

NEEDS-BASED CURRICULAR CONTENT GOALS

FOR TWO-YEAR EQUINE CURRICULA

by

Susan Jolene Stuska

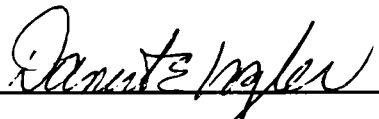
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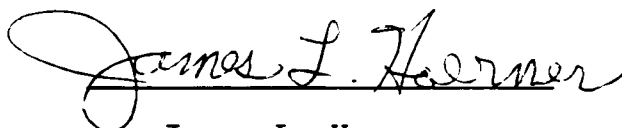
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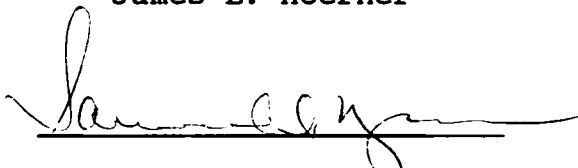
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by Susan Jolene Stuska
and Daniel E. Vogler

ABSTRACT

The horse industry is a significant contributor to the economy of any area in which it is found. Products and services oriented toward its recreational and competitive aspects are provided by workers in more than 71 categories of equine occupations. The equine industry is undergoing continuous technological change, and there is increasing competition for equine industry jobs; both affect its work force. Graduates of 46 two-year college equine programs are appearing on the job market yearly and many are finding equine industry jobs. However, there was no formal, organized communication about equine curricula among these institutions, and needs-based prioritized curricula did not exist. A current study of equine educators and employers was needed to advise equine curricular planners of the curricular content goals needed to align equine curriculum with equine industry job requirements.

The procedural problem of this study was to analyze occupational needs-based curricular objectives for two-year equine curricula. The equine industry occupations were determined and categorized according to the U.S. Department

of Labor (1977). Two-year equine curricular content goals were identified from the literature and from existing college equine programs. These goals were made consistent in syntax utilizing Vogler's Performance Instruction System (1991). Course titles according to the U.S. Office of Education's (1981) classification system were used, and college level educational requirements were gleaned from accreditation standards of the Southern Association of Colleges and Schools (1991). Equine industry employers were polled according to frequency of use and difficulty of execution of the skills in the work place while educators determined the level and type of expertise desirable in their graduates; these data were analyzed according to Vogler (1991). Prioritized lists of content goals by course were determined, as well as curricula for one- and two-year equine educational programs at the college level.

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My parents, Russell A. and Sarah Sue Stuska, were responsible for my enthusiasm for academic work from my earliest years. The loving support of my husband, Neil F. Murphy, encouraged me to complete the graduate work and write this dissertation. My committee chair, Dan E. Vogler, contributed the System for curricular formulation and the technical expertise required for this project. I appreciate the contributions of my colleagues in education and in the equine industry, and hope that this study will benefit many generations of equestrians.

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CHAPTER 1: INTRODUCTION

Introduction

Horses were a \$15.2 billion industry in America in 1987; this figure represented 16% of the gross national product of the Agricultural Forestry and Fisheries section of the United States economy (American Horse Council, 1990b). There were 6.6 million horses in the United States in 1988, according to a study by the American Veterinary Medical Association (American Horse Council, 1990b). A 1987 study found 5.25 million economically productive equines in America (American Horse Council, 1990b). Thoroughbred racing was the number one ranked spectator sport in the United States in 1989, according to Daily Racing Form statistics ("Thoroughbred Racing," 1991). In 1990, 56,194,565 people attended Thoroughbred racing, an increase of more than 1.35 million from 1988. Although ranking below the 2nd-ranked spectator sport, major league baseball, Quarter Horse racing attracted 9,284,398 spectators in 1990 ("Thoroughbred Racing," 1991). Well trained employees are essential to any business of this economic importance. Therefore, given the strength and impact of this industry on the American economy, and the need for well trained equine employees, a carefully researched and quality educational program to prepare these employees is essential.

The horse as a species has remained relatively

constant since it evolved into today's Equus equus. However, the technological advances of society have influenced the way horses are bred, cared for, trained, and worked. Technology has continued to advance, which necessitates constant reevaluation of the education provided to workers in the equine industry. Workers have had to advance their skills to keep pace with technological changes; this necessitates retraining.

Competition for jobs in the equine industry is intense, and the better prepared applicants receive the positions. Industry experience is often needed to obtain a job in the industry. Applicants need a way to obtain industry experience and also gain skills for a wide variety of applications within the industry in a relatively short period of time. Internships are a popular way for students to gain industry experience. Employers often value college educated employees for their maturity and proven ability to work hard toward a goal. In many cases, jobs are obtained by applicants with a college education over those without.

In the past, industry employees had been trained by the apprenticeship method. While effective, this method was slower and produced a narrower range of abilities than college education could. College education is not necessary at the lowest levels of horse industry employment, in jobs requiring manual labor alone. There

are additional methods of educating equine industry workers; for example, in private training facilities. However, a college-level education is increasingly essential for equine industry employment at the higher levels as the industry becomes oriented more toward technology and the competition for jobs is resolved by the amount of higher education.

Two hundred and sixty institutions in the United States, including colleges, universities, preparatory schools, and farrier's schools, offer specialized equine training (Stuska, 1991b); 46 of these are two-year colleges. There is no formal, organized communication about equine curricula among these institutions. There is no standard source of prioritized curriculum; there have been no recent studies of equine educators, curriculum or employers. Each accredited program, and any program desiring positive results, should periodically compare their offerings to employers' needs (Southern Association of Colleges and Schools, 1991). While some programs have industry committees and compared instructional goals to industry requirements, there is no current industry-wide study. The workers in the multi-billion dollar equine industry are too important to be prepared by chance. Equine educators need a complete, up-to-date, prioritized curricular content goal list.

Conceptual Framework

The conceptual framework of this study was anchored in four standardization systems. In order to list the equine industry occupations in an organized manner, the equine occupations were categorized according to the Dictionary of Occupational Titles (U.S. Department of Labor, 1991). The accreditation criteria of the Southern Association of Colleges and Schools (SACS) (1991) were followed in designing the credit structure. A complete list of curricular content goals was gleaned from the literature and from community college equine programs. These goals were organized into courses according to the U. S. Department of Education A Classification of Instructional Programs (1981) because there was no standardization of courses in existing programs. The syntax of the goals was made consistent, and the goals were prioritized, according to Vogler (1991b) and his PEAKS (R) CourseBuilding Software (tm) (1991a).

Equine Occupations Categorization

There are at least 71 different equine occupations in which workers deal with horses and/or in which a working knowledge of horses is needed (American Horse Council, no date; McElroy & Brice, 1975; Rudolph, 1979; U.S. Department of Labor, 1977). Elucidation and categorization of these occupations was part of the Literature Review, chapter 2,

of this study. Categories of these occupations are listed in Table 14 in chapter 4.

Five studies, reviewed in chapter 2, analyzed equine employees' tasks. However, Barnes (1979), Byrd et al. (1975), and Holcomb et al. (1975) worked in the 1970s; Cecil Community College's Inventory of Skills for the Equine Manager (1988) was sketchy; and Cruikshank (1985) worked with employees with high school level skills. A clearer, more complete, current picture of the range of skills needed by graduates was needed.

Content Goals Determined, Syntax Corrected,
Organized and Prioritized

Two-year equine curricular content goals were identified from the literature and from existing programs. PEAKSolutions in collaboration with Vogler, including Vogler's PEAKS (R) CourseBuilding Software (tm) (1991a), were used to facilitate formation of the curricular content goals into a common syntax. Each curricular content goal was formed into a short statement beginning with a present tense action verb and ending with a direct object (Vogler, 1991a). The verb had to "lend itself to observation and measurement" (Vogler, 1991b, p. 15) for ease of sorting, teaching and evaluating of the content goal. There was no common course organization in the literature or in equine programs, so for this study the content goals were

organized into courses according to the U. S. Department of Education's Classification of Instructional Programs (1981). The original titles for the courses, taken from this researcher's experience, were shown to cause some confusion among the survey respondents. Therefore, the titles were changed during the study to fit the U. S. Department of Education's format. The content of each course remained the same. The goals were sorted using Domain-Level and Frequency/Difficulty sorts and prioritized according to Vogler's System (1991a, 1991b), and formed the curriculum that resulted from this study.

Domain-Level Sort

The PEAKSolutions System (Vogler, 1991a) called for sorting of each content goal. The domain sort helps the curriculum developer to "clarify the content intent" (Vogler, 1991b, p. 15). There were three domains: cognitive, psychomotor and affective. Cognitive domain goals involved students' knowledge (Vogler, 1991b). The psychomotor domain included content goal statements regarding skills (Vogler, 1991b). The affective domain included content goal statements that related to interests, attitudes and values (Vogler, 1991b; see Table 1).

