rural and urban lifestyles. It must continue to change and expand its offerings as society develops. As an industry grows large enough to offer a variety of careers, students need to be more aware of opportunities and gain the necessary skills to enter that job market. The equine industry qualifies as an important and viable part of not only Virginia's economy, but also the national economy.

Career Development Events (CDEs) are designed to help prepare students for careers in agriculture. Classroom instruction comes alive as students demonstrate their skills in a competitive setting. CDEs test the abilities of individuals, as well as teams, in 28 major areas of agricultural instruction (National FFA, 2006). The basic core of agricultural education program consists of three components:

1. classroom instruction,
2. FFA, including Career Development Events, and
3. Supervised Agricultural Experience (SAE) programs.

The FFA is a co-curricular organization representing one-third of the total agricultural education program. As such, FFA activities should reflect the instruction provided in the agricultural education classroom and laboratory. The concern facing the profession relates to why there were 40 Virginia FFA chapters with a CDE horse judging team in 2005, but that only 12 programs offered an equine management course.

The purpose of my research was to assess the perceptions of Virginia's secondary agricultural education teachers toward the benefits of offering an equine management course, within the secondary agricultural education programs that have CDE horse judging teams. The survey of 40 agricultural teachers who had a horse judging team at the 2005 state CDE event showed that 14 (22%) of the teachers did teach an equine course or unit within another course, 21 (63%) did not, and five (15%) did not respond.

Based on the findings of this study, teachers' perceptions were that an equine management program and participation in equine Career Development Events are necessary. Teachers agreed the event improved their students' overall academic performance, increased their acceptance of responsibility, and increased their self-confidence.

Dedication

I dedicate this work to my wife, Linda, and to my two daughters, Cassie and Mandy, for putting up with me and the sacrifices they had to deal with so I could accomplish this goal. I also would like to dedicate this to my father, John H. Miller, who passed away in July of 1972; I owe all of my equine and agricultural background to him. Without this knowledge, I could have not accomplished this goal.

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CHAPTER 1

INTRODUCTION

There are well over 170,000 horses in Virginia counties spreading from the southernmost edges to its borders with the nation's capital. All breeds of horses used for purposes from trail riding and competition to breeding, field hunting, training, and racing can be found in the Old Dominion. Across Virginia, horses are valued for their strength, beauty, and athletic prowess, as well as for the bonds they forge among family members, communities, and competitors. Because of the significant financial investment horses and horse activities involve, horses are also valued for their contribution to Virginia's economy (Virginia Horse Industry Board, 2006).

The total population of horses, ponies, and mules in the state make Virginia the fifth largest equine state in the United States. Cash receipts of \$99.4 million for equine sold in 2001 placed horses as the seventh largest agricultural commodity in the state. In 2001, the value of all equine in Virginia was \$1.46 billion, with Virginians spending \$60.9 million during the same year for the purchase of equine (Virginia 2001 Equine Survey, 2002).

Virginia's horse industry generated nearly 20,000 jobs and over \$352 million in wages and salaries in 2001. In the same year, Virginians spent \$2,969 per horse, totaling \$504.7 million in business sales. Horse events attracted over 800,000 participants and spectators to Virginia resulting in over \$167 million spent in the state for more than 700 annual events and competitions (Virginia 2001 Equine Survey, 2002).

To understand the economic value of the Virginia equine industry, one must consider the many activities that include equine, the many breeds of horses that reside in the state, and the thousands of equine enthusiasts. These enthusiasts represent every walk of life, live in urban and rural areas, and fill their homes, offices, and vehicles with symbols of their interest in horses. By

recognizing all the breeding farms and stables, land, equipment, facilities, and products necessary to produce and use horses, one begins to understand how the horses and people involved represent an influential industry. Finding a rival in complexity would be a challenge. Together the breeding, raising, training, showing, racing, riding, and care of thousands of equine each year stokes a vast industry that when pulled together in all its diverse aspects makes a huge contribution to the Virginia economy (Virginia 2001 Equine Survey, 2002).

Support from the Horse Industry

Because the horse industry is such a vital component of Virginia life and Virginia's economy, the horse owners, through a referendum in 1994, established the Virginia Horse Industry Board to promote and develop Virginia's horse interests. Operating through the Virginia Department of Agriculture and Consumer Services, the Board is comprised of leaders from all segments of the industry including breeders, association presidents, and commercial and professional service providers. Together they work on behalf of the various breeds, disciplines, interests, schools, and related businesses to promote the industry (Virginia Horse Industry Board, 2006).

Due to the increase of horses in Virginia and the ever changing job market, it is important that agricultural education keep up with the need of the industry. Curriculum is ever-changing and must remain so to continue to be viable. As the economy changes, so must the schools, offering programs that better prepare students to enter today's workforce (Virginia Horse Industry Board, 2006).

Agricultural Education

The mission statement for agricultural education states: “Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber, and natural resources industries” (National FFA, 1999, n.p.). As agricultural educators, the focus is on the future and preparing students for careers. Educators must challenge the common barriers of time constraints and resources, and work toward creating opportunities that students can be involved in that will better prepare them for future employment (National FFA, 2005).

An agricultural education program in which a student enrolls is more than just a class. It is a well-rounded, total educational approach. To have a well round agricultural program a teacher should include all three of the following components:

1. Classroom instruction,
2. FFA, including Career Development Events (CDE), and
3. Supervised Agricultural Experience (SAE) programs.

The classroom/laboratory is where the students’ agricultural education experience begins. The students’ time in the classroom will be similar to other traditional classes. At other times the class will be much more hands-on and tied to the real world. The student will learn the basic knowledge needed to be successful in the remaining two phases of the total agricultural education experience (National FFA, 2006).

Since its creation in 1917, the work based experience component called Supervised Agricultural Experience (SAE) has been a cornerstone of the agricultural education program. The program is composed of technical knowledge related to the diverse industry of agriculture offered through classroom/laboratory instruction, leadership instruction with application

provided through the FFA, and work based learning provided through the supervised agricultural experience program (National FFA, 2006). The purposes of SAE are:

- provide practical application of classroom/laboratory instruction,
- explore career options,
- demonstrate employment skills and responsibility,
- demonstrate entrepreneurial skills,
- further develop knowledge and skills in their chosen occupational pursuit area,
and
- provide recognition for outstanding student accomplishments.

When classroom instruction, FFA, and SAE components are utilized through a well-planned program, they provide a context for learning necessary content and life skills, to prepare students for the future regardless of their career areas. With the integration of science concepts and skills, agricultural education programs provide a context in which learners can explore. FFA Career Development Events give students enrolled in agricultural education instruction and reinforcement of science principles within the context of agriculture (Dailey, Conroy, & Tolbert, 2001).

Career Development Events enable students to use their technical agricultural knowledge and skills in 28 areas in a real industry setting. CDE activities are judged and evaluated by professionals in the field (National FFA, 2006). Students have the maximum opportunity to practice and demonstrate problem solving within their industry, communication skills, and application of classroom knowledge to a new situation (Wade, 1998).

Agricultural Education Curricula

Agricultural education curricula are no different than academic curricula in the element of change. Agricultural education may even be more affected by what is happening in society and thus must be more easily accepting of change. As industries or jobs fade, so must the emphasis in offering opportunities to develop relevant competencies. Likewise, as an industry expands and becomes a force in the economy, schools must prepare students with the necessary skills (Hagen & Sherman, 2000).

The last part of the 20th century saw a new focus in agricultural education. Agricultural education was very job specific and industry needs were considered a high priority. This led to shifting away from a narrow view to broader, more integrated curricula that would benefit all students (Hagen & Sherman, 2000). Agricultural educators have seen great changes in the curriculum they teach; with more variety of subjects, many with a scientific aspect to them, and a focus on the whole individual. The focus on more relevant subjects has resulted in the development of such courses as veterinary science, turf and landscape management, equine science, and aquaculture (Hagen & Sherman, 2000). The equine curriculum has a very strong science emphasis with examples such as horse anatomy, physiology, and psychology being major components of the curriculum. Students learn much about the behavior and physiological processes of equine.

Agriculture curricula should reflect the competencies and content needed in industry. The equine industry is growing rapidly offering a wide array of job opportunities for people of varying levels of knowledge and expertise. A few of the equine job opportunities for which agricultural education programs can prepare students include: high school agricultural teacher, certified equine appraiser, pharmaceutical sales, veterinary technician, trainer, stable manager, riding instructor, farrier, stallion and broodmare manager, and farm manager (White & Llewellyn, 2001).

Agricultural education has to alter its curricula in order to remain in step with the changes in rural and urban lifestyles. It must continue to change and expand its offerings as the society develops. As an industry grows large enough to offer a variety of careers, students need to be more aware of the opportunities and gain the necessary skills to enter that job market. The equine industry qualifies as an important, viable part of not only Virginia's economy, but also the national economy (Virginia Horse Industry Board, 2006). While many two-year colleges and four-year universities offer equine courses or degrees, it is a relatively new concept at the secondary level. Based on changes in the United States economy, agricultural education is very different than it was 50 years ago. No longer does agricultural education have its main focus on preparing youth to go back to the family farm or to raise crops. Now it is more scientifically based with a broader perspective, allowing education to be more accessible to a greater number and variety of students. To remain current, the concept of offering equine courses for secondary school students should be addressed. While there are many equine science programs at post secondary institutions, a search of the literature clearly indicates there is a different view of high school equine curricula within the southern region. Two states that border Virginia, North Carolina and West Virginia, are at opposite ends of the spectrum. North Carolina offers two full equine science classes (equine science I and equine science II) (North Carolina CTE, 2006). West Virginia, however, includes no type of equine curriculum within the state's curriculum guide (West Virginia Department of Education, 2006).

Virginia's Equine Management courses, Equine Management Production (ANR 8015), an 18-week course, and Equine Management Production (ANR 8080), a 36-week course, are designed to assist students with a limited knowledge and background in equine science to develop a solid foundation from which they may further their equine science studies. Equine management introduces students to basic terminology that is used throughout the equine industry. Students learn to make a

distinction among animals by breed, sex, and use. In addition, students learn the foundational principles that are needed in a profitable equine enterprise (Virginia Office of Career and Technical Education Services, 2006 a).

A “hands on” component gives students an opportunity to learn more directly about horses through observation and experience. Students are given the opportunity to work with equine as they apply principles they have learned in the courses. Equine management introduces students to the fundamentals of leadership and management. Therefore, students learn skills necessary for successful living and working in the equine industry and society. The Virginia Office of Career and Technical Education Services (2006 b) has developed a list of essential competencies to assist teachers in offering a focused, well-planned quality program of study for the beginning equine management student.

Academic Components of Agricultural Education Program

Curriculum has been defined in many different ways. It can be a very broad and all encompassing program or as small as a single course. Finding the right curriculum is not always easy because preparing youth for the job market is "complicated by always having to shoot at a moving target" as the market never remains the same (Swanson, Nelson, & Meyer, 1969, p. 22).

An association between each Virginia agricultural education course and the Virginia Standards of Learning (SOL) for English, history, and social science, mathematics, and science has been developed by teams of agricultural educators and academic specialists. The academic standards that are reinforced by specific tasks and competencies within each course have been identified. Within Virginia’s equine management course, a number of tasks and competencies reinforce the standards listed beside them on the SOL task table (Appendix A) (Virginia CTE, 2006 a).

Problem Statement

The FFA is a co-curricular organization representing one-third of the total agricultural education program. As such, FFA activities should reflect the instruction provided in the agricultural education classroom and laboratory. FFA Career Development Events (CDEs) are designed to help prepare students for careers in agriculture. Classroom instruction comes alive as students demonstrate their skills in a competitive setting. CDEs test the abilities of individuals and teams in 28 major areas of agricultural instruction (National FFA, 2006). The concern facing the profession relates to why there were 40 Virginia FFA chapters with a CDE horse judging team in 2005, but only 12 programs that offered an equine management course.

Purpose and Objectives

The purpose of this descriptive research study was to determine the status of equine subject matter in Virginia's secondary agricultural education programs, with a specific focus on factors related to equine course offerings in comparison to equine Career Development Event participation. This research will seek to determine the need and the standards for implementation of a secondary school level equine management course.

In order to accomplish the purpose, the following objectives were established:

1. Determine the characteristics of Virginia's secondary agricultural education equine teachers whose teams participated in the 2005 state FFA equine Career Development Event.
2. Determine the characteristics of Virginia's secondary agricultural education programs that were represented in the 2005 state FFA equine Career Development Event.
3. Determine the factors associated with the decision of whether to teach equine management by the coaches of teams in the 2005 Virginia FFA equine Career Development Event.
4. Ascertain the benefits of teaching equine management as perceived by the FFA equine Career Development Event coaches.

5. Determine the barriers associated with why some secondary agricultural education equine coaches do not teach an equine management course.
6. Determine the perceptions of survey respondents regarding the future of equine management in Virginia's secondary agricultural education programs.
7. Identify possible strategies rated by FFA equine Career Development Event coaches to enhance equine instruction.

Significance of Study

Within Virginia, only 12 high schools offer equine programs, so many of the 40 schools having students participating in the equine CDE fail to follow the objectives of a well-rounded agricultural education program. FFA activities should reflect the instruction provided in the agricultural education classroom and laboratory. "In Virginia, the philosophy of the Career Development Events should reflect instruction that currently takes place in the entire agricultural education program, including classroom instruction, laboratory instruction, individualized instruction, and/or supervised agricultural experience" (Virginia FFA CDE Guide, 2006, n.p.). By applying this philosophy, the high school agricultural education teachers may competently prepare their students by adding more equine programs to their high schools' agricultural programs.

Limitation

The results of this study can only be generalized to Virginia agricultural education departments whose FFA chapters participated in the 2005 state-level horse-judging CDE.

Assumptions

The researcher made the following basic assumptions in respect to this study:

1. All secondary agricultural education teachers across Virginia involved in this study would truthfully answer all questions contained in the survey.
2. Perceptions of the need for an equine management course in secondary agricultural education were identified.

Definition of Terms

Career Development Event (CDE): This is an event held outside of the classroom that offers students the opportunity to gain further skills and experience in different aspects of agriculture. An example would be a horse-judging contest (National FFA, 2005).

Classroom/Laboratory: The setting in which students learn from the agricultural instructor (National FFA, 2006).

Competency: Used as a basis for determining course content in order to achieve specific learning outcomes of students (Curry, 1984).

Curriculum: "The sum of the learning activities and experiences that a student has under the auspices or direction of the school" (Finch & Crunkilton, 1999, p. 11).

Equine: A synonym for horse; of or like a horse (Ehrlick, 1980).

Equine/horse industry: The business activities related to horses (Ehrlick, 1980).

Equine occupations: Occupations that deal with horses and/or in which a working knowledge of horses is needed (Ehrlick, 1980).

FFA: An organization for students who are studying agriculture. In FFA, students practice what they have learned in the classroom through Career Development Events. CDE help develop leadership skills, prepare for career success and experience personal growth (National FFA, 2006).

SAE: The supervised agricultural experience program is a hands on program that the student create and carry out. This gives the student the opportunity to explore the area of agriculture that interests them (National FFA, 2006).

Summary

The purpose of this descriptive research study was to conduct an assessment of the status of equine subject matter in Virginia's secondary agricultural education programs, with a specific focus upon factors related to equine management curriculum infusion in comparison to equine career development event participation. Virginia ranks as the fifth largest equine state in the United States with cash receipts of \$99.4 million for equine sold in 2001. This places horses as the seventh largest agricultural commodity in the state. Within Virginia, only 12 high schools offer an equine management course, but 40 Virginia agricultural education programs had FFA equine judging teams in 2005. This research study will seek to determine the need and the standards for improvement of the current secondary school level equine management curriculum.

Virginia's equine management course is designed to assist the student with a limited knowledge and background in equine science to develop a solid foundation from which they may further their equine science studies. In addition, students learn the foundational principles that are needed in a profitable equine enterprise.

Organization of the Study

Chapter 2 consists of a literature review which includes publications on technological changes; agricultural education; equine science as a focus area for agricultural education; agricultural curriculum; equine curriculum; role of the National FFA; FFA Career Development Events; and change, adoption, innovation, and evaluation of curriculum. The research design is discussed in Chapter 3, with an outline of the procedures used, the subjects and the subject selection process, data collection, and the methodology used for analyses. In the fourth chapter, the findings of the study are presented, including factors associated with the decision of whether to teach equine management, benefits for teaching equine management, barriers associated with not teaching an equine management course, and program and teacher characteristics. Chapter 5 includes a summary of the findings of the study, recommendations based on the importance of teaching an equine course, and suggestions for further study.

CHAPTER 2

LITERATURE AND RESEARCH REVIEW

In chapter two, the reader will be introduced to the relevant literature in regard to the overview of agricultural education, theoretical framework, technological changes, history of agriculture education, equine science as focus for agricultural education, agricultural education curriculum, the future of agricultural education curriculum, equine curriculum, role of the National FFA Organization, FFA Career Development Events, and change, adoption, innovation, and evaluation of curriculum.

Overview

The United States leads the world in agricultural productivity and research. According to *Reinventing Agricultural Education for the Year 2020*, a planning initiative and vision of the National FFA Organization (1999), “the United States’ leading position in agriculture lies in part because of its infrastructure for developing and delivery technology, including agricultural education programs in the public schools” (National FFA Organization, 1999, n.p.). According to the National FFA (1999), today’s network of agricultural scientists and educators has served the country well, but has begun to show a degree of mental wear. A great deal of concern relates to the rapid pace of change that comes with technological innovation. Current curriculum development initiatives and educational delivery approaches in local school districts around the nation have not kept pace with the rate of technological change that the United States has experienced over the past decade (National FFA Organization, 1999). “Rather than reacting to change as it comes, ‘a passive approach,’ the agricultural education community must take a

proactive stance and look ahead to develop a cohesive vision of its preferred future decade" (National FFA Organization, 1999, n.p.). The National Research Council (1988), in the book *Understanding Agriculture*, emphasized that in order for agricultural education to remain viable, educators should emulate the best current programs while generating new ways to deliver agricultural education instruction.