Once the domain of the content goal was determined, a further sort was performed on each goal to determine the level within the domain. This further sort of the content goals helped the curriculum developer to "clarify the

Table 1**Needs-Based Curricular Content Goals**Domain-Level Sort for Content Goals

| Level | Domain | | |
|-----------------------|---------------|-------------|-------------|
| | Cognitive | Psychomotor | Affective |
| Simple | Fact | Imitation | Awareness |
| Moderately Complex | Understanding | Practice | Distinguish |
| Most Complex | Application | Habit | Integrate |

Note. From **Performance Instruction: Planning, Delivering, Evaluating** (p. 19) by D. E. Vogler, 1991, Eden Prairie, MN: Instructional Performance Systems, Inc. Copyright 1991 by D. E. Vogler. Reprinted by permission.

content intent" (Vogler, 1991b, p. 15). The level sort required the curriculum developer to decide and specify the "level of performance expected for exit from instruction" (Vogler, 1991b, p. 18). There were three somewhat subjective choices of level: simple, moderately complex, and most complex (Vogler, 1991a, 1991b). This sort was routine because the content goals had been written according to Vogler's syntax directions. Verbs within the cognitive and affective domains differed in levels of complexity; for example, "define" was simpler than "explain." The psychomotor domain also had a complexity hierarchy, based on how quickly the student was expected to perform the skill.

Frequency/Difficulty Sort

The frequency and difficulty sorts helped the curriculum developer to determine how much and what should be taught, and what should not be included (Vogler, 1991a). The frequency analysis enabled the developer to include the work place requirements in the curriculum; Vogler pointed out that "this sort can serve as a valuable activity for involving work-based persons in structured curriculum development" (Vogler, 1991b, p. 22). "The frequency sort seeks to relate how often content is used while on the job" (Vogler, 1991b, p. 20). The term and idea of "importance" was at times substituted for frequency; the results were the same (Vogler, 1991b). Two categories of frequency, low

and high, were used by Vogler. The choice of "low" or "high" difficulty was based on "how hard this content was to accomplish on the job as compared to other instructional goals" in the same discipline during a general employment period (Vogler, 1991b, p. 20). In applying the results of the PEAKSolutions System, any tasks determined to be high frequency were included and covered thoroughly in the curriculum. Any determined to be low frequency were "of lower overall priority" (Vogler, 1991b, p. 22).

High frequency low difficulty (I priority) goals were covered in the curriculum and were highest priority. High frequency high difficulty (II priority) goals were also important, but ranked below the first category because employers were more lenient if the beginning employee was not yet competent in these. Low frequency high difficulty goals were third, III, priority; these were provided to the better students as enrichment learning activities and would provide abilities to make the graduate competitive on the job market (Vogler, 1991a). Low frequency low difficulty goals were fourth, IV, priority; they were relatively easy, and less important to the job, and it was likely that the graduate would gain these skills on his or her own (Vogler, 1991b; see Table 2).

Credit Structure Criteria

The accreditation criteria of the Southern Association

Table 2**Needs-Based Curricular Content Goals****Frequency/Difficulty Matrix**

| Frequency | | Difficulty | |
|------------------|---|------------|---|
| | | Low | High |
| H I G H | I Highest priority Easy and important All students should pass Taught in introductory courses Group or individual instruction | | II 2nd highest priority Difficult and important Some students may fail Taught in advanced courses Group or individualized instruction |
| L O W | IV 4th highest priority Easy; not too important Probably pick up on own May be remedial content Individualized instruction | | III 3rd highest priority Difficult and occurs seldom Provide to best students Individualized instruction |

Note. From Performance Instruction: Planning, Delivering, Evaluating (p. 19) by D. E. Vogler, 1991, Eden Prairie, MN: Instructional Performance Systems, Inc. Copyright 1991 by D. E. Vogler. Reprinted by permission.

of Colleges and Schools (SACS) (1991) was followed in designing the credit structure. This regional association was chosen because it governs institutions in the researcher's geographical area. Also, it is the most structured and fully developed of the related associations regarding occupational programs; it includes a commission on occupational program areas. SACS is generally recognized as having the most stringent standards of all the regional accreditation associations. Therefore, SACS was chosen as representative of the other regional accrediting agencies and its standards were used throughout this study. Specifically, SACS standards were used to dictate the expectations of semester credit hours completed for associates degree programs. The PEAKSolutions System (Vogler, 1991a) called for one content goal per three-hour learning block. The associate's degree required 30 semester credit hours of specialty credits (SACS, 1991). Thirty semester hours of credit, using the PEAKSolutions System (Vogler, 1991a), utilized 450 \pm 10% content goals. As stated in chapter 3, Methodology, the content goals developed in this study were categorized according to skill, knowledge or affective emphasis by educators, and they were cross matched by frequency of use and difficulty of performance on the job by employers. A prioritization based on these criteria was developed.

Assumptions

Four assumptions provided a starting point for this study. The first was that there is sufficient student interest in equine education to warrant two-year college equine programs' existence. The fact that 46 programs currently offer associate's degrees (Stuska, 1991b) supported this assumption. The second assumption was that two-year equine programs had a common aim: to educate students for jobs. This was well documented in the literature (American Horse Council, no date; Blair, 1976; Cargo, 1977; Close, 1980; Potter 1976; etc.). These sources documented the goals and purposes of college equine educational programs as training for employment in the industry. Third, it was assumed that an equine degree from a two-year college is appropriate preparation for some equine industry positions. This, too, was well documented in the literature (American Horse Council, no date; A Two-year College Alternative for Horsemen, 1979; Blair, 1976. Last, it was assumed that equine industry workers who had spent time working as employers, managers or supervisors in different facets of the industry would correctly represent the employment needs of the industry when surveyed.

Statement of the Problem

While 46 two-year college equine programs produce graduates annually (Stuska, 1991c), no recent study had been made that advised planners of the curricular content

goals needed to align the curriculum with equine industry job requirements. Current research was needed: the industry needs had to be reassessed and the current educational system standards had to be determined. Therefore, the procedural problem of this study was to analyze and prioritize occupational needs-based curricular content goals for two-year equine curricula.

Purpose

The general purpose of this study was to develop a validated content goal list for two-year college equine education consistent with accreditation standards. Specifically, the investigator synthesized the extant literature; classified equine industry jobs; and determined, rewrote in consistent syntax, categorized, and prioritized two-year equine program content goals into an equine curriculum.

Research Questions

Five research questions were addressed in achieving the purpose of this study. First, what were the equine industry occupations, and how were these classified? Second, what were the two-year degree program equine curricular content goals? Third, what were the equine curricular content goals in terms of frequency of use and difficulty of execution in the work place as rated by employers? Fourth, how were the equine curricular content

goals sorted in terms of domain and level by educators?
Fifth, given the frequency and difficulty ratings by employers, and the domain and level sorts of the educators, what was the prioritized list of content goals?

Delimitations

The study was delimited in order to focus on the curricular needs of two-year degree equine programs. The population studied was defined, as well as the subject matter of the content goal data collected. The study was delimited to programs which granted two-year associate's degrees in an equine discipline during the 1991-1992 academic year. Despite the importance of general education in the college education, this study was delimited to content goals of the equine specialty.

Limitations

This study was necessarily limited in its generalizability because of its focus and methodology. While not decreasing the value of the study, these limitations set boundaries on the use of the study results. The results of this study are best generalized to two-year college equine programs, and the objectives determined in the study represented the needs of students in 1991-1992 academic year equine programs for jobs immediately after graduation. Low response numbers for some of the

educators' sorts limits the universality of results for some course goals.

Need for the Study

While 46 two-year college equine programs are turning out graduates yearly, no current guide exists to advise curricular planners of the content goals needed to align the curriculum with equine industry occupational requirements. The workers in this multi-billion dollar equine industry are too important to be prepared by chance. Equine educators need access to an up-to-date prioritized curricular content goals list. This study prioritized content goals based on educators' and employers' input. By applying the results, curriculum committees and faculty may competently prepare their students for equine industry positions.

Definitions

The following definitions refer to terms as they are used in this study.

Affective domain. A classification of content goal; the goal involved student's interests, attitudes or values (Vogler, 1991a, 1991b).

Cognitive domain. A category of content goal which dealt with the student's knowledge (Vogler, 1991a, 1991b).

Content goal, also termed Instructional goal. A short statement that began with a present tense action verb and

ended with a direct object. The verb lent itself to observation and measurement. Content goals were the basis of the curriculum; each goal represented approximately three hours of learning time (Vogler, 1991a, 1991b).

Difficulty. The relative ease of performance of a skill in the work place as compared to other tasks required of the graduate. Limited to the period of time immediately after graduation from an associate's degree equine program. In this study, categorized as high or low by employers according to the PEAKSolutions System (Vogler, 1991a).

Domain. A classification of content goals as cognitive, psychomotor, or affective (Vogler, 1991a, 1991b), done by educators in this study.

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

Equine/horse industry. The business activities related to horses (Ehrlick et al., 1980). Included occupations which required consistent, daily contact with horses, and those that required knowledge of and ability to work with horses, while not involving frequent handling of horses.

Equine occupations. Occupations that dealt with horses and/or in which a working knowledge of horses was needed.

Frequency. A measure of how often a content goal skill was used in the work place; high frequency skills were used often, while low frequency skills were used less frequently (Vogler, 1991a). Content goals were sorted for frequency

by employers in this study. Another term used for frequency was "importance."

Job requirements (Competencies). Skills needed by workers; the ability to do what was required (Ehrlick et al., 1980).