As educators, we must let go of the traditional agricultural curriculum and reinvent a curriculum that will stimulate the students' interest in the agricultural field. Supplying a well-trained workforce for agriculture should be a primary goal of the education community. Today, while only a few youth express an interest in traditional agricultural occupations, educators must move the educational curriculum to include areas of interest that are representative of a broadly defined agriculture, food, fiber, and natural resources industry. Orthel, Sorensen, Leman, and Riesenberg (1989) concluded that a negative opinion of pursuing a career in agriculture is really an expression of pursuing a career in farming and ranching, and that students have not been exposed to factual information about the industry of agriculture and corresponding careers. *A New Era in Agriculture* (National FFA Organization, 1999) provided the following on how agriculture, as an industry, should be viewed:

Agriculture is a field that encompasses the production of agricultural commodities, including food, fiber, wood products, horticultural crops, and other plant and animal products. The terms include the financing, processing, marketing, and distribution of agricultural products; farm production, supply and service industries; health, nutrition and food consumption; the use and conservation of land and water resources; development and maintenance of recreational resources; and related economic, sociological, political, environmental, and cultural characteristics of the food and fiber system. (p. 2)

The mission statement for agricultural education states: "Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber, and natural resources industries" (National FFA Organization, 1999, n.p.). As educators, if

we choose to stay with the traditional agricultural curriculum, educators will not prepare the students for today's agricultural workforce and will lose more and more of them to other disciplines. Educational programs in agriculture are in direct competition with programs such as engineering, business, and medicine, which are judged by the public as having more promising career opportunities. In contrast to the aforementioned views, some supporters of agriculture still prefer a more traditional agricultural curriculum. Traditional agriculture is a lifestyle enjoyed by many who are proud to continue the tradition of the family farm, many on "Century Farms," which have been in the family for generations. Farmers continue to market high quality products in a volatile, consumer-oriented industry. Value-added products are seen as income-enhancers to some producers (National FFA Organization, 1999). These farmers learned their farming skills from their parents and they learned from their fathers. They have been successful in how their farm has produced and they feel no need for any change. Based on hundreds of years of experience, these systems are often highly productive and sometimes more reliable than the so-called improved systems based on mono-cropping and the use of chemical inputs. There is a great deal to learn from the past generation of farmers (National FFA Organization, 1999).

Whether one chooses a more modern or traditional agriculture curriculum, the issues of technological change and the decline of enrollment must be addressed. In the viewpoint of the researcher, agriculture must take a more positive stance and move toward a more modern science-based approach tied to specific justification. The more modern science-based approach can be enhanced by an interesting subject matter such as equine science (National FFA Organization, 1999).

Theoretical Framework

Rogers (1995) described the five stages of the innovation-decision process as knowledge, persuasion, decision, implementation, and re-invention. The knowledge stage consists of information recall, comprehension, and skill for effective adoption. The persuasion stage includes the individual liking the innovation, discussion about innovation with others, acceptance of messages about the innovation, formation of a positive image of the message and innovation, and support for innovative behavior from the social system. The decision stage is characterized by the intention to try the innovation. The implementation stage includes the acquisition of additional information about the innovation, as well as regular and continued use of the innovation. An important phase of the implementation stage, when the innovation is applied to uses other than its original intended purpose, is re-invention. The confirmation stage consists of recognition of the benefits of using the innovation, integration of the innovation's use into routine, and promotion of innovation to others (Anderson, 2003).

Agricultural education has re-invented itself to remain in step with the changes in rural and urban lifestyles. Agricultural education must continue to change and expand its offerings to meet the needs of the students and the needs of industry. As the equine industry grows large enough to offer a variety of careers, students need to be more aware of the opportunities and gain the necessary skills to enter the equine job market. The equine industry qualifies as an important, viable part of Virginia's economy, but also the national economy. While two-year colleges and four-year universities offer equine courses or degrees (Stuska, 1991), it is a very new concept at the secondary level. Based on changes in the United States economy, agricultural education is very different from what it was 50 years ago, as it should be. No longer do agricultural educators believe their main focus is preparing youth to go back to the family farm or to raise crops. Now

agricultural education is more scientifically based with a broader focus, allowing education to be more accessible to a greater number and variety of students. To remain up to date, the concept of offering equine courses for secondary school students should be considered.

The responsibility of preparing future effective agriculture teachers to conduct an equine management course primarily resides with teacher educators. Data from the 2005 CDE state horse judging contest showed 40 teams participating with only 12 schools having a horse management course offer within their agricultural education curriculum. The 12 Virginia high schools that teach this course might be interpreted to have reached the re-invention stage. They could share information with the remaining 28 schools that are currently in the knowledge, persuasion, decision, and implementation stages in regard to equine curricula. This information would facilitate the implementation of an equine program within those schools' agricultural education programs. This study will show the needs as well as the barriers related to implementing a course in equine management. Agricultural educators should develop coursework and design programs to effectively achieve this outcome. In doing so, they must often rely on their own personal experiences as well as relying on teachers with current equine programs. By identifying the characteristics of an equine management course, agricultural educators can focus on developing a program that will be effective for their students.

Technological Changes

Technological changes that allow students to obtain more output from a given quantity of inputs are the principal source of modern agricultural growth. Although this basic premise is well established, the forces that encourage increases in productivity and the mechanisms whereby inventive ideas are created and translated into practical and commercial realities are not well understood.

Technological advances, international trade, and other economic factors are causing the farm sector to consolidate at a remarkable pace. The age of computers has brought with it many innovations. One area that has been greatly impacted by the rise in technological ability has been agriculture. The “simple life” of the farm has been irrevocably changed by the advent of computer-based renovations. “Precision agriculture” is the term coined to represent the new era in farming techniques. Through the use of the Global Positioning System (GPS), computer-age farmers are able to pinpoint the position of equipment and to analyze the soil content and production potential and then adjust inputs to maximize efficacy (National FFA, 1999).

Many factors are influencing the dramatic changes within agriculture. These include changing consumer demands, international competition, restructuring of farm and agribusiness enterprises, new technology (including biotechnology and information technology applications), increased environmental concerns, and public awareness. Together, these factors will continue to influence how food is produced on farms and ranches, and these changes in production will influence the number of youth who will decide to go into some field of agriculture. Changes in information technology have led to rapid development of electronic-commerce applications for agricultural producers in recent years (National FFA, 1999). There will be an increasing challenge to provide timely, accurate, and interesting agricultural courses via the Internet as we compete with private information providers, likely resulting in the need for new partnerships and relationships between universities and private businesses. To be prepared for careers in an agricultural field, students need to attain academic skills and knowledge. Students should acquire information related to agriculture, management, and workplace skills to develop career opportunities, entry requirements, and industry expectations. To prepare for success, students

need to have opportunities to learn, reinforce, apply, and transfer their knowledge and skills as well as to apply technology in a variety of settings (National FFA, 1999)

Agricultural classes should help prepare students to use computers as analytical and reference tools. Computers, videos, and telecommunications can add new dimensions to an agriculture program. The Ag Ed Network is one example of what can be accomplished with available technology. Agricultural education curriculum can be obtained electronically from the Ag Ed Network. For example, one source is the Agri Data Network, which is used as a “live textbook” in many agriculture classrooms. Agricultural education teachers should seek out and share high-quality software and curricular materials for agricultural management, planning, and instructional applications. Private-sector assistance should be sought in developing new instructional modules, exercises, and software (National FFA, 1999).

History of Agricultural Education

Agricultural education has existed for centuries in one form or another, as informal education, with parents teaching their children, or as formal education, in the classroom. Once formal societies were established, it was the parents who taught their children how to hunt, farm, and interact with others (Pucel, 2001). As career choices for youth expanded and moved into areas different from the parents, the educational system also had to change to prepare citizens for additional vocations. Apprenticeships were an important part of education until the late-1800s, allowing youth to gain the necessary skills from a skilled craftsman for a career that was different from their parents (Pucel, 2001). The Morrill Land Grant Act of 1862 brought about the establishment of vocational education at the college and university level. According to Scott and Sarkees-Wircenski, "the Land Grant Act of 1862 was one of the most important pieces of

legislation for vocational education and for higher education ever passed by Congress" (1996, p. 86). This act demonstrated that Congress believed in investing in the future workforce through vocational education (Scott & Sarkees-Wircenski, 1996).

At the turn of the century, Holmes (as cited in Sappe, 1984, p. 17) said that the purpose of secondary schools should be to "graduate pupils who can, first earn their own livings; second, discharge their duties as citizens; and third, participate in the refined pleasures of modern life." Barlow (1973, p. 27) noted "vocational education was viewed as a means of conservation of the natural resources, of efficiency in the use of human resources, and of each individual's effectiveness in the economic world leading to dignity and power in the social world." Senator Carroll Page declared to the U. S. Senate in 1916 "that achieving good citizenship was among the chief purposes of vocational education" (Barlow, 1973, p. 45). The Smith-Hughes Act of 1917, while thought by many to be the beginning of vocational education, was really the beginning of federal-state partnering for the further establishment and support of vocational education at less than the baccalaureate level. During this time, vocational education curriculum became separate from general academics to meet the needs of an economy in tremendous growth and change (Sappe, 1984). This act brought about federal funding of vocational education in three main focus areas including agriculture, trade and industry, and home economics. Over the next four decades, these three areas remained the primary focus of vocational education, but changes were on the way due to the ever-changing society. As Pucel (2001, p. 19) stated,

Vocational education practices, which were successful in satisfying the needs of the industrial age during the late 1800's and early 1900's, need to be questioned. Continuing them without adaptation will make high school vocational education obsolete as we continue into the knowledge/information age.

According to Finch and Crunkilton (1999), the Smith-Hughes Act brought about more quality control with higher standards in agricultural education, and also in curriculum

development. It also helped to develop a broad base of vocational education course offerings, whereas in the past, many times there may have been just single courses in a specific area. The Federal Board for Vocational Education, which was established due to the Smith-Hughes Act, worked to establish a more structured and consistent curriculum (Moore & Borne, 1986). In 1963, the passage of the Vocational Education Act reaffirmed the federal government's commitment to vocational education and also expanded its definition. According to Scott and Sarkees-Wircenski (1996, p. 130),

Vocational education meant vocational or technical training or retraining which is given in schools or classes under public supervision and control, or under contract with a State board or local educational agency, and is conducted as a part of a program designed to fit individuals for gainful employment as semi-skilled or skilled workers or technicians in recognized occupations.

The Carl Perkins Act of 1990 allowed for a more flexible curriculum with more cooperation between groups, especially more integration of academics and agricultural education (Finch & Crunkilton, 1999). "The tendency to separate general and agricultural education in the past has penalized both those who are college bound and those who plan to terminate their formal education at the end of high school or junior college" (Bushnell, 1966, p. 34). The School-to Work Opportunities Act of 1994 attempted to develop a more skilled workforce through partnerships between education and industry (Scott & Sarkees-Wircenski, 1996). "This act has been seen by many as legislation that 'brings it all together' to form a powerful curriculum and instructional delivery system. It encourages creative, collaborative development of curricula that link academic and applied studies in more meaningful ways" (Finch & Crunkilton, 1999, p. 8). There has been much emphasis placed on making sure that academics are emphasized along with vocational subjects so that the individual needs are met, thus allowing students to go on to

advanced education (Cetron & Gale, 1991). The concept of integration is an important direction for education. As cited in Barlow (1981, p. 26), Greene stated that:

It is an everlasting pity that so sharp a dichotomy has established itself in our minds between liberal education and vocational training, with the false implication that the former is somehow higher, though useless, and the latter, useful but somehow crass and demeaning. If these two equally essential preparations for life are thus divorced, a *merely* liberal education will indeed tend to be useless, and a *merely* vocational training, crass.

Subjects are more interesting and relevant if they are taught in context, and courses integrated with one another (Erickson, 1980). "More integration will provide all students at the secondary level with an understanding of, and appreciation for the role agriculture plays in the economy and in their everyday lives" (Schwachtgen & Albers, 2000, p. 22).

When looking specifically at agricultural programs, one study by the National Research Council (1988) stated that agricultural education must change on a continual basis so that it can better serve agriculture. In this study, it is also stated that the agricultural curriculum has failed to keep up with modern agriculture (National Research Council, 1988, p. 31). Herring (1995) stated that the greatest challenge facing agricultural education was that of anticipating and managing change. To deal with change more effectively, four conditions must be present, including respect for the past, ability to adapt, confidence in the future, and recognition of the inevitability of change (Herring, 1995). Farmers continue to change in the ways that they produce products, by integrating more science into agriculture. Therefore, agricultural education, while still very important, had to change greatly from training students to go back to the farm, to developing new technology and more scientific based courses of study. If one looks at how the United States has changed over the last century, it is apparent the country is no longer agricultural-based, with many family farms of varying sizes. While the number of farms is reduced, the remaining farms

have increased in size, becoming more scientifically based, and more efficient in their production.

As industries change, education must refocus its curriculum to be better able to give students the skills that they will need for the industries of the future. The idea of agricultural education needing to change to remain current is nothing new, but this "becomes more important and is increasingly stressed as agricultural educators strive to gear their programs to a rapidly changing labor market" (Conner & Ellena, 1967, p. 293)

It is also important that agricultural education maintains its breadth and increases its depth to be able to give the students the necessary skills and knowledge to be successful in the world (Bottoms & Cop, 1983). A survey conducted by the American Vocational Association in 1984 ranked concerns of teachers from 48 states, and a major concern of these teachers was upgrading subject matter (Corwin & Sandiford, 1984). In 1999, the President of the National Association of Agricultural Educators stated, "the National Council for Agricultural Education has determined that the restructuring of the agricultural education profession must happen now" (Kremer, 1999, p. 1). According to Speer (1998), some of the career options that FFA advisers discuss with their members within the classroom and CDE activities include: cell biologists, patent attorneys, technical communications specialists, equine dentists, golf course superintendents and rural sociologists. "Courses are being redesigned to meet the interest and needs of today's students in the urban market. Animal and Plant Science classes are now more specific with names such as: Veterinary Sciences, Turf and Landscape Management, Equine Science and Aquaculture, just to name a few" (Hagen & Sherman, 2000, p. 123)

Equine Science as a Focus Area for Agricultural Education

As new and growing industries become important to the economy, schools must address the issue of preparing students to enter those industries. One such industry, which has become very popular, is the equine industry, which has emerged as a very viable employment option for the future. "The horse industry is a highly diverse industry that supports a wide variety of activities in all regions of the country. It combines the fundamentally rural activities of breeding, maintaining, and training horses with the more urban activities of operating racetracks, off-track betting parlors, and horse shows. "It also includes the recreational activities of riding, which occur in both urban and rural settings and in national and state parks" (American Horse Council Foundation, 1996, p. 4).

The majority of horse owners are amateurs (Du Teil, 1989), and this category of ownership is increasing. This classification includes predominantly middle-income women, 35 to 45 years of age, and youth; horses are their hobby. These nonprofessional horse people have the strongest positive impact on the horse industry of all the other categories (Huff, 1990) because of the revenue they generate. Related businesses, such as horse boarding, lessons, training, and companies which market horse care products, feel the results of this economic activity (Du Teil, 1989).

Unlike other agricultural animal industries where the emphasis is on production of human food, the horse industry in the United States is recreational in nature. The clientele have recreational aims, making their involvement in the industry somewhat dependent on the broader economy. Despite economic fluctuations, interest in leisure time recreational pursuits continues to grow in society.

A problem with the non-production emphasis of this agricultural field is that research, although needed, has not been emphasized. There has been relatively little money expended on horse research as compared to the production-based agricultural fields. The primary research facilities are universities, along with a few nonprofit foundations like the Morris Animal Foundation. This Foundation believes that the horse industry should be supported by research and is widely known for its research findings in disease areas such as colic (Morris Animal Foundation, 1982).

Despite the lack of interest by feed producers in developing a healthier horse, horse production practices are vitally important within the horse industry. Within the industry, current technological advances are being made in artificial insemination, embryo transfer, in vitro fertilization, hormone therapy, and the related fields of coat color genetics, heritable performance traits, and feeding for optimum growth. Such subject matter content can add a scientific base for agricultural education instruction.

Agricultural Education Curriculum

In the 20th century, industries became involved in curriculum development as they formed linkages with schools, to aid in the preparation of students for the world of work. However, Pratt (1980) contended that it should also be recognized that the needs of the learner should be a focus of curriculum development, not just industry or societal needs. Early in the 20th century, John Dewey realized that there were three components in curriculum that needed to be addressed. These included subject matter, society, and the individual; Dewey emphasized the need for these to be in balance (Tyler, 1981). During the Depression of the 1930s, "high school graduates were unable to find work and felt their schooling had not prepared them to be

independent adults" (Tyler, 1981, p. 599). Curriculum was examined extensively during the 1930s and 1940s, with educators determined to make significant reforms (Tyler, 1981). Curriculum must be developed with the concept of being used for very diverse groups, allowing for employment at different occupational levels (Meek, 1973). Curriculum in schools has continued to change to the present time.

Curriculum has been defined in many ways, by many people. It can be a very broad program or as small as a single course. Weinberger said, "Curriculum refers to all learning goals attended to by the system, including the scope and sequences of materials and activities" (Weinberger, 1977, p. 407). In 1987, Hass defined curriculum as "all the experiences that individual learners have in a program of education whose purpose is to achieve broad goals and related specific objectives, which is planned in terms of a framework of theory and research or past and present professional practice" (p. 5). Another definition included the "sum total of a student's experiences and activities under the direction of the school, including teaching materials and methodology" (O'Kelley, 1969, p. 29). Enterline (1961) denoted curriculum as "an organized sequence of courses and other related learning activities designed to achieve a particular educational objective" (p. 28). Finch and Crunkilton (1999) defined curriculum as "the sum of the learning activities and experiences that a student has, under the support or direction of the school" (p. 11).

According to Saylor, Alexander, and Lewis (1981), "our complex and rapidly changing society requires that we plan in advance to be ready for new events. Failure to do this, results in unfortunate breakdowns in society" (p. 369). Oliva (1997) expanded on this idea to include "social forces, philosophical positions, psychological principles, accumulating knowledge, and educational leadership" as factors influencing curriculum change (p. 29). "To the degree that

curriculum is clearly defined and meets the needs of its target market, the program will be effective" (Gleason & Harvey, 1984, p. 42). Curricula should include general or academic education and also agricultural education (Finch & Crunkilton, 1999).

Curriculum planners not only work to try to anticipate the future needs but they also can affect what happens in the future (Ravitch, 1983). Pratt (1980) said "curriculum planners are nothing if they are not planners, and as planners they are useless unless they have the future in their bones" (p. 62). According to Tyler (1979), there are four fundamental questions that need to be answered when developing curriculum:

1. What are the purposes or objectives of the program?
2. What experiences are likely to attain these objectives?
3. How can these experiences be effectively organized?
4. How can the effectiveness of learning be evaluated?

Cox wrote: "Curriculum should promote respect for the achievements of the past, understanding of the present, and a critical but open-minded attitude towards future developments. It should be so planned and carried out that pupils will be prepared for an ever-changing, ever more complex social-economic community life" (as cited in Nolan, 1994, p. 27). The development of curriculum to meet the future needs of students and society is a difficult task at best.

The Future of Agricultural Education Curriculum

History tells us that, traditionally, curricula have been developed in a somewhat haphazard manner with little consideration given to the impact of the development process (Finch & Crunkilton, 1999). Agricultural education curriculum becomes outdated when steps are not taken to keep it from remaining static. Educators as well as administrators must

recognize that the agricultural education curriculum thrives on relevance. The extent to which a curriculum assists students to enter and succeed in the work force indicates success.

Education, in any form, has always been a tool used to better oneself through the development of mental and physical skills that will be used throughout life. In its early history, education aimed its goal at only the more elite youth with its focus on more classical subjects and religion. As the world and opportunities grew, education was seen as a way to give all people a common footing and to develop strong citizenship. "The American public school system was invented at a time when, it seemed, that the purpose of education was, or should be, to promote republican Protestant morality and civic literacy" (Schlechty, 1990, p. 5). As society changed, becoming more industrial with more immigrants, the purpose of American schools changed from promoting a common culture to preparing students to enter an industrial society (Schlechty, 1990). Herring (1995) noted that "every scientific break through has resulted from a break with tradition, with the old ways of thinking" (p. 8), and this could also be said of education. Education and educators must focus on the areas that they can change, being proactive in their manner, always looking for the better way to educate the population (Herring, 1995). "A ship does not sail with yesterday's wind" (p. 17), and so, while education must honor its past, it must embrace the changes that are happening in the present and take them forward (Weeks & Foster, 1995). "For it is one of history's clearest lessons that institutional survival is not a matter of stubbornly standing pat, but of continuous, accurate adaptation to change" (Feldman, 1981, p. 36).

As a curriculum is being developed, the agricultural educator is obligated to deal with these concerns in such a way that quality is built into the finished product. Any curriculum that is

not developed thoroughly becomes static or irrelevant and will soon have an unfavorable effect on all of the students who come in contact with it. Agricultural educators must give consideration to the basic character of the curriculum and build in those factors that contribute to its quality. Outcomes from this process will lead to an agricultural education curriculum that is data-based, dynamic, explicit in its outcomes, fully articulated, realistic, student-oriented, evaluation-conscious, future-oriented, and world class-focused (Finch & Crunkilton, 1999).

Most curricula are student-oriented and curricula in agricultural education are certainly no exception. Currently there is a great deal of concern about how curriculum can best meet students' needs. Curriculum must meet stakeholders' needs, but educators have an obligation to meet the individual student's needs as well. In order to meet these needs in a prompt manner, educators must provide instruction that accommodates various students' learning styles, develop individual work-based learning plans, or make available alternate paths for the achievement of course objectives (Finch & Crunkilton, 1999).

Agricultural education teachers should work with their school administrators to obtain the resources they need for the adoption of new courses. Also, school administrators can play a role in removing or alleviating barriers to the adoption of new courses (Miller, 1999).

Agricultural educators who complete college courses in a content area such as equine science will be more likely to adopt the course within their school and will be better prepared to teach the course compared to the teachers with no course work in a content area; this will have an impact on the quality of education received by the students (Curry, 1984). College agricultural teacher educators may need to improve the curriculum and courses that are designed to prepare agricultural teachers to teach an equine course. Participation in workshops would increase the knowledge base for high school agricultural education teachers in the field of equine science,

but would these workshops result in increased equine course adoption? Workshops do not have the depth provided in college courses, however, it appears that an assessment of their effectiveness and value is warranted (Curry, 1984).

Equine Curriculum

Rudolph (1980) created a basic core of instruction for equine management and production for the Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education in Stillwater, Oklahoma. It was designed to help educators prepare students for successful employment or management of a one or two horse operation. This is a useful curricular goal; the purpose was easily met in a work of this volume, and the content presented was appropriate for that purpose.

The topics in Rudolph's curriculum provided good coverage of the subject and were consistent with earlier reviewed studies. Each unit of instruction contained some or all of eight basic components: performance objectives, teacher activities, teacher information sheets that covered the essential content, assignments for the students that stressed knowledge prerequisite for skill development, psychomotor skill sheets to guide student acquisition of skills, transparency masters, tests, and answers to tests and assignment sheets (Rudolph, 1980). Because of the complete coverage of topics, the detail within each unit, and the instructor information included, this curriculum could be used by an instructor with little horse expertise.

Rudolph's curriculum guide covered much the same topics as the Virginia equine management guide, but with broader coverage of many of the topics. This may have been, in part, because the Rudolph curriculum was specifically an equine curriculum while the Virginia guide included horse management as part of a livestock curriculum. Rudolph's guide placed more emphasis on hands-on work, and was generally suited for older students. It was applicable

at the community college level for a one or two semester course in horse production and management, but was not complete enough for associate's degree work in equine (Rudolph, 1980).

Virginia's Equine Curriculum

Virginia's Equine Management Production course focuses on the basic scientific principles and processes that are involved in animal physiology, breeding, nutrition, and care in preparation for an animal science career major. Topics include animal diseases, introduction to animal science, animal nutrition, animal science issues, career opportunities, and animal evaluation. Skills in biology, chemistry, and algebra are reinforced in this course. Work-based learning strategies appropriate for this course are agriscience projects, internships, and supervised agricultural experience. Supervised agricultural experience programs, Career Development Events, and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies (Virginia Office of CTE Services, 2006).

Virginia's tasks and competencies are designed to give the student a well-rounded equine education preparing the student to meet the standards set by the equine industry (Appendix B). The bullets in the left-hand column are considered essential statewide and are required of all students. In some courses, all tasks/competencies have been identified as essential. The unbulleted tasks and competencies and/or locally added tasks and competencies should be included as local conditions permit (Virginia Office of CTE Services, 2006).

Role of the National FFA Organization

The FFA has played a big part in trying to reinvent agricultural education. The organization changed its name in 1988 from Future Farmers of America to the National FFA Organization to reflect its evolution in response to expanded agricultural opportunities encompassing science, business, and technology in addition to production farming. FFA members, who may enter the workforce directly or pursue higher degrees through technical schools and four-year universities, are preparing for careers in agricultural marketing, processing, communications, education, horticulture, production, natural resources, forestry, agribusiness, and other diverse agricultural fields (National FFA, 1986).

The reinvention of agricultural education has taken giant steps. According to National FFA (2002), more than 12,000 teachers deliver an innovative, cutting-edge, and integrated curriculum to students, 92% offer agriscience, 71% offer advanced agriscience and biotechnology, 59% offer agricultural mechanics, 49% offer horticulture, 43% offer animal science, and 24% offer environmentally-related curricula. In 2001, 59% of qualified agricultural education graduates pursued teaching as a career and over 35 agricultural programs closed due to lack of qualified teachers. Three hundred-sixty-five agriculture teachers teach in more than one school with 23% of the teachers having five or fewer years of teaching experience (National FFA, 2002). The shortage of qualified agricultural teachers is the greatest challenge facing FFA and agricultural education.

Members of FFA participate in a hands-on work experience allowing them to apply knowledge learned in class. Collectively, FFA members earn \$4 billion annually through their hands-on work experience (National FFA, 2002). Members participate and learn advanced career skills in 45 national proficiency areas based on their hands-on work experience which

ranges from food science technology to agricultural communications and wildlife management to agricultural production. Through the national Career Development Events, such as public speaking, environment and natural resources, meats evaluation, and technology, FFA members extend and test their industry knowledge in a variety of career fields. Agriculture is the nation's largest employer, with more than 22 million people working in some sector. Classroom instruction, Supervised Agricultural Experiences, and FFA (including Career Development Events) prepare members for more than 300 careers in the science, business, and technology of agriculture (National FFA, 2002).

FFA Career Development Events

Agricultural educators believe that students are important customers who recognize quality and value in products and activities. When students are provided an opportunity to mold their educational experiences, they generally make wise decisions based on their needs and interest. Students value change based on their perceived personal needs as well as the needs of others. Students sometimes value change for the sake of variety. Educators are concerned about student's experiences and want to organize experiences that will meet the future needs of students while accomplishing the purposes of agricultural education and the National FFA Organization (National FFA, 2006).

Career Development Events should reflect instruction that currently takes place in the entire agricultural education program including classroom instruction, laboratory instruction, individualized instruction, and/or supervised agricultural experience. Agricultural educator should promote Career Development Events. Career Development Events that include team activities should be based on cooperation and teamwork while recognizing the value of

competition and individual achievement. The role of Career Development Events is to motivate students and encourage leadership, personal growth, citizenship, and career development.

Students should be recognized for achievement in Career Development Events. Quality standards should be used as a basis for achievement (National FFA, 2006).

The perceived importance of the FFA, including membership, activities, policies, and contests, increases for teachers over time as they work with students in the classroom (Claycomb & Petty, 1983, p. 31). A substantial number of studies have been done to assess the professional development needs of teachers in different states. Student and teacher development needs can be ranked in order of importance after they have been evaluated for level of need by teachers in various studies. Often, FFA-related activities are included in the top 10 highest ranked areas of need. The activities include, but are not limited to: assisting with students' preparation for and success rates in FFA degree award programs, assisting with students' preparation for and success rates in FFA CDE's, developing SAE opportunities for students, and supervising traditional and nontraditional SAE programs (Edwards & Briers, 1999; Roberts & Dyer, 2004b; Washburn, King, Garton, & Harbstreet, 2001). This area of existing research is of particular interest in this study, because it has been documented that teachers would like support in these areas in order to strengthen a comprehensive agricultural education curriculum.

A Roberts and Dyer (2004a, p. 89) study on the characteristics of effective agriculture teachers found that 100% of the teachers surveyed agreed that an successful agricultural teacher has a sound knowledge of the FFA, actively advises the FFA chapter, and well prepares students for CDE's and other FFA activities. The same study reported that 93.55% of respondents agreed that an effective agriculture teacher "has a sound SAE knowledge, and actively supervises and encourages SAE projects" (p. 90). These findings are significant since a comprehensive

agriculture curriculum includes the components of CDE preparation and SAE supervision with classroom and laboratory instruction (Seibel, 2005).

For the Roberts and Dyer (2004 a) study, questions were included in the instrument that asked students about whether or not they felt their agriculture classes prepared them for the Career Development Events they participated in, and if the student believed that the Career Development Events evaluated current knowledge and level of ability in the particular subject area choice of the student. Agricultural education teachers believe strength in preparing students for such events is characteristic of an effective teacher, and in-services have been requested on CDE preparation. The Roberts and Dyer study revealed how much of a correlation between classroom instruction, CDE preparation, and SAE involvement is perceived by students. One of the stated objectives determines the students' perception of whether or not the content of the state CDE's is related to classroom instruction.

In a study conducted by Seibel (2005), he found that 76% of the students surveyed thought that the Career Development Events did measure their current knowledge and ability in the given event area, and 67.6% reported that their classroom instruction prepared them for the related Career Development Events. The study also showed that a majority of respondents (67.6%) indicated that that instruction received in their agricultural education classes prepared them to be successful in the Career Development Events (Seibel, 2005).

Another objective of Seibel's study (2005) was to determine if the students thought that Career Development Events assisted them in future employment. The survey asked the students about the impact the Career Development Events would have on career preparation and the ability to compete for future employment opportunities and 54.4% and 64.4%, respectively, responded favorably to these questions. Many students readily recognized the technical skills

that are learned through Career Development Event participation, but the connection between the events and the affective skills developed in them may not be readily made (Seibel, 2005).

Seibel's study also showed that a majority of students (61.6%) stated that they were exposed to new career areas through participation in state level Career Development Events (Seibel, 2005). Agricultural education, and programs like the FFA, demonstrate that students should be actively involved in their learning, and receive training and exposure that will prepare them for work in their communities (Brown, 2003). Presentations regarding employment opportunities and fields, as well as training and support of career development teams for competition are ideal ways to create community networks that will further facilitate a comprehensive learning environment in the classroom and laboratory (Seibel, 2005).

Gary Moore from North Carolina State University stated that "the FFA is considered to be an intra-curricular part of the agricultural education program--an integral part of the curriculum and not a separate appendage. The FFA was established as a laboratory in which to teach leadership skills; so that agricultural students could practice these leadership skills and influence their local communities" (Moore, 2005, p. 44).

Change, Adoption, Innovation, and Evaluation of Curriculum

Educators need to understand how those who have a stake in curriculum reform perceive the change in agricultural education so they can be in a better position to assist and take them to the level where they can deal with their uncertainties. Capacity building is not only about developing competence but changing people's attitudes and behaviors that may be unfavorable to the change process (International Bureau of Education, 2004).

Educators engaged in curriculum change must be exposed to a variety of capacity-building activities aside from training workshops. Follow-through activities and school-based, capacity-building initiatives must be encouraged for more purposeful, focused, and customized professional development programs (International Bureau of Education, 2004).

Curriculum policy change is increasingly shaped by broad processes of consultation of stakeholders on the nature and direction of change perceived to be necessary. Such dialogues promote more commitment from both educators and stakeholders involved and give all those involved a sense of ownership of the changes. This fosters trust of the stakeholders and contributes to the reinforcement for the support of the policy changes (International Bureau of Education, 2004).

Curriculum change is an active process that involves many people, often with different priorities, vested interests and needs which includes the students as well as the stakeholders. In practice, curriculum change often previously focused almost exclusively on curriculum documents without much involvement of the students. It is important that educators understand recent trends in curriculum change in order to improve teaching and learning, and to be able to increase access and improve quality. An understanding of such trends helps to clarify fundamental change or the rationales for change in each context (International Bureau of Education, 2004).

A focus on the quality of education has significant implications for processes of curriculum change. Effective formulation of curriculum policy, curriculum design, and implementation require an understanding of the student as well as the needs of the student, possible educational inputs and outcomes, and the wider public context. The opinions of the students are not often heard in the curriculum process. An understanding of the education context

and other related contexts will provide critical support for the direction that the development process should take. The understanding of the curriculum context will be useful as a starting point for the identification of standards, which will help to ensure quality during the processes of curriculum development and implementation (International Bureau of Education, 2004).

In education, the term evaluation is used in reference to operations associated with curricula, programs, interventions, methods of teaching, and organizational factors. Curriculum evaluation aims to examine the impact of implemented curriculum on student performance and to revise or readjust the official intended curriculum accordingly (International Bureau of Education, 2004).

Assessment of learning outcomes has always been a powerful influence on how and what teachers teach and is thus an important source of feedback on the official intended curriculum and the way in which it is implemented. The assessment of students' learning outcomes constitutes an integral component of the teaching and learning process and serves a number of purposes, including;

1. Providing teachers with information about students' knowledge, understanding and skills to enable teachers and students to monitor teaching and learning;
2. Allowing progression through a school system or selection within it;
3. Providing stakeholders employers with confidence in, and details of, the competency outcomes of schooling; and
4. Allowing educational authorities to monitor and compare the performance of schools and education systems (International Bureau of Education, 2004).

Summary

The equine industry in Virginia makes a sizable contribution to the economy of areas in which it exists; three main sources are horse ownership costs, the economic contributions of amateur owners and riders, and the products and services provided by professional industry workers. The industry has a recreational emphasis and is performance oriented. The size and focus of this industry justify occupationally-oriented curricula to prepare workers. Numerous equine occupations exist and have been classified by the American Horse Council (1996). The diversity among equine occupations shows the need for broadly based flexibility in employee preparation (American Horse Council, 1996).

As new and growing industries become important to the economy, schools must address the issue of preparing students to enter those industries. One such industry, which has become very popular, is the equine industry, which has emerged as a very viable employment option for the future. An equine educational need is shown by the employees' need for broadly-based flexibility. Educational needs were linked to technological changes in the industry; retraining is necessary. The equine job market is highly competitive. Limited contact occupations, high and low level technicians, managers, and specialists have noteworthy educational needs. The foundation of the curriculum should be established by the faculty in response to industry needs and should change with technological advances (Du Teil, 1989).

The FFA is a co-curricular organization representing one-third of the total agricultural education program. As such, FFA activities should reflect the instruction provided in the agricultural education classroom and laboratory. A dilemma facing the current Virginia program of agricultural education is making certain the FFA Career Development Events are based on appropriate classroom instruction.

Career Development Events should reflect instruction that currently takes place in the entire agricultural education program including classroom instruction, laboratory instruction, individualized instruction, and/or supervised agricultural experience. Agricultural educators should promote Career Development Events. Career Development Events that include team activities should be based on cooperation and teamwork while recognizing the value of competition and individual achievement. The role of Career Development Events is to motivate students and encourage leadership, personal growth, citizenship, and career development. Students should be recognized for achievement in Career Development Events. Quality standards should be used as a basis for achievement (National FFA, 2006).

Curriculum change is an active process that involves many people, often with different priorities, vested interests, and needs, which includes the students as well as other stakeholders. In practice, curriculum change often previously focused almost exclusively on curriculum documents without much involvement of the students. It is important that educators understand recent trends in curriculum change in order to improve teaching and learning, and to be able to increase access and improve quality. An understanding of such trends helps to clarify fundamental change or the rationales for change in each context (International Bureau of Education, 2004).

CHAPTER 3

METHODOLOGY

Overview

The purpose of this chapter is to describe the research methodology used in the study, the population from which data were collected, the instrument used to collect data, the procedures used to administer the instrument, and the statistical procedures used to analyze the collected data.