Level. A content goal sort that differentiated the goals by the "level of performance expected for exit from instruction" (Vogler, 1991b). There were three levels, simple, more complex, and most complex, within each of the three domains. The sort was subjective (Vogler, 1991b), and based on the verbs in the content goals. This sort was performed by educators in this study.

Placement. How job openings were located and filled with skilled workers (Virginia Highlands Community College, 1990).

Psychomotor domain. A classification of content goal statements for goals which involved student skills. Did the content require that the student repeat and replicate the performance to develop proficiency? Was something other than a traditional classroom required? Was the content tested with other than a pencil and paper test? If one answer was affirmative, the content was considered psychomotor (Vogler, 1991b).

Organization of the Study

Chapter 2 consists of a Literature Review which covers extant publications on equine industry and occupations,

equine educational programs and equine curricula. The research design is discussed in chapter 3 with a step-by-step outline of the procedures used. The subjects and the subject selection process are covered here, as are data collection and treatment methodology. Example survey instruments are filed in the Appendix. The 4th chapter, Results, presents the findings of the study, includes statistics on course goals and a prioritized list of goals for each course. Chapter 5 interprets the findings of the study. It includes curricular recommendations based on the prioritized curricular content goals and suggestions for further study.

CHAPTER TWO: LITERATURE REVIEW

Overview

The status of the equine industry becomes clear in a presentation of its definition, economics, recreational emphasis, performance orientation, and occupations. The resulting occupational classifications are listed in Table 14 of chapter 4. Equine industry educational needs are elucidated by examination of the employees' need for broadly based flexibility, technological changes in the industry, the need for retraining, the competitive job market, and educational needs of the various occupations. College education is found to be a viable option: a number of programs exist; institutional suitability is found; a broad educational base is provided; graduate job placement is available; and accreditation curriculum controls are in place. The foundation of the curriculum is curricular objectives which are developed by faculty in response to industry needs and which necessarily change with technological advances. Agriculture and community college curricula typically have such organized objectives. Ten occupational requirements and/or curricular studies and four equine programs were sources of curricular objectives in various syntaxes.

Equine Industry Status

The status of the equine industry will be stated with a presentation of its definition, economics, recreational

emphasis, performance orientation and occupations. The resulting occupational classifications are found in Table 14 in chapter 4.

Definition

The horse or equine industry is defined, for occupational purposes, as all businesses related to horses (Ehrlick et al., 1980). Frequent contact with horses may be required, or the occupation may require knowledge of equines in another setting, according to the American Horse Council's Educational Opportunities in the Horse Industry (no date). There are pockets of intense horse industry activity in certain areas of the country, including northern Virginia, southern Maryland, central Kentucky, and western California. Nonetheless, this industry is found throughout the 50 states.

Economics

Numerous equine census and economic impact studies have been conducted in recent years, including those by the Virginia Cooperative Extension Service (Frank, Stanfield, Foster, Meacham and Huff, 1981), the Tennessee Department of Agriculture (Brantner, 1990), and the American Horse Council (1990b). In every case, the economic impact of the horse industry on the state or geographical area has been found to be both positive and substantial.

In Virginia, in 1989, the Commonwealth's 96,000 horses resulted in \$664 million of economic activity; the economic contribution was expected to reach \$1.1 billion when pari-mutuel racing was implemented (Lawrence, 1992; Sharp, 1992). Gross horse farm income totaled \$106,196,000 (Sharp, 1992).

In Tennessee, 178,000 horses were reported to the Department of Agriculture. The economic contribution to the state by the equine industry totaled \$143 million (Brantner, 1990). Horses were a \$15.2 billion industry in America; this figure represented 16% of the gross national product of the Agricultural Forestry and Fisheries section of the United States economy. There were 6.6 million horses in the United States (American Horse Council, 1990b).

The horse industry within any given geographical area contributed to the economy in many ways. For example, the equine industry employment in Virginia was estimated at over 6,000 workers in 1992 (Lawrence, 1992). The sale price of horses has continued to rise with some syndicated stallions having brought upward of \$1 million. Regardless of the individual horse purchase price, the money spent to maintain horses provided a significant stimulus to the economy.

Ownership Costs

Maintenance costs over the life or ownership of the

horse far exceed the purchase price. Virginia residents have spent an average of \$3,649 annually to maintain one horse (Sharp, 1992). With the recent recession, horse-care spending has decreased. However, maintenance needs, such as housing, veterinary care, and feed, continued to result in spending (Du Teil, 1989b & 1991).

There is intense interest in horse ownership and horse activity among people of all economic levels. While the wealthy are most able to afford horse ownership, horses can be kept less expensively by moderate to low income families.

Amateur Owners and Riders

The majority of horse owners are amateurs (Du Teil, 1989a), and this category of ownership is increasing. This classification include 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 generated. Related businesses, such as horse boarding, lessons, training, and companies which marketed horse care products, feel the results of this economic activity (Du Teil, 1989b).

Professional Workers

The professionals who work in the horse industry

provide the products and services needed by the amateurs. While not, on average, a particularly lucrative career, professional horsepeople are a necessary part of the horse industry.

Recreational Emphasis

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 nonproduction 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. The 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 food producers in how to grow a healthier horse, horse production is 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.

Performance Orientation

The horse industry is performance-oriented, with competitions, shows, races, and events vitally important. There is money to be made in competition management, computerized record keeping, coaching, and racing; while the amateur participates for fun and the achievement of winning, the professional has employment at stake for winning. An unfortunate result of the importance of competition is that performance-enhancing drugs are being used. In some cases, drugs are used to enable an otherwise unsound horse to compete. The industry is working to police itself, and drug testing is an active field. Organizations like the American Horse Shows Association write and enforce regulations against illegal drugs and drug use (American Horse Shows Association, 1992-93).

Horses are being bred more and more to perform. Breed associations increasingly keep pedigree and performance data available for the breeder. It is difficult to quantify the results of some of the most popular types of

horse competitions other than racing because of the subjective judging, so additional performance testing is being done by sport horse breed associations of the potential brood stock. This, pedigree analysis, and the associated record keeping, are new fields for horse industry employees.

Occupations

There is one significantly complete listing of equine industry occupations, Educational Opportunities in the Horse Industry, (American Horse Council, no date); its listings are categorized by educational requirements. The forerunner to this pamphlet was "Pursuing a Career in the Horse Industry," also by the American Horse Council (1986). The companion video "Unbridled Opportunities: Careers in the Horse Industry" is also by the American Horse Council (1990a); the video describes various jobs and discusses how to obtain equine employment. The most recent and complete book is O'Connor's Working with Horses: a Roundup of Careers (1980), which describes selected jobs in some detail. Williams' 1963 book Work with Horses as a Career is out-of-date. Journal articles include Jones' "Working in and out of the Horse Business" (1979), McElroy & Brice's "Training for Occupations in the Horse Industry" (1975), and Rogers' "Careers with Horses" (1976). Listings that included, but were not limited to, equine occupations are

found in the Handbook of Agricultural Occupations (Hoover, 1967), Kohl & Riley's "Your Career in Animal Services" (1977), McHugh's Veterinary Medicine and Animal Care Careers (1977), and the most official source: the U.S. Department of Labor Dictionary of Occupational Titles (1991).

The Dictionary of Occupational Titles (1991) lists equine and equine related occupations numerically. The numbered categories include all related occupations; these related jobs share common initial numbers. See Table 14 in chapter 4 for a complete listing of equine occupations based on the Dictionary of Occupational Titles classifications and incorporating occupations from all other listed sources.

Equine Industry Educational Needs

The educational needs of the equine industry were elucidated by examination of the employees' need for broadly based flexibility, technological changes in the industry, the need for retraining, the competitive job market, and educational needs of the various occupations.

Broadly Based Employee Flexibility

In order to withstand changes in the industry, the horse industry employee needs a broad knowledge base (American Horse Council, 1986) and a broad preparation that includes liberal arts (A. N. Huff, personal communication,

May 12, 1992). This preparation gives the employee many options when entering the industry (American Horse Council, 1986): ingenuity to get a job; flexibility and the ability to adjust to a new job when changing jobs within the industry and to follow as the industry changes. Solomon (cited in Johnson, 1981, p. 61) stressed the need to "get a good education which allows [the student] to function well in more than one area of the [horse] industry."

The student who diversifies his or her skills is much more marketable within the industry, Solomon explains (cited in Johnson, 1981). In the majority of horse businesses, the true job description is to "do whatever needs to be done." This is particularly typical of small businesses where the owner might employ one assistant stable manager/trainer, one stall cleaner/maintenance person, and do all the rest himself or herself. When any of the three workers is absent, the others take over his or her tasks. When he or she moved to another such business, the employee might find the need for a different set of skills. The individualistic nature of the owner/employer causes a variety of functions to take place under one business, and the employee, and owner, must truly be multi-talented. "It is a wise decision to pursue a broad education," states the American Horse Council (1986)

because it is desirable to know and be able to do all related tasks.

Industry's Technological Changes

While the horse itself had not changed much over time, the horse industry is undergoing continual change; it has changed more rapidly lately than it had in the past. Educational needs in the equine industry are a result of changes in the industry. Brooking and Hunsicker (1966, p. 276) explained the changes in the agriculture industry in general as having come from the "explosion of new knowledge."