The purpose of this descriptive research study was to conduct an assessment of the status of equine subject matter in Virginia's secondary agricultural education programs, with a specific focus on factors related to equine curriculum in comparison to equine Career Development Event (CDE) participation. This research sought to determine the need and the standards for implementation of a secondary school level equine management course.

In order to accomplish the purpose, the following objectives have been established:

1. Determine the characteristics of Virginia's secondary agricultural education equine teachers whose teams participated in the 2005 state FFA equine Career Development Event.
2. Determine the characteristics of Virginia's secondary agricultural education programs that were represented in the 2005 state FFA equine Career Development Event.
3. Determine the factors associated with the decision of whether to teach equine management by the coaches of teams in the 2005 Virginia FFA equine Career Development Event.
4. Ascertain the benefits of teaching equine management as perceived by the FFA equine Career Development Event coaches.

5. Determine the barriers associated with why some secondary agricultural education equine coaches do not teach an equine management course.
6. Determine the perceptions of survey respondents regarding the future of equine management in Virginia's secondary agricultural education programs.
7. Identify possible strategies rated by FFA equine Career Development Event coaches to enhance equine instruction.

Population

The population for the study consisted of the 40 agricultural education teachers whose FFA chapter had a team compete in the 2005 Virginia horse judging CDE (Appendix C). The rationale for utilizing all members of the population was the fact that agricultural education teachers offer such a small number of equine programs (N=12) when compared with the number of agricultural teachers who have a equine judging team participating in the state FFA horse judging contest (N=40).

Instrumentation

A survey instrument was developed by the researcher with the aid of an exhaustive literature review in order to achieve the objectives of this study. Section D of the survey (Barriers associated with teaching an equine management course) was based on the survey instrument used in Mark Balschweid and Gregory Thompson's (1999) study: *Integrating Science in Agricultural Education: Attitudes of Indiana Agricultural Science and Business Teachers*.

The validity of the instrument was established by means of content and face validity. Brown (1983) defined content validity as "the degree to which items on a test representatively sample the underlying content domain" (p. 487). Brown recommended using an expert panel as one means of establishing content validity. A panel of experts at

Virginia Tech consisting of the researcher's faculty committee reviewed the instrument for content validity. Minor adjustments were made to strengthen the survey's validity.

The survey instrument (Appendix D) for this study consisted of six sections. The sections were entitled: Section A: Program characteristics; Section B: Factors associated with the decision to teach equine management; Section C: Educational benefits; Section D: Barriers associated with teaching an equine management course; Section E: Strategies for enhancing equine management instruction; and Section F: Teacher characteristics. Sections A and F contained open-ended responses to questions concerning teacher and program characteristics. Sections B through E consisted of questions utilizing a five-point, Likert-type scale with the following possible responses: 1=Strongly Disagree, 2=Disagree, 3=Uncertain, 4=Agree and 5=Strongly Agree. Sections B through E also contain open-ended responses to questions concerning equine management courses.

Pilot Test

Face validity and reliability were established during a pilot study consisting of seven North Carolina secondary agricultural education teachers who teach an equine program. Face validity, according to Miller (1999), means that according to the respondents, an instrument is valid if it is measuring what it is supposed to measure. Seven North Carolina secondary agriculture teachers agreed to participate in the pilot test and they were given access to an electronic survey. A cover letter explaining the purpose of the study and a consent form were sent to the teachers. Teachers were asked to fully complete the survey and suggest any changes that should be made.

In order to test the internal consistency reliability of the instrument, the pilot test data were analyzed utilizing Cronbach's alpha according to conventions established by

Nunnally (1967) and Davis (1971). According to Davis (1971) this would indicate a very strong association between variables. Davis (1971) utilized the following scale in describing measures of association: .00 - .09 = negligible association; .10 - .29 = low association; .30 - .49 = moderate association; .50 - .69 = substantial association; and .70 or higher = very strong association. No adjustment was made to the survey instrument after the pilot study because of the high coefficient score for each section. For data analysis purposes, variables in each of the selected sections were combined to form one domain for each section. Upon completion of this task, a Cronbach's coefficient alpha was computed for the combined variables that comprised each domain. The results of this analysis, shown for sections B thru E (Table 1) using Chronbach's coefficient alpha, ranged from .66 - .90 for the individual sections of the survey.

Table 1
Reliability of the Instrument

Survey Sections	α	Magnitude
Section B: Factors associated with the decision to teach equine management	.81	Very Strong
Section C: Educational benefits	.72	Very Strong
Section D: Barriers associated with teaching an equine management course	.90	Very Strong
Section E: Strategies for enhancing equine management instruction	.66	Substantial Association

Data Collection

Prior to data collection, the researcher requested permission from the Institutional Review Board (IRB) at Virginia Tech. The Institutional Review Board granted permission to the researcher to conduct this study (Appendix E).

For this study, the survey instrument was on a protected website at Virginia Tech. Data were collected through a web-based questionnaire and a request for them to complete the survey was sent via e-mail. Electronic survey methods such as surveys through e-mails and the web have emerged as innovative survey techniques. These survey methods have both advantages and disadvantages as compared with traditional survey techniques. One of the greatest advantages of this method is cost reduction which includes elimination of paper, postage, and data entry costs (Dillman, 2000).

An online questionnaire was linked from an introductory e-mail message that was sent to respondents by the researcher conducting the survey. By clicking on the URL in the e-mail message, respondents could access the survey website, complete the instrument, and submit the questionnaire.

An element of Dillman's Total Design Method (2000) was utilized to achieve an optimal return rate. The first round consisted of sending an e-mail message to the Virginia agricultural education teachers who had an equine judging team participate in the 2005 CDE contest at the Virginia State FFA Convention. They received a cover letter on April 10, 2006, by e-mail (Appendix F) from the researcher and major professor outlining the purpose of the research containing instructions for accessing the website.

The teachers were given one week to respond to the initial survey. The second round consisted of all non-respondents receiving a follow-up e-mail message emphasizing the importance of the study. The third round involved sending another e-mail reminder to non-respondents, in which they were given one week to respond to the survey. The fourth round consisted of a phone call to each of the non-respondents along with an e-mail reminder with the attached survey. One week after this, the data collection was closed.

Non-respondents are also an important consideration during data collection. The non-respondents group may differ in crucial respects to the respondent group (Dillman, 2000). Therefore, those participants who did not return a completed survey electronically by the 28th day after the initial e-mail were considered non-respondents. Dillman (2000) suggested that follow-ups to non-respondents need not involve completion of the entire survey, a phone interview or a face-to-face interview was conducted to elicit answers to key questions. Non-respondents were asked to respond to the following questions from the survey: Section C, Educational benefits, questions 1, 5, and 7; Section D, Barriers associated with teaching an equine management course, questions 2, 3, and 8; Section E, Strategies for enhancing equine management instruction, questions 1, 3, 5, and 7.

If data on the characteristics are unavailable, available evaluation data can be used with this technique. With respondents assumed typical of non-respondents, if no differences are found, then non-respondents are generalized to the sample. If differences are present, data are weighted proportionately for determining the statistics to describe the sample (Miller & Smith, 1983). Non-respondents were contacted at the state FFA convention and a face-to-face interview was conducted. The non-respondents who did not attend the convention were contacted by phone and were asked the above selected questions from the survey. In relation to this study the answers to the select question asked the non-responders showed no significant differences between the responses of the responders.

Data Analysis

The data collected from the participants were coded, entered, and analyzed using the researcher's personal computer. Data were analyzed using the Statistical Package for

Social Science (SPSS), Personal computer Version 12.0. The analysis of data included frequencies, standard deviations, and means.

Summary

The purpose of this descriptive research study was to assess the status of equine subject matter in Virginia's secondary agricultural education programs, with a specific focus upon factors related to equine management course offerings in comparison to equine career development event participation. This research sought to determine the need and the standards for implementation of a secondary school level equine science curriculum. Based upon an exhaustive review of literature, a survey instrument was developed by the researcher to accomplish the research goals of this study. Content validity was determined with the assistance of the researcher's graduate committee; face validity and reliability were established through a pilot study of seven North Carolina agricultural education teachers. The analysis of data included frequencies, means, and standard deviations.

CHAPTER 4

RESULTS

The purpose of this descriptive research study was to determine the status of equine subject matter in Virginia's secondary agricultural education programs, with a specific focus on factors related to equine course offerings in comparison to equine Career Development Event (CDE) participation.

In order to accomplish the purpose, the following objectives were established:

1. Determine the characteristics of Virginia's secondary agricultural education equine teachers whose teams participated in the 2005 state FFA equine Career Development Event.
2. Determine the characteristics of Virginia's secondary agricultural education programs that were represented in the 2005 state FFA equine Career Development Event.
3. Determine the factors associated with the decision of whether to teach equine management by the coaches of teams in the 2005 Virginia FFA equine Career Development Event.
4. Ascertain the benefits of teaching equine management as perceived by the FFA equine Career Development Event coaches.
5. Determine the barriers associated with why some secondary agricultural education equine coaches do not teach an equine management course.
6. Determine the perceptions of survey respondents regarding the future of equine management in Virginia's secondary agricultural education programs.
7. Identify possible strategies rated by FFA equine Career Development Event coaches to enhance equine instruction.

Overview

The population for the study consisted of the 40 agricultural education teachers whose FFA chapter had a team compete in the 2005 Virginia horse judging CDE. The teachers were given one week to respond to the initial online survey. The second round

consisted of all non-respondents receiving a follow-up e-mail message emphasizing the importance of the study. The third round involved sending another e-mail reminder to non-respondents, in which they were given one week to respond to the survey. The fourth round consisted of a phone call to each of the non-respondents along with an e-mail reminder with the attached survey. One week after this, the data collection was closed.

Thirty-two teachers responded to the survey and eight teachers were non-responders. Non-respondents were asked to respond to the following questions from the survey: Section C, Educational benefits, questions 1, 5, and 7; Section D, Barriers associated with teaching an equine management course, questions 2, 3, and 8; Section E, Strategies for enhancing equine management instruction, questions 1, 3, 5, and 7. Non-respondents were contacted at the state FFA convention and a face-to-face interview was conducted. The non-respondents who did not attend the convention were contacted by phone and were asked the above selected questions from the survey.

Objective 1: Characteristics of Teachers

Determine the characteristics of Virginia's secondary agricultural education equine teachers whose teams participated in the 2005 state FFA equine Career Development Event.

In determining the characteristics of Virginia's secondary agricultural teachers who were subjects in this study, it was found that the average age was 40 years old. The division by gender was fairly close with 56% being male and 44% being female. Seventy-five percent of the teachers had completed a bachelor's degree with only 25% completing a master's degree. The average years of teaching experience was 16, with the range of two to 37. Fifty-six percent of the teachers stated that they had some type of

equine background, with 44% having no prior equine background. The type of equine background teachers reported varied from owning a horse to completing a college equine course. The following are the responses from the teachers regarding their background, with some statements reworded to preserve anonymity.

- Have been teaching Equine Mgt for 12 years. I started knowing that one end bites and the other end kicks. I have learned by trial and error having paid for my mistakes because "experts" weren't and resources didn't exist. In 12 years I lost one horse to snake bite and one "12" year old was put down because I trusted an individual who purchased the horse for us to know that a young horse didn't need dentures. My biggest peeve is that everyone who has ever owned a horse is an instant expert and they get angry when you don't recognize the "expert advice" that they are giving. I don't pretend to know everything about horses but the industry needs to get its booty off its shoulders and understand that right and wrong don't necessarily exist. The biggest question is what keeps the horse healthy, safest, and what works to accomplish the goals of the program.
- Pony as a child. Own a horse as an adult.
- Grew up with and still have horses.
- Personal interest in horses.
- Raised horses at home.
- Owning horses all my life.
- I grew up showing Paints and Pintos on regional and national levels. I have competed in a variety of English, western and dressage events. I was member of an equine 4-H club for several years. Although I currently only pleasure ride, I do still own 2 horses.
- Grew up with horses. Equine and Veterinarian courses in college.
- I owned a horse during my high school years and have taught equine units in the Ag. Production IV class in years past.
- Owned and rode horses since I was four. Rode for the equestrian team at my university, worked at the university's riding facility for two years, university's horse reproduction facility for three years, taught riding lessons in Maine for a summer (dressage, hunt seat equitation, ground work, vaulting, etc.) During my career at the university I attended my emphasis was in equine studies. Currently own two horses that visit the school frequently for hands-on activities.
- I have owned several horses/ponies and have had experience with horses on a ranch setting--using the horse for roundup.
- Walking horses - show in NC VA TN WV, Plantation Pleasure - light and heavy shod. Padded and trail pleasure.
- Raised horses when young on farm.
- Managed equine farm.
- Dealt with the animals through my students for years.

- I had a horse in high school.
- As long as I can remember I have always been interested in horses. I took lessons as a child and learned a lot about the basic care of horses. I also developed basic riding skills. As a student I minored in Animal Science and took the equine evaluation course in which I learned more about the anatomy and structure of the horse. I hope to own horses in the future.
- I grew up on a farm with horses and have owned one most of my life.
- Owned a horse in high school.
- I owned horses for a short period of time--we have trained for judging contests and I have some students who participate in horse shows.

Objective 2: Characteristics of Programs

Determine the characteristics of Virginia's secondary agricultural education programs that were represented in the 2005 state FFA equine Career Development Event.

In determining the characteristics of Virginia's secondary agricultural education programs, the study found a mean of 171 students enrolled in an agricultural department with a minimum of 59 and a maximum of 341 students (Table 2). The current FFA chapter membership averaged 130 students with a minimum of 30 and a maximum of 300 students (Table 2). The number of teachers in each program ranged from a minimum of one to the maximum of four with a mode of two teachers (Table 2). Two courses are available, ANR 8015 Equine Management (18 weeks) and ANR 8080 Equine Management (36 weeks). Seven schools offered ANR 8015 and 7 schools offered ANR 8080. The number of students who enrolled in an equine management course ranged from a minimum of zero (schools with no courses) to a maximum of 70. The average enrollment in the equine management courses in a school was 30 students (Table 2). Teachers were asked if they teach any type of equine content in any other classes. The survey showed that seven (22%) teachers do teach an equine unit within another course, 20 (63%) responded that they do not, and there were five (15%) who did not respond. Nineteen (56%) schools in the study offer no type of an equine course. Three (9%)

schools offer one course, seven (23%) schools offered two courses, and three (9%) schools offered 3 courses. The teachers who responded yes listed the following classes in which they incorporate an equine unit.

- Ag Science and Mechanics II
- Ag Prod IV & V and in AG II
- AG II
- Intro to Ag. Science and Technology
- Agriculture Production Technology III
- Production Ag III
- Animal Care II

Table 3 reports topics taught by the seven teachers who responded that they do incorporate an equine unit.

Table 2
Characteristics of Virginia's Secondary Agricultural Education Programs

Program Characteristics	N	Minimum	Maximum	M	SD
Students currently enrolled agricultural education programs	32	59	341	171.44	70.26
Current FFA chapter membership	32	30	300	130.38	64.90
Teachers in your agricultural education department	32	1	4	1.88	.81
Number of students enrolled in these courses	14		70	30.47	21.42

Table 3
Topics Covered

Topics	<i>f</i>	%
Classification, breeds, and colors	7	100
Conformation	7	100
Judging	7	100
Management	7	100
Nutrition	6	86
Selection	6	86
Health, diseases, and parasites	6	86
Stable management	6	86
Housing	5	71
Equine reproduction	4	57
Foaling	4	57
Mare care	4	57
Hoof care and maintenance	4	57
Basic record keeping	3	43
Industry	3	43
Equine careers	3	43
Genetics	2	29
Aging	2	29
History	1	14
Evolution	1	14

The teachers were asked the total number of clock hours they teach the above topics. A true number of clock hours were not obtained due to the interpretation of the question by the teachers. Eleven teachers responded to the question and the range of clock hours ranged from 8 hours to 90 minutes per day. The length of the unit was not specified within the study.

Teachers were asked if they used a resource person to teach equine management or coach the FFA equine Career Development Event. Fourteen (44%) teachers responded that they do use a resource person, 17 (66%) teachers do not use a resource person, and one teacher did not respond. Teachers listed the following resource persons used:

- A local stable owner helps with 2 practices. I also attend Block and Bridle horse clinics (weather permitting!) and the horse contest done by Block and Bridle.

- Local equine owners help coach and parents with equine help.
- I primarily coach my team but I also have a parent who assists in coaching.
- Parents and other individuals, such as a farrier, volunteer their time to come in and help work with the students for 10-15 hours each semester, both in and out of class time.
- We use an instructor from a community college and her equine facilities to conduct the equine lab. She has an indoor riding ring along with providing the horses.
- A local veterinarian fills in as a resource person for particular topics (pre-purchase examinations, ultrasounds, neonatal care of the foal, etc.) He fills in as a resource person due to the wonderful equipment he has.
- Extension agents and horse owners.
- Local horse people.
- We draw off of our student's parents and other people from within our community to help prepare our students for judging and other units for our equine class.
- Several past students help in the coaching of the FFA and 4-H Equine Team.
- I have utilized student teachers and horse enthusiasts from our area.
- Area horse people.
- I have a resource that knows more about horses than I do.
- Outside horse people.

Objective 3: Factors Associated with the Decision to Teach Equine

Determine the factors associated with the decision of whether to teach equine management by the coaches of teams in the 2005 Virginia FFA equine Career Development Event.

For objective three, only the teachers who taught equine management classes were asked to respond to this section. Respondents were asked their perceptions in relation to eight statements regarding their decision to teach an equine management course within their secondary agricultural education programs. Table 4 shows the means and standard deviations for the factors associated with the decision to teach an equine management course. Teachers overall agreed with all of the statements regarding to this objective with an average mean of 4.17 on a five-point scale.