Like other specialties within the agriculture area, the equine industry has been brought more closely together by the mobilization and communication afforded by new technology. The industry, both within the United States and between countries, has become a "smaller world." The success of an equine business depends on its being geographically accessible to its clients, but the geographical area has expanded. Employees need to be able to represent their business well to walk-in customers and to those who contact them by modern communication and transport technology. Examples include the increasing market for shipped semen, where employees collect, stabilize, transport, and possibly even inseminate mares across the country; the use of the computer, including facsimile machine, for record keeping and communication;

the advertisement of horses for sale or at stud by video tape; and marketing and sales abroad. The foreign markets require skills in foreign language and culture, export and import regulations, quarantine, and long distance shipping.

Technology also allows more flexibility for the business' location. As with other agricultural endeavors, the weather is an important factor in business location. Businesses previously limited to one location now might move to a facility in the southern United States for winter and then back North for the summer. Modern communication and transportation equipment, and flexible record keeping systems, allow a smooth transition. Employees for traveling businesses need flexibility and the ability to put the latest technology to use.

Technology has also had an impact directly on the horse. Exercise and conditioning are accomplished with the help of the newest treadmills and are closely monitored by radiographs, heart rate meters and computerized tracking systems. Medical technology has benefited from the latest in diagnostic and treatment technology including ultrasound and fiberoptics.

Retraining

The necessity of retraining industry employees is increasing. While many skills needed to keep up with a changing industry were available on the job, the growing

technology requires a return formal education in many cases. The community college has played a key role in this retraining by working with the industry and providing the instruction needed either in or away from the workplace (Virginia Highlands Community College, 1992).

Competitive Job Market

The equine industry job market is competitive (Solomon, cited in Johnson, 1981), and, lately, has been getting more so (American Horse Council, 1986). According to The Chronicle of the Horse editor Strassburger (1990), potential industry employees increasingly need a college degree to be competitive for jobs.

Occupations' Educational Needs

The American Horse Council (no date) provides a classification of jobs that facilitates discussion of educational needs across occupations. Their categories are: limited contact, low level technician, high level technician, manager, and specialist. The occupations categorized and listed in the Table 14 of chapter 4 have been discussed in this paper using the American Horse Council breakdown to facilitate review.

Limited Contact Occupations

The limited contact category includes workers who are required to have a knowledge of horses, but do not have frequent contact with the animals. These include workers

in the building trades, medical/research laboratory personnel, extension service workers, feed and farm management advisors, writers, photographers, race track and competition personnel, breed and other association staff, real estate and insurance agents, designers and sales workers, bloodstock agents, pedigree analysts, and leather workers (American Horse Council, 1986; U. S. Department of Labor, 1991; see Table 14 in chapter 4). There is perhaps more money spent, and likewise made, in this area than in others; the manufacturing and retail trades have been growth areas, particularly in design and sales (Du Teil, 1989b).

Low Level Technicians

Low level technicians are the employees with horse contact who perform jobs such as stall cleaning and fence building. The industry has always needed a ready supply of these workers, partly because their duties are needed in every stable, and partly because there is a great deal of movement in and out of this level of job. Often, these jobs are held by individuals without a high school education; the English language is not always a prerequisite. These are low pay, low incentive positions, and it is a perpetual problem of equine businesses to get and keep these workers. The salary is not usually an incentive, and those with the skill and background to

perform other horse tasks move up to the high level technician positions. The low level technician positions are therefore often entry-level positions for the industry.

Some stables hire low level technicians to clean stalls only, with no possibility of advancement. The low level technician who has no desire or ability to be competitive can often get by with on-the-job training; a high school education may not be required. The intelligent employee, however, will find him or herself in a low paying position without much intellectual challenge. Some businesses promote appropriately competent workers. Therefore, in most cases, skills over those required for the position are needed to be competitive for the entry level jobs. Also, some lower level jobs are taken by overqualified workers because employers appreciate the increased maturity often possessed by those who hold post secondary degrees (American Horse Council, 1986). If a worker ever considers job advancement or diversification, cautions the American Horse Council (1986), a college degree could be invaluable. Another possibility is that, after he or she pays his or her dues in the entry level job, a worker might change stables for a promotion. The use of technology in the industry makes it desirable for even some low level technicians to possess the skills to operate equipment like treadmills, specialized tractors,

and health maintenance equipment like whirlpools; this necessitates higher education for a competitive edge for these positions.

High Level Technicians

Also in the frequent contact category, high level technicians perform duties requiring more specialized training. They may, in smaller businesses, also perform the tasks usually delegated to the low level technician. By the classification definition, management or administrative duties are not a part of this level of work. Examples of this level from Table 14 are recreational therapists, instructors of many types, recreational sports workers who work directly with horses, animal treatment investigators, most horse livestock workers, truck drivers, horse and wagon drivers, and packers (American Horse Council, 1986; U. S. Department of Labor, 1991). The highly skilled high level technician is becoming an increasingly important worker in agriculture in general, according to Stevens (1967), and in the equine field in particular. Brooking and Hunsicker explained the need for highly trained technicians in agriculture in general as due to "the explosion of new knowledge" that created "a gap in the area of applied laboratory knowledge [laboratory experience] that was formerly the domain of the scientist or engineer . . . [and] is being increasingly filled by

highly trained technicians" (1966, p. 276). This is consistent with the situation in the equine field.

The duties of high level technicians require some specialized training. They usually have responsibility for horses and for students; they must be cognizant of safety and liability. Teaching, riding, and training abilities may be required. They may be required to carry out veterinarian's or farrier's instructions on the horses in their care. They may have need to operate health maintenance equipment, breeding apparatus, exercise or conditioning apparatus, and may need to understand the technology behind them. Additionally, skills such as verbal and written communication are essential.

Riding instructors and those who educate the adult amateur and youth recreational horse enthusiasts make up a significant percent of the horse industry work force. Their extreme importance to the equine industry is seen by their students' strong positive impact on the industry (Du Teil, 1989a) and by the necessity to the continued viability of the industry of an expanded horse user base through education of recreational owners and riders (Huff, 1990).

There is a trend in the industry toward certification of some high level technicians. Riding instructors may be certified by the American Riding Instructor Certification Program. Handicapped riding professionals have already

found the advantages of being associated with a training and certifying center like the CHEFF Center for the Handicapped in Michigan: lower insurance rates and the sharing of techniques.

Managers

Managers within the frequent contact classification are those workers with administrative and management responsibilities; these workers are in demand in the horse industry. Examples may be found in many areas of Table 14; state extension service specialists, huntsmen, and stable managers are a few. Business management training is essential for workers of this classification. Specialized skills needed included computerized scheduling, record keeping and accounting; communication by computer, facsimile, and telex; and understanding of liability and insurance.

The horse industry has suffered with society's lawsuit mentality. Insurance costs are rising so much that the need for insurance coupled with the inability to pay for it has caused some businesses to cease operation. While this trend provides jobs for horse business insurance sales people, the majority of business owners have focused on methods to minimize risk and therefore make insurance more affordable. Equine industry managers are being affected by these trends.

Specialists

Specialists are professionals in the frequent contact category like veterinarians, farriers, equine dentists, and judges whose work is always in demand. These are highly skilled areas. The veterinarians are increasingly challenged to apply the latest in healing techniques, while farriers work with the veterinarians in curing serious hoof and leg conditions. While apprenticeship used to be the requirement for farrier's work, specialized vocational schooling at a facility approved by the American Farrier's Association is increasingly necessary. There is a trend in the industry toward certification of some specialists, namely judges and farriers. The certification process involves some education and results in increased status and benefits.

College Education

The apprenticeship system used to be the standard training method for agriculture in general and the horse industry in particular. This training method was slow and too limited for total education. More recent equivalents are college internships and working student positions (Kilby, 1981). On-the-job training is another option, often administered by the college (Wright et al., 1972a-e). Amateur and recreational riders are most often educated through Pony Clubs, 4-H, preparatory schools, and riding

academies. Some educational functions are included in local horse clubs, breed associations, private equine training and teaching facilities, and state and local Cooperative Extension Agencies. All these institutions have their place in equine education. However, college education has been found to be a viable option: a number of programs exist; institutional suitability is present; a broad educational base is provided; graduate job placement is available; and accreditation curriculum controls are in place.

Existing College-level Equine Programs

There are a number of college-level equine programs. Printed sources of information on these educational opportunities include the periodically updated College Blue Book: Occupational Education (1989) and Degrees Offered by College and Subject (College Blue Book, 1989). These list degrees, and describe the institutions offering them. The College Handbook (College Entrance Examination Board, 1991) is published yearly and lists degrees offered. While up-to-date and accurate, these sources typically miss some existing equine degree programs. The only recorded master's degree research on equine degree programs (Parmenter, 1978), is out-of-date but served as a basis, along with Rudolph's (1979) work, for this author's previous equine program curriculum study (Stuska, 1981). A more generous description but slightly less objective view

was gained from periodic articles on equine education in general (Kreitler, 1992; Reiss, 1979), or on one or another particular college program, in books (D'Eisenberg, 1979), trade journals Horse Action (Hibbs, 1975), Horse and Rider (Hughs, 1972; Pitts, 1973), Horse Lover's (Abhau, 1978), Horseman (Rogers, 1973), Western Horseman (Allmart, 1979; Blair, 1976; Cargo, 1977; Close, 1980; Cowan, 1977; "Equine Center," 1973; Manly, 1979; Mathis, 1977; Swain, 1972; "A Two-Year College Alternative for Horsemen," 1979; Witte, 1978), or nontrade publications (Durhee, 1977; Leerhsen, 1977; New, 1977). Three directories listing equine educational programs and concentrating on colleges are in print. Harness Horse Youth Foundation publishes an Equine School and College Directory (Maurer, 1992-93), which includes scholarship information. Manning and Associates sells advertising for A Guide to College Equestrian Programs (Manning, 1992). The Equine Educational Programs Directory (Stuska, 1991b) contains the largest number of listings. The appearance and emphasis of many college equine programs becomes known through advertisements in trade journals, publications by the particular college, and by word of mouth.

Institutional Suitability

Why are colleges, specifically two-year institutions, often the institution of choice? Colleges are educational

institutions; their main purpose is education. As such, they are designed for educational pursuits. Their physical facilities establish a comfortable learning environment. They offer support facilities like the book store and library, and educational equipment and facilities such as architectural drawing, computer, and biological laboratories (Brooking & Hunsicker, cited in Stevens, 1967). Services such as writing assistance, research assistance, alternate learning methodology, tutoring, educational counseling, personal counseling, internship contact assistance, and job placement are commonly available.

The faculty are adept in teaching a variety of subjects needed by the student. Brooking & Hunsicker (cited in Stevens, 1967) noted that the existing biological science faculty may be utilized. Two-year college faculty must meet standards of academic and professional training (SACS, 1991) for the institution to be accredited and enjoy a positive reputation.

The occupational and technical programs of community college education were designed to provide job skills in a relatively short and finite amount of time. In post secondary education, the student gains knowledge and experience much faster than the old apprentice system allowed, plus he or she gains a wide variety of information

from many sources like teachers, guest lecturers and peers. Conscientious faculty ensure that their lesson plans reflect the current state of the industry, and call in local industry experts as advisors and guest speakers.

Two-year colleges are particularly responsive to the needs of and resources of their community. Guest speakers, field trips, and horses loaned for training programs come from the local community (Witte, 1978). Local talent is groomed to fit the needs of employers. Additionally, colleges tend to be responsive to the job market of the disciplines they serve, and many students attend a college and then travel away from home for employment.

Broad Educational Base

College offers the student a broad base of education that is desirable in the job market. A liberal arts education is among the preferences of employers, who require their staff to communicate well, both orally and in writing, and desire they be well-rounded members of the community. College curricula often includes humanities/fine arts, the social/behavioral sciences, and the natural sciences/mathematics (SACS, 1991). Brooking and Hunsicker (cited in Stevens, 1967, p. 276) related how for agricultural technology preparation, "primary emphasis should be on the underlying sciences" and "each curriculum should provide courses in mathematics . . . communications

and technical reporting and courses which provide pertinent understanding of the applicable principles of economics, business management and cost control, and human relationships". Solomon (cited in Johnson, 1981) encouraged college equine studies students to acquire some background in science, business or communication in order to be competitive for a job in the horse industry. Strassburger (1990), in a Chronicle of the Horse editorial, suggested that young people learn how to think, to solve problems, and to make decisions. Employers have been outspoken in their desire for a mature employee who was self-motivated and reliable. Potter (1976) mentioned that it was always easier to place good students who performed well than marginal or poor students. Geurin (1971) made a strong case for the value of a college education for job opportunities and life skills.

Graduate Job Placement

Forty-six colleges across the United States award two-year associate's degrees in some facet of the equine sciences. Personnel in these colleges assist students with job placement. Where are the graduates working? Stuska (1991c) showed that 60 to 95%, with an average of 82%, of the graduates of these programs work in the equine industry upon graduation. The faculty of 20 colleges provided the data.

The most popular area of the industry for graduates was found to be stable work and/or management; all colleges that responded had at least some graduates in these positions. College faculty were asked what percent of their graduates worked in each area. From 5 to 60% of the programs' graduates, with an average of 25%, worked in the stable work and/or management area. Second in popularity was the equine teaching, training, and recreation area. Only one college responding did not have graduates working in this area. The others had from 3 to 45% of their graduates employed here with an average of 21%. A close third in popularity was the equine competition related positions; a few respondents had no graduates in this area, but the others had from 3 to 50% with an average of 18% working in this area. The equine health and support services area claimed the next highest percent of graduates; the range was 0 to 20% with an average of 11%. The racing industry, the greatest money-making part of the industry, claimed about 10% of the graduates (with a range from 0 to 20%). Least popular were the arts related positions (photography, journalism, etc.), with 0 to 10% of the graduates having taken jobs in these fields, for an average of 2%. Estimates of graduates who continued their equine education at four-year institutions ranged from 8 to 50%, while unemployment estimates ranged from 0 to 30%.

Within the employment areas, the jobs in order of popularity were shown in Table 3. The number of programs, out of the 20 that responded, that had graduates who worked in each area was listed in the right-hand column of Table 3.

Accreditation Curriculum Controls

Accreditation provides a standard of quality and is built into the community college system. Faculty, curriculum, and physical facilities are scrutinized regularly by accreditation teams (SACS, 1991); accreditation is designed to ensure quality education.

Southern Association of Colleges and Schools (SACS)

Accreditation criteria, and guideline for this study, come from Criteria for Accreditation from the Southern Association of Colleges and Schools (SACS). This document was revised most recently in 1991. SACS is the recognized accrediting body for 11 southern states: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia. Latin America and the Commonwealth of Independent States are also included. SACS covers the associate degree-granting institutions studied here. Its policies are remarkably similar to those of the other regional accrediting agencies. Accreditation criteria exists at two levels of expectation for the colleges: the word "must" is used with

Table 3 Needs-Based Curricular Content Goals
Two-year Equine Degree Graduates' Employment

| Industry Area | Job | No. of Institutions with Graduate(s) on the Job N = 20 | Area Total ^a |
|--|---|--|----------------------------|
| <u>Stable work/stable management:</u> | | | |
| | stable, farm, ranch manager | 19 | |
| | stallion manager | 16 | |
| | foal care/foaling crew | 15 | |
| | broodmare manager | 14 | |
| | artificial insemination business | 7 | |
| | horse buyer/importer/seller | 5 | |
| | equine real estate sales/appraisal | 2 | |
| | equine building construction | 1 | |
| | groom | 1 | |
| | pest control specialist/sales | 1 | |
| | | | 81 |
| <u>Equine teaching/training/recreation:</u> | | | |
| | riding instructor | 19 | |
| | trainer | 14 | |
| | camp counselor/manager | 12 | |
| | guest ranch wrangler/manager | 12 | |
| | handicapped riding instructor/assistant/ program manager | 11 | |
| | 4-H agent | 10 | |
| | horse buyer/consultant | 6 | |
| | technical school teacher | 6 | |
| | packer/guide | 5 | |
| | horse drawn/mounted tour guide | 4 | |
| | huntsman/whipper-in/field master | 2 | |
| | rodeo manager/announcer/performer/stock contractor | 2 | |
| | groom | 1 | |
| | | | 104 |
| <u>Equine competition related positions:</u> | | | |
| | groom | 17 | |
| | horse show coach/trainer/rider | 15 | |
| | competition/horse show/event management/ publicity | 7 | |
| | judge/technical delegate/steward | 5 | |
| | | | <u>table continues</u> |

Two-year Equine Degree Graduates' Employment, continued

| Industry Area | Job | No. of Institutions with Graduate(s) on the Job N = 20 | Area Total ^a |
|--|---|--|----------------------------|
| <u>Equine competition related positions, continued</u> | | | |
| | first aid personnel | 2 | |
| | announcer | 1 | |
| | | | 47 |
| <u>Equine health and support services area:</u> | | | |
| | veterinary technician/assistant | 15 | |
| | feed business development/sales/marketing/ management | 11 | |
| | tack/harness/clothing manufacture/design/ sales | 9 | |
| | office personnel in equine business/ bookkeeper/ computer programmer | 7 | |
| | farrier | 6 | |
| | horse transportation - design/manufacture/ hauling, travel agent | 6 | |
| | horse/farm insurance | 4 | |
| | brand inspector/identification | 2 | |
| | humane society | 1 | |
| | | | 61 |
| <u>Racing industry:</u> | | | |
| | groom | 15 | |
| | stable manager | 8 | |
| | jockey/harness driver | 4 | |
| | race track personnel | 4 | |
| | trainer | 2 | |
| | exercise rider | 1 | |
| | harness horse owner | 1 | |
| | race track maintenance | 1 | |
| | race track office | 1 | |
| | | | 37 |
| <u>Equine arts related positions:</u> | | | |
| | writer/journalist/publisher | 7 | |
| | equine artist | 3 | |
| | equine photographer | 3 | |

table continues

Two-year Equine Degree Graduates' Employment, continued

| Industry Area | Job | No. of Institutions with Graduate(s) on the Job | Area Total ^a |
|--|---|--|----------------------------|
| | | N = 20 | |
| <u>Equine arts related positions</u> , continued | | | |
| | equine video sales/manufacture (educational or sales oriented) | 2 | |
| | publicity agent | 1 | |
| | | | 16 |

Note. From **Equine Industry Jobs for Two-Year Graduates** by S. J. Stuska, 1991c, unpublished manuscript.