Table 4

Factors Associated with the Decision of whether to Teach Equine Management Courses (N=13)

Factors	M	SD
Popularity of horses in Virginia had an influence on offer an equine management course.	4.43	.65
School administration was supportive of an equine management course.	4.38	.65
Students have shown an interest in an equine management course.	4.29	1.07
Local community supported an equine management course.	4.23	1.17
Equine industry in my area had an impact on my decision to offer an equine management course.	4.21	.80
Equine program has benefited my agricultural education department.	4.14	1.41
Students benefit from an equine management course.	4.08	1.44
Equine judging team influenced my decision to offer an equine management course.	3.57	1.22

Note. Strongly Agree = 5, Agree = 4, Undecided=3, Disagree = 2, and Strongly Disagree = 1.

Teachers were asked if there were other factors not mentioned in the survey that influenced their decision to offer an equine management course. Four teachers responded yes and the following are their responses.

- We have a land lab of approximately 60 acres. Production units included crops, beef, and aquaculture. Equine was a natural progression to expanding our program.
- Students asked and so we did.
- Our County has changed from agrarian to suburban with a lot of students owning and boarding horses. This class was a way to change our program from Cow and Plow Ag. to a more modern curriculum.
- Our course was originally offered as a way to provide an Ag class that would be suited for girls. Our Ag Science and Production classes are shop oriented and we find that males are the predominant students.

Teachers were asked what benefits their students have achieved from taking the equine management course. The following are comments made by the teachers.

- Lot of interest in horses was increased by having actual horses for the students to work with during school hours. A number of students realized that horses are not all fun and require a great deal of time and money to maintain.
- Interest in taking other Ag classes. It attracts females to the Ag program. It promotes our image in the local community. It is a "newer" Ag class and reflects the changing face of Ag.
- Basic care of the animal and what is expected if ownership of a horse takes place.
- Class credit, job offers, career decisions, learning enough in class to save a horse's life, helping others gain knowledge about horses.
- The equine course has allowed the students of our program to have direct contact with animals at least once a week. Horses are something that a lot of students have in common even those who do not have an agriculture background. Many students have the desire to have a horse to pleasure ride or just for a pet. The equine science course has been a great recruitment tool because it pulls non-traditional students who would generally not consider agriculture an option in their course study while in high school.
- Students have experienced the typical layout for a college course considering most lessons were taught using PowerPoint. In addition, those students wishing to pursue a career in veterinary medicine have received hands on experience to help them identify likes and dislikes.
- Exposure to pre-vet material helped them to mature (vocabulary, anatomy, etc.), aided them in understanding their own human body systems, progressed their public speaking abilities, helped them gain entry to farms and stables they otherwise would not have had access to.
- Most of our students only have a very limited knowledge of horses -- only extreme minorities of them have an in-depth knowledge of horses, riding, and their care.
- It has increased the number of girls in my program.

Objective 4: Benefits of Teaching Equine Management

Ascertain the benefits of teaching equine management as perceived by the FFA equine Career Development Event coaches.

Only the teachers with equine management classes were asked to respond to this section. The survey asked their perceptions in relation to seven statements regarding the benefits of teaching equine management. Table 5 shows the means and standard

deviations for the benefits listed on the survey. Teachers were in agreement with the statements related to this objective, with a average mean of 4.19 on a five-point scale.

Table 5
Benefits of Teaching Equine Management Course (N=13)

Benefits	<i>M</i>	<i>SD</i>
Equine management course provides students with the opportunity for character development.	4.74	.45
Equine management course can sharpen students' critical thinking skills.	4.46	.52
Benefits for an agricultural education program that includes an equine management.	4.38	.51
Benefit to my students in building life skills.	4.23	.44
Equine management course benefited the department in community relations.	4.15	.56
Dual enrollment agreement with a community college is or would be a benefit to my program.	3.85	.80
Teaching equine management, it is a good idea to work with the school's science department.	3.54	.78

Note. Strongly Agree =5, Agree =4, Undecided=3, Disagree = 2, and Strongly Disagree = 1.

Teachers were asked if there are any other educational enrichment benefits not covered by the seven statements that influence their class, students, or themselves. One teacher stated, "Field trips and judging activities expose students to other aspects of the industry. These students have been motivated and have been willing to participate in a lot of FFA activities. A lot of our officers have come from this program."

Objective 5: Barriers to Establishing an Equine Course

Determine the barriers associated with why some secondary agricultural education equine coaches do not teach an equine management course.

All of the teachers were asked to respond to this section of the survey. Table 6 shows the means and standard deviations for the barriers associated with why some

secondary agricultural education equine coaches do not teach an equine management course. Teachers seem to be unsure of the barriers related to why teachers do not teach an equine management course. The means ranged from 3.77 to 2.72 for the statements related this objective.

Table 6
Barriers Associated with why some Secondary Agricultural Education Equine Coaches do not Teach an Equine Management Course (N=32)

Barriers	M	SD
Lack of student preparation is a barrier to integrating equine management.	3.77	1.09
Lack of appropriate equipment is a barrier to integrating an equine management.	3.70	.95
Access to horses is a barrier to integrating an equine management course.	3.21	.90
Adequate federal, state, or local funding is a barrier to integrating an equine management course.	3.20	.96
Close proximity to equine farms or facilities is a barrier to integrating equine management.	2.87	.90
Lack of equine in-service workshops or courses teachers is a barrier to integrating equine management.	2.83	1.04
Lack of science knowledge is a barrier to teaching equine management.	2.72	.96
Lack of equine jobs in the local community is a barrier to integrating equine management	2.70	1.02

Note. Strongly Agree =5, Agree =4, Undecided=3, Disagree = 2, and Strongly Disagree = 1

Teachers were asked “Within your department, do you see a need for some type of course in equine management?” Twenty-two (69%) of the teachers responded yes, with seven (22%) responding no, and three (9%) did not respond. The teachers who responded gave the following reasons for a need or lack of need for some type of equine course.

- My students want an advanced equine class. I hope this can be developed.
- Already have it, but it wouldn't bother me if there was no need.
- There are a few horse farms in and around our County. I feel that the students taking my classes are already interested in horses and the class expands their knowledge of the subject.
- I believe that an equine management class would be very popular in my Ag program but has never been considered.
- It would be a nice addition to what we offer our students to be able to teach an equine management course, but our teaching loads are currently full and there is no room to add more classes unless we added another teacher. Our principal has not been positive about adding faculty, despite having too many kids sign up for existing Ag. Classes for the last 2 years (guidance had to place students in other classes).
- Equine management is a valuable course for any student wishing to pursue a career in large animal studies. In addition, equine management creates leadership, growth, success, and confidence especially in those members participating on horse judging teams.
- It attracts a different kind of student than the typical shop class thus we have a better rounded program.
- It would be helpful with my team.
- This class would be a nice addition.
- It helps to broaden our student base for our department (Richmond seems to be very interested in the number of "non-traditional" backgrounds of students taking vocational classes).
- I believe there is an interest but am not sure how many students would enroll in the class because we do not currently offer an equine course as part of our program and have never done any sort of interest survey.
- Several students as well as parents have expressed an interest in such a program.
- This course would help with our judging team.
- There is some interest, but not enough to warrant an equine course. The interest lies in Horticulture, Small Animal Care I, Vet. Science, Small Engine, etc.
- There is a demand for the course. This was the second year that it was taught and there was a waiting list for the course despite having three sections.
- Not enough "room" in the teachers' schedules to add another class.
- There is not enough interest to sustain an equine program.

Teachers were asked, "Do you feel confident in teaching an equine related class?"

The following are the responses from the teachers.

- I feel confident with all aspects except riding--which we will not teach as agreed to with School Board approval of teaching the option and judging criteria.
- Yes, I own a horse.
- Yes - I enjoy the subject material.

- Yes, In fact we have a full time substitute filling in as a teacher and I asked to keep the equine class.
- To an extent but would be better if I were more knowledgeable as in other production area sheep, beef.
- This would be right up my alley.
- I could teach the basics of equine management material.
- There are times that the students know more than I do but I am studying and have learned a lot based on experiences I have had. I am a Horticulture major but love to work with horses so I didn't hesitate to take on the course. I would love to see more workshops for teachers.
- A basics class would be okay.
- Somewhat.
- I would have to review.
- I would have to look at the curriculum to be completely sure of my confidence level; I may need additional training to feel confident teaching all areas of the course.
- A little.
- NO!
- I never have but I think I could handle it.
- A workshop would be helpful.

Teachers were asked what have they done or would need to do to implement an equine management course. The following are the responses to the question.

- The program is implemented. We have four horses on campus at all times and foal 1-2 mares yearly. Biggest problem is generating enough money to feed, medicate, vaccinate, and hoof care. Average of 1000-1500 per year is needed if reasonable source of hay is available.
- Approved class when I started teaching at this high school.
- Really, I did nothing to implement the course - it was already offered when I started the position.
- Nothing, our classes are going great as of so far.
- Added to course offering book and got recruitment info out
- Talk to administrators.
- I would have to propose it to my department head and principal first. Then it would have to go to the school board from there.
- Our school would need to hire an additional instructor to have space in the class schedule for an equine course.
- Proposed the idea to the guidance department, created a description to appear in the course catalog, advertised in order for students to understand what an equine is, and prayed for the numbers to be high enough to have the class.
- Start an Equine Management course.
- Add another teaching position; we are currently on full load.
- Find the class time and space.
- Revise my current course load and schedule, purchase the necessary supplies. and texts, become familiar with the curriculum and seek additional training in

areas not fully practiced in, develop a network of local experts to use as resources/supplements to the course, develop lesson plans to meet the objectives outlined in the curriculum, and publicize the addition of the new course to our current program.

- Hire another teacher.
- I would need to know more than horses are pretty.
- The course was already put into works when I got the job.
- Our school would need an additional Ag teacher.
- Survey to see if there is enough interest.
- Talk the county into buying resource material.
- Take a couple in-services on equine.
- I teach too many classes already.

Teachers were asked to respond to the following question: “What did you give up or do you believe you would have to give up in your agricultural education program to offer an equine management course?” The teachers’ responses were as follows.

- Equine has swallowed several of the AG. II sections and one of the production III sections. Major drawback is the one-two course offerings that don't keep students involved throughout high school career. Other programs offer up to 5 sections. With 4 X 4 scheduling more courses would be filled if offered.
- I gave up teaching the Ag-Biology class. Another teacher now has those classes.
- Other class options, since no new teachers are being hired.
- Nothing was given up.
- Production or vet science class.
- I would have to give up a section of Horticulture or Animal Care. I currently teach 6 classes.
- We would have to give up spots for Ag. I students in order to have a section for the equine class. This would cut down on the number of students who could stay in the program for Ag. II, Production III, Production IV, Business III, or Business IV.
- Part of the land lab was given up in order to fence in an appropriate amount of land for an equine to stay safely during the day.
- Nothing. It has helped us build our program.
- Space for Ag. I students.
- A section of a class I currently teach or teach an extra period.
- The only way an equine course would be offered would be if another instructor would be hired to take on the extra course load.
- Any one of the other offerings, which all have very strong enrollment.
- I believe the welding and small engines courses were transferred to another teacher in the department so that the person who got my position could teach equine management.
- We would have to give up an Ag. I class and because that is a class needed to build enrollment of potential completers, we are not willing to give that up.

- Next year we will offer Aquaculture, Prod Ag III & IV, Soils, Forestry, Ag I and Ag II. One of these would have to go.

Objective 6: Future of Equine Management Courses

Determine the perceptions of survey respondents regarding the future of equine management in Virginia's secondary agricultural education programs.

Teachers were asked two questions on the future of equine management courses in Virginia's secondary agricultural education programs. The questions and answers given were as follows.

1. In your opinion, what does the future hold for equine curriculum programming within your school's department?

- We have topped our enrollment each semester for each of the three Equine I courses. Any more students and the horses start souring at excessive handling by so many different students. Liability continues to be a concern. As long as administration recognizes the need to aggressively support discipline and not let dangerous behavior create dangerous environments, the program at our school will flourish. I have students that want the course but I don't want to add any more sections at the expense of production and Ag Science.
- We would like the State Dept of Ed to offer a second horse class.
- If enrollments is good, the class will be taught, if it drops, we will have to re-evaluate.
- As far as I know there will always be classes as long as students are interested.
- It should continue to grow.
- This may be something we look into in the future. Right now I am satisfied coaching a Horse CDE team and teaching the unit on Horses within my Animal Care class.
- The county has arbitrarily decided to close all agriculture programs except for horticulture at the technical center.
- Until there is a willingness to hire an additional agriculture teacher for our program, I do not believe it is feasible for us to offer an equine class. I feel certain there would be a demand for the class, but I do not think the students in the class would sign up for additional Ag. classes in subsequent years.
- Hopefully, in the future equine management will offer students 3 if not 6 college credits. Students will be able to transfer these credits to a credible four year college of their choice. With a decrease in the production of tobacco in our county it is possible the horse industry will start to flourish. Land once used to grow tobacco could be sewn with clover and orchard grass to sustain an equine population.
- If our numbers hold we will continue to offer the class.
- More students = more classes = more jobs.

- Whole Ag Ed program gone in 2007.
- There will be no future unless another teacher is added to our program.
- I would hope to some day have one.
- We will be offering equine education in our department for a long time, as I see it.
- I feel that our school's department could benefit from offering an equine course and will look into that possibility at some point in the future.
- Doubtful, as I would have to give up a core agricultural course.
- It is growing within the state, we need a program.
- I feel that our equine program will continue to grow successfully and that if the space allows (being that there is a spot open in the schedule or if a new teacher is hired) we will have enough student interest to be able to offer a second level course.
- We would need additional staffing in order to offer the equine class and our administration is resistant to hiring additional staff.
- There is a chance that equine would become part of our curriculum because of the increase in the number of students who have or want a horse.

2. What direction do you see for the development of future equine curriculum in Virginia?

- Strong--continued development of an area horse center, urban horse clubs and strong extension programs will increase demand for feed, supplies, and horses. A need will continue to develop for areas to ride, train, and show that are close to urban hubs.
- Continued growth.
- I believe it will increase.
- Going forward.
- Equine is certainly a HUGE industry within Virginia so I think it is very important for this curriculum to be taught, especially in areas that have a large equine population.
- I would like to take the class from an 18-week class to a 36-week class.
- Hopefully, a bright future with much support, especially with a new pro education head in the state.
- Uncertain.
- I see it becoming very big.
- It is a very good course for any student who has some interest in horses. Ag educators need some courses that we can take to help us be better certified in teaching this curriculum. I have tried three different times to take an equine management class from our local community college only to find that the class does not fill up with the minimum number of participants for it to be offered as an evening class to adults.
- It depends on the area; some areas in Virginia do not have as large of an equine industry as others and therefore do not have as much of a need for a program that includes an equine curriculum.
- Positive direction.

- Depends on the area and interest in a particular school.
- I would like to see curriculum developed for a second level course.
- I could see an increase in the number of programs and the number of horses continue to increase and the interest in racing continues to build.
- Hopeful we can add a class at some time.
- It's a large growing industry in Virginia.
- I would like to see it required.

Objective 7: Strategies to Enhance Equine Instruction

Identify possible strategies rated by FFA equine Career Development Event coaches to enhance equine instruction.

For objective seven, all teachers responded to this section. Respondents were asked their perceptions in relation to eight statements regarding possible strategies rated by FFA equine Career Development Event coaches to enhance equine instruction. Table 7 shows the means and standard deviations for each strategy rated by FFA equine Career Development Event coaches to enhance equine instruction. Teachers were in general agreement with most of these statements. The two with the lowest levels of agreement dealt with equine management courses becoming the largest class and having a dual enrollment agreement for an equine class with a community college.

Table 7
Possible Strategies Rated by FFA Equine Career Development Event Coaches to Enhance Equine Instruction (N = 32)

Strategies	f	M	SD
Educators, parents, and policymakers must develop strategies to address the needs.	32	4.21	.56
Agricultural education teachers need training in equine education.	32	4.17	.54
Including an equine management course would build my FFA chapter membership.	32	4.14	.65
Teachers should become familiar with the local equine industry groups represented in their school's community.	32	4.07	.59
Support networks and recruitment efforts by public school officials would enhance the number of students interested in participation in an equine course.	32	4.03	.63
Equine management course would become my largest class.	32	3.72	.70
Dual enrollment agreement for an equine class with a community college.	32	3.11	.97

Note. Strongly Agree =5, Agree =4, Undecided=3, Disagree = 2, and Strongly Disagree = 1

Summary of Results

Chapter 4 included the results of the data collected with the aid of the survey instrument. The purpose of the research objectives was to assess the perceptions of Virginia's secondary agricultural education teachers toward the benefits of offering an equine management course within the secondary agricultural education programs that have CDE horse judging teams. The survey showed that seven (22%) teachers teach an equine unit within another course, 20 (63%) responded they do not, and there were five (15%) who did not respond. Nineteen (56%) schools in the study offer no type of an equine course. Teachers who have equine management courses reported a positive

experience for both the teacher as well as the student. Most agreed that the equine management course has been very positive for their programs. There are barriers associated with why some secondary agricultural education equine coaches do not teach an equine management course. Teachers were asked, “Within your department, do you see a need for some type of course in equine management,” and 22 (69%) of the teachers responded yes.

Overall, teachers agreed that an equine management course in their program would build FFA chapter membership. Agricultural education teachers need training in equine education to be able to move forward in offering more equine classes. Teachers agreed that an increase in support networks and recruitment efforts by public school officials would enhance the number of students interested in participation in an equine course in agricultural education.

CHAPTER 5

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

Chapter 5 contains the purpose and objectives of the study, summary of the research methodology, summary of the results of the study, conclusions and implications, and recommendations developed from the results of the study.

Purpose and Objectives

The purpose of this descriptive research study was to determine the status of equine subject matter in Virginia's secondary agricultural education programs, with a specific focus on factors related to equine course offerings in comparison to equine Career Development Event participation. This research sought to determine the need and the standards for implementation of a secondary school level equine management course.

In order to accomplish the purpose, the following objectives were established:

1. Determine the characteristics of Virginia's secondary agricultural education equine teachers whose teams participated in the 2005 state FFA equine Career Development Event.
2. Determine the characteristics of Virginia's secondary agricultural education programs that were represented in the 2005 state FFA equine Career Development Event.
3. Determine the factors associated with the decision of whether to teach equine management by the coaches of teams in the 2005 Virginia FFA equine Career Development Event.
4. Ascertain the benefits of teaching equine management as perceived by the FFA equine Career Development Event coaches.
5. Determine the barriers associated with why some secondary agricultural education equine coaches do not teach an equine management course.
6. Determine the perceptions of survey respondents regarding the future of equine management in Virginia's secondary agricultural education programs.