^aIndustry area totals may be more than 20 because some respondents had graduates in more than one occupation within each area.

a requirement that the institution must meet, and the word "should" is used for a recommendation that is advisable for the institution to fulfill.

General Education

While this study did not focus on goals of general education courses, the importance of general education is well documented. SACS stated that "all undergraduate degree programs . . . [must] include a substantial component of liberal arts or general education courses at the postsecondary level" (1991, pp. 11-12), which consist of a minimum of 15 semester hours or the equivalent quarter hours (SACS, 1991, p. 12). These general education credit hours "may be either a prerequisite or an essential element of those programs and are to be drawn from each of the following areas: the humanities/fine arts, the social/behavioral sciences, and the natural sciences/mathematics" (SACS, 1991, p. 12). At least one course from each of these areas is required (SACS, 1991) of the associate's degree graduate candidate. While it may seem appropriate to include equine occupational concepts in these courses, SACS states that "the [general education] courses must not be narrowly focused on those skills, techniques, and procedures peculiar to a particular occupation or profession" (1991, p. 12).

Brooking and Hunsicker (cited in Stevens, 1967, p.

276) suggested that in planning educational programs for agricultural technicians, the agricultural competencies must be identified and made the stated objectives of the program. However, they stress:

primary emphasis should be on the underlying sciences and related technical study of procedures, processes, techniques, methods and principles. The courses should include extensive laboratory experience and should be application oriented. Each curriculum should provide courses in mathematics to the degree necessary to support the science. It should include courses in communications and technical reporting and courses which provide pertinent understanding of the applicable principles of economics, business management and cost control, and human relationships.

The SACS standards emphasizes the importance of basic skills in a college education. "Completion requirements for an associate . . . degree must include competence in reading, writing, oral communications and fundamental mathematical skills" (1991, p. 18) and this could be "within or in addition to the core" (SACS, 1991, p. 19). Computer training is recommended, also, as a basic skill: "Because the computer is an important means of both communication and computation, institutions should provide means by which students may acquire basic competencies in the use of computers" (SACS, 1991, p. 19).

Curriculum Requirements Statement

SACS states that:

An institution must state the requirements for each . . . degree it awards. The statement of requirements must specify: the number and distribution of general education credits to be completed, the minimum and maximum credits to be earned in the major or area of concentration, the total credits which must be earned, and the competencies which students must acquire in order to receive each . . . degree. (SACS, 1991, p. 18)

A degree program for an associate's degree must include "at least two academic years" (SACS, 1991, p. 11).

SACS requires that "students and faculty . . . have a clear understanding of the goals and requirements of each course, [and] the nature of the course content" (1991, p. 19). "Curricula must be directly related and appropriate to . . . the ability and preparation of the students admitted" (SACS, 1991, p. 18). The measurement-oriented goals list that has resulted from this study may be adapted to fill this need.

"In certain professional, vocational and technical programs, appropriate clinical and other affiliations with outside agencies may be necessary. In all such cases, learning experiences for which credit is awarded must be

under the ultimate control and supervision of the educational institution" (SACS, 1991, p. 20). The course goal list that has resulted from this study may be used by educators and off-campus facilities to ensure proper curricula.

Curricula Review

"There must be a clearly defined process by which the curriculum is established [and] reviewed," and existing programs should [italics added] be evaluated periodically for quality and need (SACS, 1991, p. 18). Colleges are required to show that their academic programs are well related to the working requirements in each field. "For programs designed to prepare students for a specialized profession or occupation, the institution must demonstrate that an effective relationship exists between curricular content and current practices in the field of specialization" (SACS, 1991, p. 20). Statistics on "placement of graduates of occupational programs in positions related to their fields of preparation" may be one of the procedures used to evaluate instructional programs (SACS, 1991, p. 15). The goal list and occupations list from this study may be used by colleges to help show that their graduates have been trained to meet industry needs.

Curricular Objectives

The foundation of the curriculum is curricular objectives which are developed by faculty in response to

industry needs and which change with technological advances. Agricultural and community college curricula typically have such objectives.

Need for Curricular Objectives

"Objectives are the foundation of the curriculum," (Cole & Johnson, 1981, p. 69). "It is important that the major objectives of the school or unit of instruction be clearly identified if time and effort are not to be wasted on less important things and if the work of the school is to be guided by some plan" (Bloom, 1984, p. 26). "Clear objectives are valuable in the selection of knowledge and learning strategies" (Cole & Johnson, 1981, p. 69). These objectives are also useful in determining content, learning activities and experiences, in organizing the scope and sequence of the curriculum, and determining the formative and summative evaluation procedures (Cole & Johnson, 1981, p. 69). The text choice, type and order of assignments, and teaching techniques all hinge on the objectives for the course (McKeachie, 1978). The presence of, and "continuous appraisal of objectives and course content are required if instructional programs are to educate competent, versatile, adaptable individuals equipped to succeed in occupational fields using some proportion of knowledge and skills in agriculture" (Stevens, 1967, p. 17). These curricular objectives are easily identified using the course content

goals established with the Peaks Coursebuilding Software tm (Vogler, 1991a).

Curricular Objectives' Development

Curricular objectives should be developed with employer's help after it has been determined that the need exists for such a curriculum (Cole & Johnson, 1981). The process of obtaining the employer's input establishes a communications link between the college and industry and inclusion of the employer's objectives in the curriculum ensures graduate placement in the industry.

It is often the faculty's responsibility to establish a list of objectives for their courses (Cole & Johnson, 1981; McKeachie, 1978). After this has been done, the faculty should relate learning experiences and evaluations of student progress to the previously established objectives (Cole & Johnson, 1981).

Curricular Objectives and Technological Advances

Nearly 80% of the academic officers responsible for curriculum development polled by Cole & Johnson (1981, p. 69) observed that junior/community college curriculum development efforts have responded to technological and scientific advancements "more than a little bit" or "to a great extent." It was agreed that the technological curriculum units require more education and advanced skill than other units (Cole & Johnson, 1981).

Curricular Objectives in Agricultural Curriculum

Brooking and Hunsicker (cited in Stevens, 1967) suggested that in planning educational programs for agricultural technicians, the agricultural competencies must be identified and made the stated objectives of the program. Statements of objectives for general agricultural curriculum have been prepared every few years by the Agricultural Education Division of the American Vocational Association in cooperation with the Agricultural Education Service, U. S. Office of Education (Stevens, 1967). These objectives are very general.

Presence of Curricular Objectives in Community Colleges

Within the curricula of various disciplines in the community/junior college, Cole & Johnson (1981, pp. 78, 80) looked for the presence of "clear and comprehensive" objectives. They found that 19% of the programs had them "to a great extent" and 46% had them "more than a little bit." The academic officers polled by Cole & Johnson (p. 69) generally felt that "clear and comprehensive" objectives had been established within the curriculum of various disciplines in the junior/community college. However, a systematic set of objectives had been used only 53% of the time when assessing the relevance of proposed junior/community college curriculum as determined by these researchers. Cole & Johnson found these data

disappointing. These researchers (1981, pp. 79, 81) also polled administrators asking if their faculty were in the habit of establishing objectives, then relating learning experiences and evaluation of student progress to these objectives. It was determined that 13% of the faculty did this "to a great extent" and an additional 50% established and used objectives "more than a little bit."

Organization of Curricular Objectives

Bloom's (1984) taxonomy of educational objectives was understood by Wright et al. (1972a-e) and developed further by Vogler (1991a, 1991b). Bloom was concerned with classifying "changes produced in individuals as a result of educational experiences" (Bloom, 1984, p. 12). His taxonomy was to provide a classification system for goals of education and to facilitate communication of and information exchange on curriculum. This taxonomy was also to help researchers find the range of possible educational goals when making a list, and to help in lesson building and evaluation. Bloom pointed out that no value or quality of objectives was implied in his taxonomy. Bloom believed that objectives must be stated in behavioral form; behavioral objectives could be observed and described, hence also classified. It was recognized that actual student behaviors may have differed in degree and kind from the intended behaviors specified by the objectives; this

was where grading of performance was necessary (Bloom, 1984).

Bloom's taxonomy was organized from simple to complex; ordering revealed significant relationships among the phenomena, and objectives in one class made use of and built on those of previous classes (Bloom, 1984; Krathwohl, et al., 1984). In other words, the more complex behaviors included the simpler ones (Bloom, 1984). The rule in classifying behaviors in this system is to place the objective in the most complex class which was appropriate and relevant (Bloom, 1984). Some very broad objectives have to be narrowed or divided into parts in order to be classified.

Bloom identified the cognitive domain which included "recall or recognition of knowledge and the development of intellectual abilities and skills" (1984, p. 7); most of the existing curriculum development work was in this domain (Bloom, 1984). The affective domain included "changes in interest, attitudes, and values, the development of appreciations, and adequate adjustment" (Bloom, 1984, p. 7). The affective category was rarely included in college education, Krathwohl (1984) explained; these behaviors tended to occur in later years when the student has had much more experience. The separation of objectives into cognitive and affective domains was somewhat artificial; one did not exist without the other (Krathwohl, 1984). The

domain of manipulative or motor or psychomotor skills was covered by Bloom under "application" of the cognitive skills (Bloom, 1984). Wright, et al. (1972a-e) had used, and Vogler (1991a, 1991b) would continue to use this organizational paradigm.