7. Identify possible strategies rated by FFA equine Career Development Event coaches to enhance equine instruction.

Summary of the Research Methodology

The population of this descriptive research study consisted of the 40 agricultural education teachers whose FFA chapter had a team compete in the 2005 Virginia horse judging CDE (Appendix C). Face validity and reliability were established during a pilot study consisting of seven North Carolina secondary agricultural education teachers who teach an equine program. In order to test the internal consistency reliability of the instrument, the pilot test data were analyzed utilizing Cronbach's alpha according to conventions established by Nunnally (1967) and Davis (1971).

The first round consisted of sending an e-mail message to the Virginia agricultural education teachers who had an equine judging team participate in the 2005 CDE contest at the Virginia State FFA Convention. They received a cover letter on April 10, 2006, by e-mail (Appendix F) from the researcher and major professor outlining the purpose of the research containing instructions for accessing the website.

The teachers were given one week to respond to the initial survey. The second round consisted of all non-respondents receiving a follow-up e-mail message emphasizing the importance of the study. The third round involved sending another e-mail reminder to non-respondents, in which they were given one week to respond to the survey. The fourth round consisted of a phone call to each of the non-respondents along with an e-mail reminder with the attached survey. One week after this, the data collection was closed.

Non-respondents are also an important consideration during data collection. The non-respondent group may differ in crucial respects from the respondent group (Dillman,

2000). Therefore, those participants who did not return a completed survey electronically by the 28th day after the initial e-mail were considered non-respondents. Dillman (2000) suggested that follow-ups to non-respondents need not involve completion of the entire survey, but rather answers may be elected to key questions. In this study non-respondents were asked to respond to the following questions from the survey: Section C, Educational benefits, questions 1, 5, and 7; Section D, Barriers associated with teaching an equine management course, questions 2, 3, and 8; Section E, Strategies for enhancing equine management instruction, questions 1, 3, 5, and 7. Non-respondents were contacted at the state FFA convention and a face-to-face interview was conducted. The non-respondents who did not attend the convention were contacted by phone and were asked the above selected questions from the survey. In relation to this study, the answers to the selected questions asked the non-responders showed no significant differences between the responses of the responders.

The data collected from the participants were coded, entered, and analyzed using the researcher's personal computer. Data were analyzed using the Statistical Package for Social Science (SPSS), Personal Computer Version 12.0. The analysis of data included frequencies, standard deviations, and means.

Summary of Findings

Characteristics of Virginia's secondary agricultural teachers who were subjects in this study included an average age of 40 years, and a division by gender of 56% males and 44% females. Seventy five percent of the teachers had a bachelor's degree, with 25% completing a master's degree. The average years of teaching experience was 16, with a range of two to 37. Fifty-six percent of the teachers stated that they had some type of

equine background, while 44% having no prior equine background. The type of equine background teachers varied from owning a horse to completing a college equine course.

The results from the 32 responding teachers indicated a mean of 171 students, and current FFA chapter membership averaging 130 students. The number of teachers in each program ranged from one to 4 with a mode of two. Two courses are available in Virginia, ANR 8015 Equine Management (18-weeks) and ANR 8080 Equine Management (36-weeks). Seven schools offered ANR 8015 and seven schools offered ANR 8080. Seven teachers (22%) indicated they teach an equine unit within another course, 20 (63%) responded they do not teach a course or unit, and five (15%) did not respond. Nineteen (56%) schools in the study offer no type of an equine course. Three schools offer one course (9%), seven (23%) schools offered two courses, and three (9%) schools offered 3 courses.

The study asked whether a resource person was used to teach equine management or coach the FFA equine Career Development Event. Fourteen (44%) teachers responded that they use a resource person, 17 (66%) teachers do not use a resource person, and one teacher did not respond. The type of resource person used varied from a parent to a person in an equine profession.

Factors associated with the decision of whether to teach equine management courses showed a majority of the teachers surveyed agreed to the following statements.

1. The popularity of horses in Virginia had an influence on teachers to offer an equine management course.
2. School administrations were supportive of equine management as a course offering.
3. Students have shown an interest in an equine management course.
4. Local community supported an equine management course.
5. Equine industry in my area had an impact on my decision to offer an equine management course.
6. Equine program has benefited my agricultural education department.

7. Students benefit from an equine management course.
8. Equine judging team influenced my decision to offer an equine management course.

Benefits for teaching equine management course show a majority of teachers surveyed agreed to the following statements.

1. Equine management course provides students with the opportunity for character development.
2. Equine management course can sharpen students' critical thinking skills.
3. Benefits an agricultural education program that includes an equine management.
4. Benefit to my students in building life skills.
5. Equine management course benefited the department in community relations.
6. Dual enrollment agreement with a community college is or would be a benefit to my program.
7. Teaching equine management, it is a good idea to work with the school's science department.

Respondents had mixed views regarding barriers associated with why some secondary agricultural education equine coaches do not teach an equine management course. Teachers seem to be unsure of the barriers related to teaching an equine management course. The means ranged from 3.77 to 2.72 for the following statements.

1. Lack of student preparation is a barrier to integrating equine management.
2. Lack of appropriate equipment is a barrier to integrating an equine management.
3. Access to horses is a barrier to integrating an equine management course.
4. Adequate federal, state, or local funding is a barrier to integrating an equine management course.
5. Close proximity to equine farms or facilities is a barrier to integrating equine management.
6. Lack of equine in-service workshops or course teachers is a barrier to integrating equine management.
7. Lack of science knowledge is a barrier to teaching equine management.
8. Lack of equine jobs in the local community is a barrier to integrating equine management.

Possible strategies suggested by FFA equine Career Development Event coaches to enhance equine instruction showed that teachers had a general agreement with most statements, but less agreement with the last two below.

1. Educators, parents, and policymakers must develop strategies to address the needs to move the agricultural education curriculum forward with new courses that will meet the needs of today's students, industry, and community.
2. Agricultural education teachers need training in equine education to be able to move forward in offering more equine classes.
3. Including an equine management course in my program would build my FFA chapter membership.
4. Teachers should become familiar with the local equine industry groups represented in their school's community in order to promote the future of new equine courses.
5. An increase in support networks and recruitment efforts by public school officials would enhance the number of students interested in participation in an equine course in agricultural education.
6. If I offered an equine management course, it would become my largest class.
7. I would be interested in having a dual enrollment agreement for an equine class with a community college.

Conclusions

Based on the findings of this study, the following conclusions were made:

1. Fifty-six percent of the teachers who had a team enter the 2005 FFA equine CDE were males, and most had a bachelor's degree, and with some type of equine background. The mean age was 40 and the mean years of teaching experience was 16.
2. The typical agricultural education department represented in the 2005 FFA equine CDE had 171 students, 130 FFA members, two teachers, and did not offer an equine management course.
3. Most of the teachers (N=13) who taught a unit or course on equine management agreed with a selected list of factors associated with teaching an equine management course within their agricultural education program.
4. Most of the teachers (N=13) who taught a unit or course on equine management agreed with a selected list of benefits of teaching such a course. Teachers strongly agreed that having an equine management course provides opportunity for character development.
5. The coaches (N=32) of FFA equine teams were generally undecided about the possible barriers identified to teaching an equine course. More teachers agreed that the lack of student preparation and the lack of appropriate equipment were barriers.
6. The subjects in the study were optimistic regarding the future of equine management courses in Virginia's agricultural education programs.

7. Teachers tended to agree with the suggestions provided in the survey to enhance equine instruction. Teachers were most undecided on the value of having a dual enrollment agreement with a community college.

Recommendations for Implementation

The following recommendations are based on the views of the researcher and the findings of the study.

1. Secondary school personnel who assist with curriculum design and updating may use the results as a basis for investigating the need to add an equine management course or an equine unit within an existing course.
2. State leaders in agricultural education should provide information on the impact that the equine industry has on the state to teachers and school administrators.
3. State leaders in agricultural education should be familiar with current agricultural education programs that offer an equine management course, and encourage those teachers to share information with teachers who do not have an equine program.
4. State leaders, administrators, and stakeholders for agricultural education should be encouraged to assist teachers who do not have equine programs to overcome the barriers associated with starting a new program.
5. State leaders in agricultural education should offer in-service and pre-service programs for teachers to better prepare them within the equine field and motivate them to teach, implement, and promote an equine program within their agricultural education program.
6. Teachers should be encouraged to utilize local equine industry groups, recruitment efforts by public officials, and dual enrollment agreements.
7. Agricultural teachers should follow the proper teaching method by connecting classroom work with CDEs.

Discussion

Agricultural education has re-invented itself to remain in step with the changes in rural and urban lifestyles. Agricultural education must continue to change and expand its offerings to meet the needs of students and the needs of the industry. Most curricula is

student-oriented and curricula in agricultural education is certainly no exception. Currently there is a great deal of concern about how curriculum can best meet students' needs. Curriculum must meet group needs, but educators have an obligation to meet the individual students' needs as well.

Within the theoretical framework of this study, Rogers (1995) described the five stages of the innovation-decision process as knowledge, persuasion, decision, implementation, and reinvention. The implementation stage includes the acquisition of additional information about the innovation, as well as regular and continued use of the innovation. An important phase of the implementation stage, when the innovation is applied to uses other than its original intended purpose, is reinvention. The adoption of an equine management course fits within the theoretical framework of this study by showing a need to reinvent the agricultural education program to meet the needs of the student within the program as well as meeting the needs of the community stakeholders.

This study will be useful to the state agricultural education opinion leaders as well as to the agricultural education teachers in providing guidelines concerning implementation of equine management courses. Secondary school personnel who assist with curriculum design and updating may use the results to investigate a need to add an equine management course or add an equine unit within an existing course. The result of this study helps explain the needs for equine management in agricultural education programs.

Agricultural educators in universities offering agricultural education teacher preparation programs will also find this research useful. Universities can develop or update equine management courses, update program planning courses, and assist with the implementation of courses to include equine science. The results of this study suggest the

need to implement in-service and pre-service programs for teachers to better prepare them within the content of equine science and motivate them to teach, implement, and promote an equine program within their agricultural education programs. Agricultural education teachers with programs that currently have an equine program should assist other teachers to determine the need of having an equine program and in the implementation where needed. After determining a need, schools should investigate how to implement the program to meet the needs of the curricula.

As new and growing industries become important to the state's economy, schools must address the issue of preparing students to enter those industries. This is true of the equine industry, which has emerged as a very viable employment option for the future. "The horse industry is a highly diverse industry that supports a wide variety of activities in all regions of the country. It combines the fundamentally rural activities of breeding, maintaining, and training horses with the more urban activities of operating racetracks, off-track betting parlors, and horse shows. It also includes the recreational activities of riding, which occur in both urban and rural settings and in national and state parks" (American Horse Council Foundation, 1996, p. 4).

Career Development Events should reflect instruction that currently takes place in the entire agricultural education program including classroom instruction, laboratory instruction, individualized instruction, and/or supervised agricultural experiences. Agricultural educators should promote Career Development Events. Career Development Events that include team activities should be based on cooperation and teamwork while recognizing the value of competition and individual achievement. The role of Career Development Events is to motivate students and encourage leadership, personal growth,

citizenship, and career development. Students should be recognized for achievement in Career Development Events. Quality standards should be used as a basis for achievement.

One teacher stated that a strong continued development of an area horse center, urban horse clubs, and strong extension programs will increase demand for feed, supplies, and horses. The researcher knows from past experience that a need will continue to develop for areas to ride, train, and show that are close to urban hubs.

Teachers in this study agreed that educators, parents, and policymakers must develop strategies to address the needs to move the agricultural education curriculum forward with new courses that will meet the needs of today's students, industry, and community. Teachers should be encouraged to utilize the local equine industry groups to support, as well as to promote, their equine program.

The FFA is a co-curricular organization representing one-third of the total agricultural education program. As such, FFA activities should reflect the instruction provided in the agricultural education classroom and laboratory. A dilemma facing the current Virginia program of agricultural education is making certain the FFA Career Development Events are based on appropriate classroom instruction. The role of Career Development Events is to motivate students, encourage leadership, personal growth, citizenship, and career development. Students should be recognized for achievement in Career Development Events. Quality standards should be used as a basis for achievement (National FFA, 2006).

Agricultural educators believe that students are important customers who recognize quality and value in products and activities. When students are provided an opportunity to mold their educational experiences, they generally make wise decisions based on their needs and interest. Students value change based on their perceived

personal needs as well as the needs of others. Students sometimes value change for the sake of variety. Educators are concerned about students' experiences, and want to organize experiences that will meet the future needs of students while accomplishing the purposes of agricultural education and the National FFA Organization (National FFA, 2006).

Recommendations for Further Research

Based on responses presented to the researcher by participants, this study left some questions unanswered and raised several additional questions, suggesting the following topics for additional research:

1. Conduct a study to determine total costs and needs to implement an equine program.
2. Conduct a study to determine perceptions of agricultural educators on the use of dual enrollment with a post-secondary institution as a tool to be able to implement an equine management course within their program.
3. Conduct a study about students' perceptions of integrating an equine management course into an existing the agricultural education program.
4. Replicate this study on a regional and national level to further validate the need for an equine program in other states.
5. Conduct a study to determine how the implementation of an equine program correlates to current space or the availability of horse facilities within their school district.
6. Conduct a study to determine the importance of an equine program in the secondary school system.
7. Conduct a study to determine if all agricultural educators with horse judging teams are knowledgeable in equine content to affectively teach an equine course.

Summary

Agricultural education curricula are no different than academic curricula in the process of changing to become more relevant, or in evolving to become more relevant. . Agricultural education may even be more affected by what is happening in society, and thus must be more easily accepting of change. As industries or jobs fade, so must the emphasis in offering opportunities to develop those skills.

Agricultural curricula should reflect the needs of industry and the community. The equine industry is thriving and offers a wide array of job opportunities for people of varying levels of knowledge and expertise. However, barriers such as equipment, funding, and educator knowledge have been identified as barriers to the integration of an equine program. Agricultural education has to alter its curricula in order to remain in step with the changes in rural and urban lifestyles. It must continue to change and expand its offerings as the society develops. As an industry grows large enough to offer a variety of careers, students need to be more aware of the opportunities, and gain the necessary skills to enter that job market. The equine industry qualifies as an important, viable part of not only Virginia's economy, but also the national economy (Virginia Horse Industry Board, 2006).

Virginia's Equine Management courses, Equine Management Production (ANR 8015), an 18- week course, and Equine Management Production (ANR 8080), a 36-week course, are designed to assist students with a limited knowledge and background in equine science to develop a solid foundation from which they may further their equine science studies. Equine management introduces students to basic terminology that is used throughout the equine industry. Students learn to make a distinction among animals by breed, sex, and

use. In addition, students learn the foundational principles that are needed in a profitable equine enterprise (Virginia Office of Career and Technical Education Services, 2006, a).

A “hands on” component gives students an opportunity to learn more directly about horses through observation and experience. Students are given the opportunity to work with equine as they apply principles they have learned in the courses. Equine management introduces students to the fundamentals of leadership and management. Therefore, students learn skills necessary for successful living and working in the equine industry and society.

Agricultural education has to alter its curriculum in order to remain in step with the changes in rural and urban lifestyles. It must continue to change and expand its offerings as the society develops. As an industry continues to rapidly grow in Virginia and other states and offer a variety of careers, students need to be more aware of the opportunities and gain the necessary skills to enter that job market. The equine industry qualifies as an important, viable part of not only Virginia’s economy, but also the national economy.

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Appendix A
Standards of Learning Correlation by Task

Match terms associated with basic horse production to the correct definitions.	English: 11.4
Match the stages of evolutionary development of the horse to the correct descriptions.	Science: BIO.6
Describe the major breeds of horses, including breed associations, origin, color, characteristics, and uses.	Science: BIO.7
List factors that contribute to correct feeding practices.	Science: BIO.5
List health practices to be considered in horse production.	Science: BIO.5
Explain fundamental breeding practices.	Science: BIO.6
Match parts of the nervous system to their functions.	Science: BIO.5
Describe the senses of the horse.	Science: BIO.5
List characteristics of the healthy horse.	Science: BIO.5
Identify infectious diseases.	Science: BIO.2
Name means by which infectious diseases are passed from one horse to another.	Science: BIO.2
Identify parts of circulatory system.	Science: BIO.5
List functions of circulatory system.	Science: BIO.5
Identify parts of respiratory system.	Science: BIO.5
Name functions of respiratory system.	Science: BIO.5
Name vital signs and their normal ranges.	Science: BIO.5
Match terms associated with parasites and parasite control to their correct definitions.	Science: BIO.5
List general symptoms of parasitic infection.	Science: BIO.5
Label the steps in life cycles of internal parasites.	Science: BIO.5
Identify parts of the digestive system.	Science: BIO.5
Name types of nutrients and their purposes.	Science: BIO.3
List factors affecting digestion.	Science: BIO.5
Classify symptoms of nutritional deficiencies, such as protein, mineral, vitamin, or carbohydrate deficiencies.	Science: BIO.3, BIO.5
Identify parts of the female reproductive system.	Science: BIO.5
Identify parts of the male reproductive system.	Science: BIO.5
Describe fundamentals of heredity.	Science: BIO.6
List conditions in female reproductive system that cause infertility.	Science: BIO.6
List conditions in male reproductive system that cause infertility.	Science: BIO.6
List signs of estrus in the mare.	Science: BIO.6
Name ways to detect pregnancy.	Science: BIO.6
Match parts of the skeletal system to the correct names.	Science: BIO.5
Prepare oral reasons.	English: 9.2, 11.1, 12.1
List health requirements necessary for interstate travel.	History and Social Science: GOVT.17
Develop communication skills.	English: 9.2, 9.6, 10.1, 10.7, 11.1, 11.2, 11.7, 11.8, 12.1, 12.7

2005/2006 Competency-Based Task/Competency List, Virginia Office of Career and Technical Education Services

Appendix B
 Equine Management Production
 2005/2006 Competency-Based Task/Competency List

8015 18 Weeks	Equine Management Production TASKS/COMPETENCIES	
	Understanding Basic Horse Production	
	• ANR8015.001	Match terms associated with basic horse production to the correct definitions.
	ANR8015.002	Match the stages of evolutionary development of the horse to the correct descriptions.
	• ANR8015.003	Match terms associated with the uses of horses to their correct descriptions.
	• ANR8015.004	Describe the major breeds of horses, including breed associations, origin, color, characteristics, and uses.
	• ANR8015.005	List job opportunities in the horse industry.
	• ANR8015.006	Select from a list of factors to consider in buying a horse.
	• ANR8015.007	List factors that contribute to correct feeding practices.
	• ANR8015.008	List health practices to be considered in horse production.
	ANR8015.009	Explain fundamental breeding practices.
	• ANR8015.010	Identify common items of tack and equipment.
	Handling and Grooming the Horse	
	ANR8015.011	Survey concerns of area breeders.
	• ANR8015.012	Define terms associated with handling and grooming the horse.
	• ANR8015.013	Match parts of the nervous system to their functions.
	• ANR8015.014	List safety factors to consider when around horses.
	• ANR8015.015	List steps to take in physically approaching the horse.
	ANR8015.016	Identify parts of the halter.
	• ANR8015.017	List rules for tying the horse.
	ANR8015.018	Label the sensitive areas of the horse.
	• ANR8015.019	List reasons for grooming the horse.
	• ANR8015.020	Identify grooming equipment.
	• ANR8015.021	Halter a horse.
	ANR8015.022	Tie a quick release knot.
	ANR8015.023	Groom a horse.
	ANR8015.024	Wash a horse.
	Handling the Young, Unbroken Horse	
	ANR8015.025	Define terms associated with handling the young, unbroken horse.
	ANR8015.026	Match the stages of learning in a horse's training to the correct descriptions.
	• ANR8015.027	Describe the senses of the horse.
	• ANR8015.028	Match categories of the horse's behavior to the correct behavior.
	ANR8015.029	List factors to consider in training the young horse.
	ANR8015.030	List steps to take in physically approaching the young horse.
	• ANR8015.031	Describe uses of voice aids with young horses.
	ANR8015.032	List methods of halter breaking.
	ANR8015.033	Teach horse to lunge.

Maintaining Health and Preventing Disease		
•	ANR8015.034	Match terms associated with horse health and disease prevention to correct definitions.
•	ANR8015.035	List characteristics of the healthy horse.
•	ANR8015.036	List components essential for maintaining an effective health care program.
	ANR8015.037	List factors to consider in providing proper stable management.
	ANR8015.038	Describe factors to consider in daily observation of the horse.
	ANR8015.039	Name diseases that may be prevented by immunization.
•	ANR8015.040	Describe treatment of a horse that has just been purchased or brought to a farm or ranch.
	ANR8015.041	Identify infectious diseases.
	ANR8015.042	Name means by which infectious diseases are passed from one horse to another.
	ANR8015.043	Identify noninfectious diseases.
	ANR8015.044	List items to be recorded in a case history.
	ANR8015.045	Secure appropriate record forms on horse health.
Performing First Aid		
	ANR8015.046	Match terms associated with basic first aid to the correct definitions.
•	ANR8015.047	Identify parts of circulatory system.
•	ANR8015.048	List functions of circulatory system.
•	ANR8015.049	Identify parts of respiratory system.
•	ANR8015.050	Name functions of respiratory system.
	ANR8015.051	Name vital signs and their normal ranges.
	ANR8015.052	List items needed in a first aid kit.
	ANR8015.053	Name visual symptoms of abnormal health.
	ANR8015.054	Distinguish between critical and non-critical injuries and illnesses.
	ANR8015.055	Explain basic care procedures for a horse during time of illness or injury.
	ANR8015.056	Describe basic treatment of wounds.
	ANR8015.057	List basic uses of bandages.
	ANR8015.058	Identify intramuscular, intravenous, and subcutaneous injection sites.
	ANR8015.059	Explain actions to take in certain medical situations.
	ANR8015.060	Check vital signs.
	ANR8015.061	Apply medication and bandage.
	ANR8015.062	Fill syringe in preparation for injection.
	ANR8015.063	Give intramuscular injections.
	ANR8015.064	Give intravenous injections.
	ANR8015.065	Give subcutaneous injections.
Controlling Parasites		
•	ANR8015.066	Match terms associated with parasites and parasite control to their correct definitions.
•	ANR8015.067	List general symptoms of parasitic infection.
•	ANR8015.068	Classify parasites as internal or external.
•	ANR8015.069	Match internal parasites to their correct description.
•	ANR8015.070	Identify external parasites.
•	ANR8015.071	Label the steps in life cycles of internal parasites.

	ANR8015.072	List guidelines for the uses of anthelmintics.
	ANR8015.073	Distinguish between anthelmintics effective against internal parasites and insecticides effective against external parasites.
•	ANR8015.074	List management practices used in prevention of parasitism.
	ANR8015.075	Explain precautions necessary when using insecticides for external parasites.
	ANR8015.076	Evaluate factors that affect susceptibility of horses to parasites.
	Understanding Fundamentals of Foot Care	
•	ANR8015.077	Match terms associated with foot care to correct definitions.
•	ANR8015.078	Match external parts of the foot to correct definitions.
•	ANR8015.079	Identify internal parts of the foot.
•	ANR8015.080	Match parts of the foot to their specific relationships and/or functions.
•	ANR8015.081	List the critical factors in the care of a foot.
•	ANR8015.082	List means of maintaining sufficient moisture in the hoof.
•	ANR8015.083	List the most common causes of lameness.
	Trimming and Shoeing	
	ANR8015.084	Arrange in order steps for lifting the horse's front and rear feet.
	ANR8015.085	Define terminology associated with foot problems, trimming, and shoeing.
	ANR8015.086	List general situations relating to unsoundness.
	ANR8015.087	Identify major diseases and injuries causing unsoundness.
	ANR8015.088	Arrange in order the most common unsoundnesses that result in retiring horses from racing.
	ANR8015.089	Describe means of detecting lameness.
	ANR8015.090	Distinguish between causes of lameness in which symptoms decrease with use or increase with use.
	ANR8015.091	Match the suspected areas of lameness to the correct indications.
	ANR8015.092	Identify basic farrier tools.
	ANR8015.093	List considerations when preparing hoof for trimming and/or shoeing.
	ANR8015.094	List common faults in preparation of the hoof.
	ANR8015.095	Identify confrontation defects of forelegs.
	ANR8015.096	Identify confrontation defects of hind legs.
	ANR8015.097	List guidelines for effective shoeing.
	ANR8015.098	Remove shoe.
	ANR8015.099	Trim foot.
	Understanding Horse Nutrition	
•	ANR8015.100	Define terms associated with practical horse nutrition.
•	ANR8015.101	Identify parts of the digestive system.
	ANR8015.102	Distinguish between the sizes and capacities for the components of the digestive system.
	ANR8015.103	Match parts of the digestive system to their correct descriptions and functions.
•	ANR8015.104	Name types of nutrients and their purposes.
•	ANR8015.105	Name functions of nutrients supplied by feed.
•	ANR8015.106	List factors affecting digestion.
	ANR8015.107	Distinguish among classifications of feeds.
	ANR8015.108	List relevant feed regulations.
	ANR8015.109	List metabolic disorders directly attributed to feeding.

	ANR8015.110	Classify symptoms of nutritional deficiencies, such as protein, mineral, vitamin, or carbohydrate deficiencies.
	ANR8015.111	Describe factors to consider in selection of commercial feeds.
	Analyzing Genetics and Fertility	
	ANR8015.112	Define terms associated with fertility and the genetics of reproduction.
	ANR8015.113	Identify parts of the female reproductive system.
	ANR8015.114	Identify parts of the male reproductive system.
	ANR8015.115	Match parts of female reproductive system to their correct functions.
	ANR8015.116	Match parts of male reproductive system to their correct functions.
•	ANR8015.117	Describe fundamentals of heredity.
•	ANR8015.118	State possible results of given matings.
	ANR8015.119	List activities affecting reproductive efficiency.
	ANR8015.120	List conditions in female reproductive system that cause infertility.
	ANR8015.121	List conditions in male reproductive system that cause infertility.
	ANR8015.122	Describe the influences of hormone secretions.
	Understanding Breeding Efficiency and Mating Procedures	
	ANR8015.123	List factors to consider in keeping a stallion in breeding fitness.
	ANR8015.124	Describe methods of semen evaluation.
	ANR8015.125	Describe normal breeding characteristics of mares.
	ANR8015.126	List management practices to consider in teasing mares.
	ANR8015.127	List signs of estrus in the mare.
	ANR8015.128	Arrange in order the steps in breeding season hygiene.
	ANR8015.129	Explain methods of breeding.
	ANR8015.130	Identify methods of restraint when hand mating.
	ANR8015.131	Arrange in order the steps in hand mating.
	ANR8015.132	List items to be included in recordkeeping during breeding season.
	ANR8015.133	Name ways to detect pregnancy.
	Caring for the Mare and Foal	
	ANR8015.134	Name important items relating to care of mare during gestation.
	ANR8015.135	Name noninfectious causes of abortion.
	ANR8015.136	List measures to take to prevent abortion.
	ANR8015.137	List indications of approaching parturition.
	ANR8015.138	Describe actions to take in the foaling process.
	ANR8015.139	Match foal presentations to appropriate actions to take to correct situation and aid foaling process.
	ANR8015.140	List essential characteristics of individual offering assistance in foaling process.
	ANR8015.141	List foaling conditions requiring veterinarian assistance.
•	ANR8015.142	Describe how to care for a newborn foal.
•	ANR8015.143	Describe how to care for a postpartum mare.
	ANR8015.144	List conditions that prevent breeding on foal heat.
•	ANR8015.145	List management practices important in caring for mare and foal from birth until weaning.
	Selecting and Marketing the Horse	
•	ANR8015.146	Define terms associated with selecting and marketing the horse.
•	ANR8015.147	List general considerations in selecting a horse.

•	ANR8015.148	Identify parts of the horse.
•	ANR8015.149	Match parts of the skeletal system to the correct names.
	ANR8015.150	Identify common leg markings.
	ANR8015.151	Identify common head markings.
	ANR8015.152	Match natural gaits to their correct descriptions.
	ANR8015.153	Describe normal measurements pertinent to a horse.
	ANR8015.154	Describe the teeth of mature and young horses.
	ANR8015.155	Determine age of horse by appearance and description of teeth.
	ANR8015.156	List means of marketing the horse.
	ANR8015.157	Determine height, weight, girth, and bone.
	Judging	
	ANR8015.158	Describe factors to consider in judging halter and performance classes.
	ANR8015.159	Describe desirable and undesirable characteristics of horse's anatomy.
	ANR8015.160	Explain the system of examination and characteristics for judging.
	ANR8015.161	List common unsoundnesses of feet and legs.
	ANR8015.162	Evaluate unsoundnesses and defects.
	ANR8015.163	Write favorable comparisons and criticisms for judging a performance class.
	ANR8015.164	List important factors to consider in taking notes.
	ANR8015.165	List important items to consider when organizing reasons for presentation.
	ANR8015.166	Discuss techniques for delivering reasons.
	ANR8015.167	Prepare oral reasons.
	ANR8015.168	Present oral reasons.
	Transporting the Horse	
	ANR8015.169	Define terms associated with transporting the horse.
	ANR8015.170	List ways to transport the horse.
	ANR8015.171	Select from a list precautions to take before transporting the horse.
	ANR8015.172	List items of trailer maintenance.
	ANR8015.173	Explain factors to consider while driving and transporting the horse.
	ANR8015.174	List equipment needed for hauling.
	ANR8015.175	List health requirements necessary for interstate travel.
	Managing the Stable	
	ANR8015.176	Define terms associated with physical facilities and stable management.
	ANR8015.177	List items to consider when planning facilities.
	ANR8015.178	Identify barn styles as determined by the shape of the roof.
	ANR8015.179	Describe recommended environmental conditions for mature horses.
•	ANR8015.180	List basic considerations when planning horse barns.
•	ANR8015.181	Determine recommended stall sizes.
•	ANR8015.182	List characteristics of stall construction.
	ANR8015.183	Describe factors to consider in the location of a barn.
	ANR8015.184	List conditions that determine storage space requirements for feed and bedding.
•	ANR8015.185	List types of bedding.
•	ANR8015.186	List types of fences used for horses.
	ANR8015.187	List advantages of good fences.

	Identifying Tack	
	ANR8015.188	Define terms associated with selection and care of tack.
	ANR8015.189	Identify parts of the Western bridle.
	ANR8015.190	Identify kinds of bits.
	ANR8015.191	Identify types of rigging on Western saddles.
	ANR8015.192	Identify parts of the English saddle.
	ANR8015.193	Identify types of saddle pads.
	ANR8015.194	Identify artificial riding aids.
	ANR8015.195	Describe ways to store saddles and bridles.
	Developing Leadership Skills	
	• ANR8015.196	Develop communication skills.
	• ANR8015.197	Develop recordkeeping skills.
	• ANR8015.198	Use parliamentary skills.
	• ANR8015.199	Identify FFA awards program available in horse production.
	• ANR8015.200	Participate in appropriate organizations.
	Examining All Aspects of Industry	
	•	Planning
	•	Management
	•	Finance
	•	Technical and Production Skills
	•	Underlying Principles of Technology
	•	Labor Issues
	•	Community Issues
	•	Health, Safety, and Environmental Issues

8080 36 Weeks	Equine Management Production TASKS/COMPETENCIES	
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	• ANR8080.001	Match terms associated with basic horse production to the correct definitions.
	ANR8080.002	Match the stages of evolutionary development of the horse to the correct descriptions.
	• ANR8080.003	Match terms associated with the uses of horses to their correct descriptions.
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	ANR8080.011	Survey concerns of area breeders.
	• ANR8080.012	Define terms associated with handling and grooming the

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•	ANR8080.023	Groom a horse.
•	ANR8080.024	Wash a horse.
	Handling the Young, Unbroken Horse	
•	ANR8080.025	Define terms associated with handling the young, unbroken horse.
	ANR8080.026	Match the stages of learning in a horse's training to the correct descriptions.
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	ANR8080.033	Teach horse to lunge.
	Maintaining Health and Preventing Disease	
•	ANR8080.034	Match terms associated with horse health and disease prevention to correct definitions.
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	ANR8080.041	Identify infectious diseases.
•	ANR8080.042	Name means by which infectious diseases are passed from one horse to another.
	ANR8080.043	Identify noninfectious diseases.
•	ANR8080.044	List items to be recorded in a case history.
	ANR8080.045	Secure appropriate record forms on horse health.
	Performing First Aid	
	ANR8080.046	Match terms associated with basic first aid to the correct definitions.

•	ANR8080.047	Identify parts of circulatory system.
•	ANR8080.048	List functions of circulatory system.
•	ANR8080.049	Identify parts of respiratory system.
•	ANR8080.050	Name functions of respiratory system.
•	ANR8080.051	Name vital signs and their normal ranges.
•	ANR8080.052	List items needed in a first aid kit.
•	ANR8080.053	Name visual symptoms of abnormal health.
	ANR8080.054	Distinguish between critical and non-critical injuries and illnesses.
	ANR8080.055	Explain basic care procedures for a horse during time of illness or injury.
•	ANR8080.056	Describe basic treatment of wounds.
	ANR8080.057	List basic uses of bandages.
	ANR8080.058	Identify intramuscular, intravenous, and subcutaneous injection sites.
	ANR8080.059	Explain actions to take in certain medical situations.
•	ANR8080.060	Check vital signs.
	ANR8080.061	Apply medication and bandage.
	ANR8080.062	Fill syringe in preparation for injection.
	ANR8080.063	Give intramuscular injections.
	ANR8080.064	Give intravenous injections.
	ANR8080.065	Give subcutaneous injections.
	Controlling Parasites	
•	ANR8080.066	Match terms associated with parasites and parasite control to their correct definitions.
•	ANR8080.067	List general symptoms of parasitic infection.
•	ANR8080.068	Classify parasites as internal or external.
•	ANR8080.069	Match internal parasites to their correct description.
•	ANR8080.070	Identify external parasites.
•	ANR8080.071	Label the steps in life cycles of internal parasites.
	ANR8080.072	List guidelines for the uses of anthelmintics.
	ANR8080.073	Distinguish between anthelmintics effective against internal parasites and insecticides effective against external parasites.
•	ANR8080.074	List management practices used in prevention of parasitism.
•	ANR8080.075	Explain precautions necessary when using insecticides for external parasites.
	ANR8080.076	Evaluate factors that affect susceptibility of horses to parasites.
	Understanding Fundamentals of Foot Care	
•	ANR8080.077	Match terms associated with foot care to correct definitions.
•	ANR8080.078	Match external parts of the foot to correct definitions.
•	ANR8080.079	Identify internal parts of the foot.
•	ANR8080.080	Match parts of the foot to their specific relationships and/or functions.
•	ANR8080.081	List the critical factors in the care of a foot.
•	ANR8080.082	List means of maintaining sufficient moisture in the hoof.
•	ANR8080.083	List the most common causes of lameness.
	Trimming and Shoeing	
	ANR8080.084	Arrange in order steps for lifting the horse's front and rear feet.