Studies of Occupational Requirements and/or Curriculum in Agriculture and Equine Studies

Ten occupational requirements and/or curricular studies and four equine programs were utilized as sources of curricular objectives in various syntaxes. A number of studies have been made on occupational requirements in agriculture; those which provided input for this study were by Burnett (1980), Love (1966), Matteson (1966), and Wright, Vogler, and Curtis (1972a-e). There have been three studies done on occupational requirements in the equine field: a recent DACUM study (Inventory of Skills for the Equine Manager, 1988); the oldest, a 1975 Ohio State University study based on a questionable percent of returned questionnaires (Byrd); and a Colorado State University study of job tasks of the 6th through 18th month of work (Barnes, 1979). Cruikshank's Virginia Vocational Curriculum study (1985) determined equine curriculum for the high school level, while Holcomb's Texas A & M study (1975) and Rudolph (1980) determined equine curriculum for

the college level. These studies are listed in an organized format in Table 4. The curricular objectives elucidated from these studies were in various syntaxes; Vogler's System (1991a, 1991b) was used to standardize the objectives.

Burnett Study

Burnett (1980) studied 12 agribusiness positions in the grain, feed, seed, fertilizer and chemical occupation cluster. The purpose of his study was to improve the relevance of vocational programs to jobs by identifying the activities associated with the occupations (Burnett, 1980).

He used two job analysis methods: a task inventory analysis and a Position Analysis Questionnaire. The former, a favorite of the Air Force, was economical for large numbers of workers. The researcher first determined a list of tasks and job requirements, then surveyed employees, asking if given tasks were part of their job or not. Based on their responses, Burnett classified the jobs as managerial; technical, for example, assistant manager; and skilled. He then suggested the skilled workers be educated at the secondary level, the technical workers at the technical school level, and the managerial workers at the university level. The latter job analysis method, designed for the Navy, defined the requirements of a job on the worker. It was rather complete, covered information

Table 4 Needs-Based Curricular Content Goals
Studies of Occupational Requirements and/or Curriculum in
Agriculture and Equine Studies

| Identification | | Topic | | Results | | | |
|------------------|------|---------------------------------|--------------|----------------|---------------|--------------------|----------------|
| Study | Date | Level to Help | Agri-culture | Equine | Task Analysis | Educa-tional Needs | Curric-ulum |
| Burnett | 1980 | voc.ed. | x | | x | | |
| Love | 1966 | voc.ed. | x | | x | | |
| Matteson | 1966 | hi.sch. voc.ed. ^a | x | | | x | |
| Wright et al. | 1972 | hi.sch. voc.ed. c.c. | x | | x | x | x |
| "Inven- tory" | 1988 | c.c. | | x | x | | |
| Byrd | 1975 | voc.ed. | | x | x | | |
| Barnes | 1979 | voc.ed. | | x ^b | x | | |
| VA Cruikshank | 1985 | hi.sch. | x | x | x | | x |
| TX Holcomb | 1975 | college | | x | x | | x ^c |
| Rudolph | 1980 | college | | x | | | x |

Note. hi.sch. = high school; voc.ed. = vocational education; c.c.= community college.

^aAcademic subjects. ^bEntry level: 6 to 18 months of employment. ^cOne unit.

needed, and relationships that are required with other workers, in addition to physical activities of the job (Burnett, 1980).

Burnett concluded that "each occupation contains some job tasks at each of the levels [managerial, technical, and skilled]." He also found that "in many agribusiness occupations, particularly smaller ones, job titles are difficult to identify" (Burnett, 1980). He recommended that "occupations for [which] training programs are designed should be periodically subjected to an occupational analysis to assess the relevance of the training program" (Burnett, 1980).

Love Study

Love (1966) analyzed job titles and competencies needed in five off-farm agricultural occupations in Pennsylvania. He described occupations as clusters of job titles. One of the occupations Love studied was animal science. He too intended his results to be used in curricular endeavors, specifically "course planning, program development, and guidance" (Love, 1966).

His study recognized that the "major criteria for success [of a vocational program] is the ability of graduates to enter and to advance in their chosen occupational field." Therefore, he spent considerable effort on the training requirements for advancement in the

fields (Love, 1966). Within the five occupations he found the need for different levels of training to enter versus to advance in the occupation. Within animal science, the difference in training needed was greater in managerial and service worker positions than in salesman and technician positions (Love, 1966).

Matteson Study

Matteson (1966) also studied competencies needed for employment in nonfarm agriculture occupations with implications for curriculum development. He was concerned with high school agriculture preparation. He chose five occupational categories, including livestock. All those polled were employers, and all in rural Wisconsin (Matteson, 1966). Five knowledge categories were surveyed: academic subjects, public relations skills, business management skills, farming, and vocational agriculture training. Matteson also looked at two levels of employment: initial employment and promotion.

Employers of all five occupational categories agreed that the three most valuable academic subjects for both entry and promotion were mathematics, English and economics. The livestock employers valued biology, chemistry and physics over algebra and geometry. All employers agreed that most academic subjects were of greater value for promotion than for initial employment (Matteson, 1966). Employers agreed on certain business

skills as being prerequisite for both initial employment and promotion in all occupations. These skills were ability to make decisions accurately, to diagnose problems and consult, to estimate cost and purchase, and to keep records and accounts (Matteson, 1966). Public relations skills were considered more valuable than any other skills. Among public relations skills, the most highly rated were the employee's ability to communicate with farm people, to communicate with businessmen, and employee's salesmanship and leadership ability (Matteson, 1966).

Livestock employers placed greater value on two years or less of high school vocational agriculture training than on a four-year high school vocational agriculture program (Matteson, 1966). The shorter period of education provided sufficient skills to enter the job market.

Wright, Vogler, and Curtis' On-Job-Training

Wright, Vogler and Curtis prepared training manuals for high school, vocational education, and community college students, faculty and employers. These manuals were published as books: the five related to this study were Here's How: On-Job-Training in Agricultural Mechanics (1972a), Agricultural Production (1972b), Agricultural Products (1972c), Agricultural Resources and Forestry (1972d), and Agricultural Supplies and Services (1972e). Developed from both educators' and employers' input, these

contained comprehensive lists of task statements for use in training. The curriculum was presented for use by employers and employees in on-the-job training for school or college credit. These volumes were excellent examples of the use of employer- and educator-generated content goal

Inventory of Skills for the Equine Manager

The most recent, and most tightly focused, of the equine occupational requirements skills studies was a DACUM study by Cecil Community College in Maryland. DACUM is an acronym for Developing A Curriculum. This unpublished study, titled Inventory of Skills for the Equine Manager (1988), is an inventory of skills for the position of equine manager. Six equine farm managers collaborated with a specially trained DACUM facilitator to formulate a description of the position and 10 general areas of expertise. The position description and areas of expertise are those of an advanced, not entry level, position. There were 10 expertise areas, shown in Table 5.

The panel detailed 7 to 18 competencies in each of the 10 areas of expertise. The panel also drew up a list of 22 categories of knowledge necessary for the equine management specialist; examples were computers, common sense, psychology and answering machine. The syntax in the findings was varied. Twenty-nine characteristics or attitudes desirable for this individual were found; they

included positive, aggressive, confident, honest, ethical, etc. Twenty-four types of equipment were determined necessary for the manager to operate, including pitchfork, jumps, clippers and tractor (Inventory of Skills for the Equine Manager, 1988).

The panel also developed a list of 29 characteristics or attitudes desirable for the equine manager. These were not consistent in syntax, but are useful in describing an ideal employee; particularly the affective characteristics listed here were poorly represented or absent in the other studies. Table 6 listed the characteristics or attitudes desirable for an equine manager.

This study yielded useful results for an educational institution; the requirements of the job must have been known in order to train individuals for it. The knowledge, characteristics/attitudes and equipment lists were good starting places, but they overlapped and lacked consistency within each list. The areas of expertise and competencies were not ranked at all, but still provided a useful and complete description of the equine management specialist's job.

Byrd's Ohio State University Study

One of two notable equine studies completed in 1975 was a research report by Byrd et al.. Sponsored by the Office of Education in Washington, DC, this project was

Table 5 Needs-Based Curricular Content Goals
Expertise Areas for the Equine Manager

-
1. train horses
 2. manage health care of horse
 3. provide maintenance of horse
 4. manage equine equipment
 5. manage business finances
 6. supervise personnel
 7. maintain property/equipment
 8. maintain safety standards
 9. market and advertise services
 10. professional development
-

Note. From Inventory of Skills for the Equine Manager, 1988, unpublished DACUM panel results.