	ANR8080.085	Define terminology associated with foot problems, trimming, and shoeing.
	ANR8080.086	List general situations relating to unsoundness.
•	ANR8080.087	Identify major diseases and injuries causing unsoundness.
	ANR8080.088	Arrange in order the most common unsoundnesses that result in retiring horses from racing.
	ANR8080.089	Describe means of detecting lameness.
•	ANR8080.090	Distinguish between causes of lameness in which symptoms decrease with use or increase with use.
	ANR8080.091	Match the suspected areas of lameness to the correct indications.
	ANR8080.092	Identify basic farrier tools.
	ANR8080.093	List considerations when preparing hoof for trimming and/or shoeing.
	ANR8080.094	List common faults in preparation of the hoof.
	ANR8080.095	Identify conformation defects of forelegs.
	ANR8080.096	Identify conformation defects of hind legs.
	ANR8080.097	List guidelines for effective shoeing.
	ANR8080.098	Remove shoe.
	ANR8080.099	Trim foot.
	Understanding Horse Nutrition	
•	ANR8080.100	Define terms associated with practical horse nutrition.
•	ANR8080.101	Identify parts of the digestive system.
	ANR8080.102	Distinguish between the sizes and capacities for the components of the digestive system.
	ANR8080.103	Match parts of the digestive system to their correct descriptions and functions.
•	ANR8080.104	Name types of nutrients and their purposes.
•	ANR8080.105	Name functions of nutrients supplied by feed.
•	ANR8080.106	List factors affecting digestion.
•	ANR8080.107	Distinguish among classifications of feeds.
	ANR8080.108	List relevant feed regulations.
•	ANR8080.109	List metabolic disorders directly attributed to feeding.
•	ANR8080.110	Classify symptoms of nutritional deficiencies, such as protein, mineral, vitamin, or carbohydrate deficiencies.
	ANR8080.111	Describe factors to consider in selection of commercial feeds.
	Analyzing Genetics and Fertility	
•	ANR8080.112	Define terms associated with fertility and the genetics of reproduction.
•	ANR8080.113	Identify parts of the female reproductive system.
•	ANR8080.114	Identify parts of the male reproductive system.
	ANR8080.115	Match parts of female reproductive system to their correct functions.
	ANR8080.116	Match parts of male reproductive system to their correct functions.
•	ANR8080.117	Describe fundamentals of heredity.
•	ANR8080.118	State possible results of given matings.
	ANR8080.119	List activities affecting reproductive efficiency.
	ANR8080.120	List conditions in female reproductive system that cause infertility.
	ANR8080.121	List conditions in male reproductive system that cause infertility.

	ANR8080.122	Describe the influences of hormone secretions.
Understanding Breeding Efficiency and Mating Procedures		
	ANR8080.123	List factors to consider in keeping a stallion in breeding fitness.
	ANR8080.124	Describe methods of semen evaluation.
	ANR8080.125	Describe normal breeding characteristics of mares.
	ANR8080.126	List management practices to consider in teasing mares.
	ANR8080.127	List signs of estrus in the mare.
	ANR8080.128	Arrange in order the steps in breeding season hygiene.
	ANR8080.129	Explain methods of breeding.
	ANR8080.130	Identify methods of restraint when hand mating.
	ANR8080.131	Arrange in order the steps in hand mating.
•	ANR8080.132	List items to be included in recordkeeping during breeding season.
	ANR8080.133	Name ways to detect pregnancy.
Caring for the Mare and Foal		
•	ANR8080.134	Name important items relating to care of mare during gestation.
	ANR8080.135	Name noninfectious causes of abortion.
	ANR8080.136	List measures to take to prevent abortion.
	ANR8080.137	List indications of approaching parturition.
•	ANR8080.138	Describe actions to take in the foaling process.
	ANR8080.139	Match foal presentations to appropriate actions to take to correct situation and aid foaling process.
	ANR8080.140	List essential characteristics of individual offering assistance in foaling process.
	ANR8080.141	List foaling conditions requiring veterinarian assistance.
•	ANR8080.142	Describe how to care for a newborn foal.
•	ANR8080.143	Describe how to care for a postpartum mare.
	ANR8080.144	List conditions that prevent breeding on foal heat.
•	ANR8080.145	List management practices important in caring for mare and foal from birth until weaning.
Selecting and Marketing the Horse		
•	ANR8080.146	Define terms associated with selecting and marketing the horse.
•	ANR8080.147	List general considerations in selecting a horse.
•	ANR8080.148	Identify parts of the horse.
•	ANR8080.149	Match parts of the skeletal system to the correct names.
	ANR8080.150	Identify common leg markings.
	ANR8080.151	Identify common head markings.
	ANR8080.152	Match natural gaits to their correct descriptions.
	ANR8080.153	Describe normal measurements pertinent to a horse.
	ANR8080.154	Describe the teeth of mature and young horses.
	ANR8080.155	Determine age of horse by appearance and description of teeth.
	ANR8080.156	List means of marketing the horse.
•	ANR8080.157	Determine height, weight, girth, and bone.
Judging		

	ANR8080.158	Describe factors to consider in judging halter and performance classes.
	ANR8080.159	Describe desirable and undesirable characteristics of horse's anatomy.
	ANR8080.160	Explain the system of examination and characteristics for judging.
	ANR8080.161	List common unsoundnesses of feet and legs.
	ANR8080.162	Evaluate unsoundnesses and defects.
	ANR8080.163	Write favorable comparisons and criticisms for judging a performance class.
	ANR8080.164	List important factors to consider in taking notes.
	ANR8080.165	List important items to consider when organizing reasons for presentation.
	ANR8080.166	Discuss techniques for delivering reasons.
	ANR8080.167	Prepare oral reasons.
	ANR8080.168	Present oral reasons.
	Transporting the Horse	
	ANR8080.169	Define terms associated with transporting the horse.
	ANR8080.170	List ways to transport the horse.
	ANR8080.171	Select from a list precautions to take before transporting the horse.
	ANR8080.172	List items of trailer maintenance.
•	ANR8080.173	Explain factors to consider while driving and transporting the horse.
	ANR8080.174	List equipment needed for hauling.
	ANR8080.175	List health requirements necessary for interstate travel.
	Managing the Stable	
	ANR8080.176	Define terms associated with physical facilities and stable management.
	ANR8080.177	List items to consider when planning facilities.
	ANR8080.178	Identify barn styles as determined by the shape of the roof.
	ANR8080.179	Describe recommended environmental conditions for mature horses.
•	ANR8080.180	List basic considerations when planning horse barns.
•	ANR8080.181	Determine recommended stall sizes.
•	ANR8080.182	List characteristics of stall construction.
	ANR8080.183	Describe factors to consider in the location of a barn.
	ANR8080.184	List conditions that determine storage space requirements for feed and bedding.
•	ANR8080.185	List types of bedding.
•	ANR8080.186	List types of fences used for horses.
	ANR8080.187	List advantages of good fences.
	Identifying Tack	
	ANR8080.188	Define terms associated with selection and care of tack.
	ANR8080.189	Identify parts of the Western bridle.
	ANR8080.190	Identify kinds of bits.
	ANR8080.191	Identify types of rigging on Western saddles.
	ANR8080.192	Identify parts of the English saddle.
	ANR8080.193	Identify types of saddle pads.
	ANR8080.194	Identify artificial riding aids.
	ANR8080.195	Describe ways to store saddles and bridles.

Developing Leadership Skills		
•	ANR8080.196	Develop communication skills.
•	ANR8080.197	Develop recordkeeping skills.
•	ANR8080.198	Use parliamentary skills.
•	ANR8080.199	Identify FFA awards program available in horse production.
•	ANR8080.200	Participate in appropriate organizations.
Examining All Aspects of Industry		
•	Planning	
•	Management	
•	Finance	
•	Technical and Production Skills	
•	Underlying Principles of Technology	
•	Labor Issues	
*	Community Issues	
*	Health, Safety, and Environmental Issues	

2005/2006 Competency-Based Task/Competency List, Virginia Office of Career and Technical Education Services

Appendix C
Schools Surveyed

School Name	Virginia Location
1. Abingdon High School	Abingdon
2. Appomattox County High School	Appomattox
3. Blacksburg High School	Blacksburg
4. Bluestone High School	Skipwith
5. Broadway High School	Broadway
6. Carroll County	Hillsville
7. Central High School	Woodstock
8. Clarke County High School	Berryville
9. Clintwood High School	Clintwood
10. Culpeper High School	Culpeper
11. Essex High School	Tappahannock
12. Fort Chiswell High School	Max Meadows
13. Fort Defiance High School	Fort Defiance
14. George Wythe High School	Wytheville
15. Giles High School	Pearisburg
16. Halifax County High School	South Boston
17. Holston High School	Damascus
18. James River High School	Buchanan
19. James Wood High School	Winchester
20. King William High School	King William
21. Loudoun County High School	Leesburg
22. Loudoun Valley High School	Purcellville
23. Massaponax High School	Fredericksburg
24. Millbrook High School	Winchester
25. Pulaski County High School	Dublin
26. Randolph-Henry High School	Charlotte
27. Richlands High School	Richlands
28. Riverbend High School	Fredericksburg
29. Riverheads High School	Staunton
30. Rural Retreat High School	Rural Retreat
31. Sherando High School	Stephens City
32. Signal Knob	Strasburg
33. Staunton River High School	Staunton

34. Spotswood High School	Penn Laird
35. Spotsylvania High School	Spotsylvania
36. Stanton River	Stanton
37. Strasburg High School	Strasburg
38. Tazwell High School	Tazewell
39. Tunstall High School	Dry Fork
40. Wilson Memorial High School	Fishersville

Appendix D
Equine Management Survey

Please check the answer that applies to you or fill in the blank

Section A: Program characteristics

1. How many students are currently enrolled in your agricultural education program?

2. What is your current FFA chapter membership?

3. How many teachers are in your agricultural education department?

4. How many sections of equine management do you teach?

0 1 2 3

Indicate courses offered:

ANR 8015 (18 weeks) ANR 8080 (36 weeks)

What is the total number of students enrolled in these courses?

5. Do you teach an equine unit within any other courses?

Yes No

If yes, what course(s)?

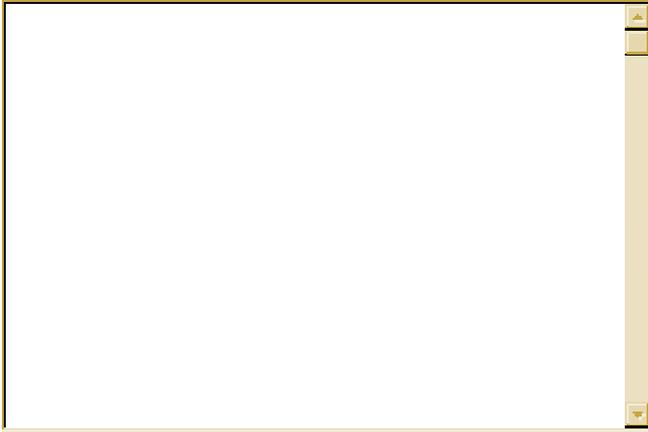
Please list the equine topics taught.

What is the total number of clock hours you teach on the above topics?

6. Do you use a resource person to teach equine management or coach the FFA equine Career Development Event?

Yes No

If yes, please explain.



If you teach an equine course or unit, please continue with Section B. If not, please skip to Section D.

Section B: Factors associated with the decision to teach equine management

1. An equine program has benefited my agricultural education department.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

2. My students benefit from an equine management course.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

3. The local community supported an equine management course.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

4. My school administration was supportive of an equine management course.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

5. Students have shown an interest in an equine management course.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

6. The equine industry in my area had an impact on my decision to offer an equine management course.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

7. The popularity of horses in Virginia had an influence on my decision to offer an equine management course.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

8. Having an equine judging team in my program influenced my decision to offer an equine management course.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

Short answer:

1. Are there any other factors not mentioned above that influenced your decision to offer an equine management course?

Yes No

Please explain.

2. In your opinion, what benefits have your students achieved from taking the equine management course?

Section C: Educational benefits

1. Participation in an equine management course and in equine judging has been a benefit to my students in building life skills.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

2. Adding an equine management course benefited the department in community relations.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

3. While teaching equine management, it is a good idea to work with the school's science department.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

4. A dual enrollment agreement with a community college for an equine class is or would be a benefit to my program.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

5. The benefits for an agricultural education program that includes an equine management course within the curriculum are evident.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

6. An equine management course provides students with the opportunity for character development.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

7. An equine management course can sharpen students' critical thinking skills.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

Short Answer:

1. Are there any other educational enrichment benefits not mentioned above that influence your class, students, or yourself?

Yes No

Please explain.



Section D: Barriers associated with teaching an equine management course

1. The lack of access to horses is a barrier to integrating an equine management course in my agricultural education program.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

2. The lack of adequate federal, state, or local funding is a barrier to integrating an equine management course in my agricultural education program.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

3. The lack of appropriate equipment is a barrier to integrating an equine management unit in my agricultural education program.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

4. The lack of equine in-service workshops or courses for agricultural education teachers is a barrier to integrating equine management into my agricultural education program.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

5. The lack of close proximity to equine farms or facilities is a barrier to integrating equine management in my agricultural education program.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

6. The lack of equine jobs in the local community is a barrier to integrating equine management into my agricultural education program.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

7. The lack of science knowledge is a barrier to teaching equine management in my agricultural education program.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

8. The lack of student preparation or knowledge (prior to enrolling) is a barrier to integrating equine management into my agricultural education program.

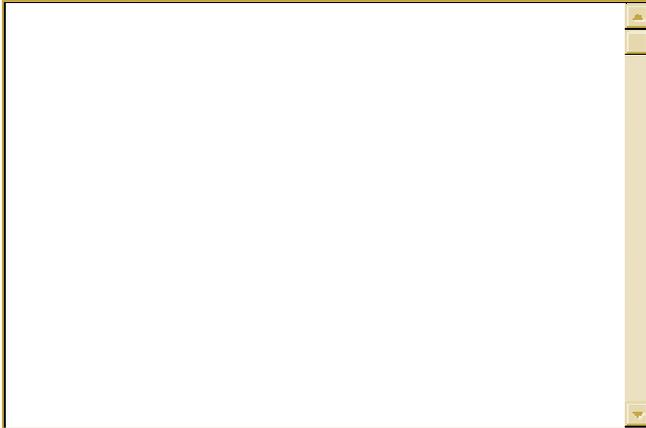
Strongly Disagree Disagree Uncertain Agree Strongly Agree

Short answer:

1. Within your department, do you see a need for some type of course in equine management?

Yes No

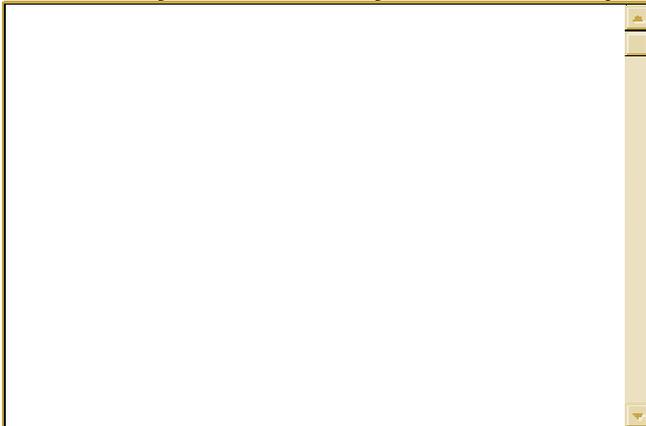
Why or why not?

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2. Do you feel confident in teaching an equine related class?

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3. What have you done or would you need to do to implement an equine management course?

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4. What did you give up or do you believe you would have to give up in your agricultural education program to offer an equine management course?



Section E: Strategies for enhancing equine management instruction

1. I would be interested in having a dual enrollment agreement for an equine class with a community college.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

2. If I offered an equine management course, it would become my largest class.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

3. Including an equine management course in my program would build my FFA chapter membership.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

4. Educators, parents, and policymakers must develop strategies to address the needs to move the agricultural education curriculum forward with new courses that will meet the needs of today's students, industry, and community.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

5. Agricultural education teachers need training in equine education to be able to move forward in offering more equine classes.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

6. Teachers should become familiar with the local equine industry groups represented in their school's community in order to promote the future of new equine courses.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

7. The infusion of equine subject matter competencies in teacher education programs will have a positive effect upon the ability to offer equine courses within the agricultural education curriculum.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

8. An increase in support networks and recruitment efforts by public school officials would enhance the number of students interested in participation in an equine course in agricultural education.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

Short answer:

1. In your opinion, what does the future hold for equine curriculum programming within your school's department?

2. What direction do you see for the development of future equine curriculum in Virginia?

Section F: Teacher characteristics

1. Age:

2. Gender:

Male Female

3. Highest degree completed:

Bachelor's Master's Specialist other:

Major

Year received

4. How many years have you taught agricultural education?

5. Do you have any type of equine background?

Yes No

If yes, please explain:



Thank you for your participation in this study.

Appendix E
IRB Approval

VirginiaTech

Office of Research Compliance
1880 Pratt Drive (0497)
Blacksburg, Virginia 24061
540/231-4358 Fax: 540/231-0959
E-mail: etgreen@vt.edu
www.irb.vt.edu
FWA00000572 (expires 7/20/07)
IRB # is IRB00000667.

Date: March 13, 2006

MEMORANDUM

TO: John H. Hillison
John Miller

FROM: Carmen Green

SUBJECT: IRB Exempt Approval: "Equine Subject Matter In Virginia's Secondary Agricultural Education Programs: Course Offerings Compared to Career Development Event Participation, IRB # 06-156"

I have reviewed your request to the IRB for exemption for the above referenced project. I concur that the research falls within the exempt status. Approval is granted effective as of March 9, 2006.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.cc: File

Department Reviewer: Patricia Sobrero

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Appendix F
Cover Letter

You are invited to participate in a research study to determine the status of equine subject matter in Virginia's secondary agricultural education programs. This study will focus on factors related to the equine management courses taught and participation in the FFA equine career development event.

Consent will be implied by the return of the completed questionnaire. This project has been approved, as required, by the Institutional Review Board for Research Involving Human Subjects at Virginia Tech.

Results will be kept confidential. Only the researcher will know the identity of the participants, and the researcher promises not to divulge the identity of the participants to anyone. Only team members directly involved in data analysis will have access to any data collected. Participants are free to withdraw at any time.

For this study, the survey instrument is located on a secure, protected website. Please click or copy and paste the following address into your browser and complete the survey.

<https://survey.vt.edu/survey/entry.jsp?id=1141995397522>

My faculty advisor is Dr. John Hillison (hillison@vt.edu). If you have any questions, please feel free to contact me at any time. Thank you for taking time to assist with this study.

Rusty Miller
Phone: 540-231-3395
Email: rustym@vt.edu