Table 6 Needs-Based Curricular Content Goals
Characteristics or Attitudes Desirable for the Equine Manager

| | | |
|-------------------|-------------|-----------------------|
| accept & delegate | empathic | organized |
| aggressive | ethical | patient |
| articulate | honest | perseverance |
| authoritative | humane | personable |
| capable | independent | positive |
| caring | leadership | professional attitude |
| confident | motivated | punctual |
| dependable | neat | responsible |
| detailed | open-minded | self-disciplined |
| efficient | optimistic | |

Note. From Inventory of Skills for the Equine Manager, 1988, unpublished DACUM panel results.

conducted at Ohio State University. Its general purpose was to improve vocational education agriculture programs by developing common cores of basic skills in each of the agricultural fields; more specifically, Byrd et al. (1975) worked to develop and validate a task list and rate the tasks necessary for successful employment as a horse farm hand.

The list of 171 tasks was developed from the literature and with the help of several horse farm owners. It was validated by 12 industry workers who owned horse farms and/or managed stables. It was clear to Byrd et al. that the duties of individual horse farm hands varied according to the size and type of business, so a cross section of workers needed to be identified for questioning. The Ohio State Agricultural Technical Institute had previously identified many of the horse farm businesses in the state, and 75 establishments were chosen from this list using a stratified random sampling technique. Each of these businesses received both an employee and an employer questionnaire. Unfortunately, the follow up consisted of an identical mailing; the result was that only 32 employee questionnaires were returned. It is not clear from the report why the employee's input was not included in the task list ratings.

The 171 tasks were compiled into 18 duty areas of work performed; the duty areas were listed in Table 7. All 18

Table 7

Needs-Based Curricular Content Goals

Duty Areas of a Horse Farm Hand

1. performing general office work
 2. recording information
 3. inventorying supplies
 4. following general safety precautions
 5. operating equipment and vehicles
 6. maintaining equipment and vehicles^a
 7. purchasing supplies for horse farm operations
 8. constructing and maintaining horse buildings and structures^a
 9. assembling, installing horse operations equipment
 10. maintaining the horse herd health
 11. feeding horses
 12. loading and shipping horses
 13. selecting horses
 14. breeding horses
 15. fitting and showing horses
 16. handling and disposing of animal wastes
 17. handling and caring for horses
 18. handling and caring for the tack
-

Note. From An Empirical Determination (p. 9) by J. R. Byrd et al., 1975, Columbus: Ohio State University.

^aFewer than 50% of the employees performed these tasks.

received a score of 2.0 or higher on an importance scale of 3 = essential, 2 = useful, and 1 = not important (Byrd et al., 1975) when rated by employees. However, two duty areas, #6 and #8, were found to be less common; fewer than 50% of the workers Byrd surveyed did this type of work, while greater than 50% performed the other duties (Byrd et al., 1975).

Byrd presented a table of the 18 duty areas, broken down into their component specific tasks, and showed the percent of workers who performed each and the average rating of importance of each task (Byrd et al., 1975). The duty areas of maintaining the horse herd health; safety procedures; and selecting horses, including evaluating overall condition; received the highest mean: 2.8, while following general safety procedures and handling and disposing of animal wastes were close seconds with means of 2.7 (Byrd et al., 1975).

In other results of interest, college level equine training was not specified as the source of job preparation for any of the employees surveyed. Adult education programs were identified by three employees; it was possible that these were at the college level. Ten of the 32 employees checked other, unspecified, training (Byrd et al., 1975) as their source of knowledge.

Barnes' Colorado State University Study

Colorado State University, under a United States Office of Education grant, did an occupational analysis for entry-level equine management. They defined entry-level as employees during their 6th to 18th months of work. They recognized the "rapid and continual changes" in "invention, technique and specialization" in the equine field as reason for this analysis; the edification of the vocational educator was the intended result. They desired the educator to use these results to determine what should be taught so that less time could be spent on this and more on teaching methodology (Barnes, 1979, p. 1).

For this study, project personnel generated a comprehensive duty and task list. The list was reviewed by nine individuals associated with the occupational area. Field review followed, with 10 entry-level workers and 10 supervisors of such workers who rated 79 tasks on a 0 (not important) to 4 (critically important) scale. Based on the results, a final task listing was completed (Barnes, 1979). The final task listing included eight categories of duties, listed in order of importance as identified by the respondents. The categories of duties were found in Table 8.

These duties were further broken down into tasks; the tasks were rated in terms of importance. The tasks and their ranked order are appropriate for an early equine

Table 8

Needs-Based Curricular Content Goals

Duties Categories for Entry-Level Equine Employees

1. recognize classes and breeds of horses
 2. understand horse behavior
 3. feed horses
 4. provide health care
 5. maintain horse facilities
 6. maintain books and records
 7. buy and sell horses
 8. maintain public relations.
-

Note. From Occupational Analysis: Equine Management, Entry Level (p. 5) by W. J. Barnes, 1979, Fort Collins, CO: Curriculum Materials Service, Department of Vocational Education.

employee; Barnes' results were similar to other studies with the same entry level emphasis (Cruikshank, 1985; Holcomb et al., 1975; Rudolph, 1980).

Virginia Vocational Curriculum Center Study

This is a competency based educational work by the Virginia Vocational Curriculum Center, supported by the Virginia Department of Education and written by Cruikshank. The subject of this 1985 study was livestock production. The section on horse production was approximately 1/6 of the whole and was meant to be curriculum for grades 11 and/or 12. Both a task study and curriculum guide were included. The curriculum was competency based; competency based education was formulated from the tasks required of the worker (Cruikshank, 1985).

This publication bridged the gap between the task analyses of the publications mentioned earlier and the classroom by including selected instructional activities, a list of tools and materials needed, a list of audiovisual materials and references. A means for evaluation of student attainment was also suggested (Cruikshank, 1985).

Agricultural education supervisors and experienced agricultural production teachers provided the input for the initial task list. The list was validated by various professionals involved in both agricultural occupations and

teachers of livestock production on the secondary level (Cruikshank, 1985). The horse production duty area contained 14 tasks (see Table 9).

Each task had an identified performance objective; several enabling objectives, which were student competencies designed to aid in attainment of the task; and suggestions for evaluating student attainment. Although equine experience would be an advantage, inexperienced teachers could present correct material in an organized way using the suggested instructional activities, tools and measures, audiovisual materials and references (Cruikshank, 1985).

Texas A & M Study

Texas A & M did a complete study in 1975 (Holcomb et al., 1975). They considered both entry and advancement competencies in what they termed horse production. In a good attempt to judge the state of the country-wide horse industry, they surveyed 46 people in the horse production industry from seven of the nine leading horse production states other than Texas. Texas was, according to the 1969 census of agriculture, the leading state in number of horses. The nine states which followed Texas were identified, the reasoning was that these states were distributed across the United States and virtually all circumstances under which horses could be raised would be

Table 9

Needs-Based Curricular Content Goals

Horse Production Duty Area Tasks

1. explain criteria for selecting horses
 2. determine ages of horses
 3. explain measurements used to describe horses
 4. groom a horse
 5. explain procedure for proper care of horses' feet
 6. explain recommended procedures for training horses
 7. develop a plan for a quality breeding program
 8. describe proper care of a foal from birth to weaning
 9. describe procedures for weaning a foal
 10. describe a program of care for a stallion
 11. explain the nutritional requirements of horses
 12. identify common horse diseases and disorders and their treatments
 13. identify procedures used to market horses
 14. identify horse tack items
-

Note. From Agricultural Production: Task Analysis for Livestock Production (p. 129) by A. T. Cruikshank, 1985, Richmond: Commonwealth of Virginia, Department of Education.

represented by this choice. Representatives from seven of the nine actually participated. These individuals reacted to competencies identified by an earlier literature review and a survey of leaders in agricultural education. The evaluation of the duties in terms of the relative importance associated with employability at the entry and first advancement levels of employment was made by a 5 point scale, with a score of 4 meaning essential and 0 meaning the skill did not apply to the occupational cluster. Eleven duties were identified, and ranked by weighted mean; 4 = essential while 0 = does not apply. The 11 duties were listed and ranked in Table 10. Each of the 11 duties was broken down into specific competencies; the 167 specific competencies were likewise rated in terms of the relative importance associated with employability at the entry and first advancement levels. The Texas A & M study included a single curriculum example to support one of the 167 specific competencies.

Rudolph's Curriculum

Rudolph (1980) created a basic core of instruction for equine management and production. 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

Table 10 Needs-Based Curricular Content Goals
Ranked Duties of Entry-Level and First Advancement Level
Equine Employees

| Duty ^a | Ranking ^b |
|---|----------------------|
| 1. training and handling horses | 3.38 |
| 2. breeding horses | 3.30 |
| 3. controlling parasites, diseases, and injuries | 3.25 |
| 4. exhibiting the horse | 3.15 |
| 5. grooming, leg, and hoof care for the horse | 3.08 |
| 6. feeding horses | 3.00 |
| 7. managing pastures | 2.64 |
| 8. maintaining records required for horse production | 2.64 |
| 9. buying and selling horses | 2.57 |
| 10. classifying and selecting horses | 2.56 |
| 11. installing, maintaining, and repairing horse farm buildings, equipment, and training facilities | 2.43 |

Note. From Employment Opportunities and Training Needs (pp. 7-17) by J. W. Holcomb et al., 1975, College Station: Texas A & M University.

^aListed in descending order of importance according to the weighted means. ^bWeighted means between 4 = essential and 0 = does not apply.

appropriate for that purpose. This impressive curriculum contained 17 units of instruction which are listed in Table 11.

The topics in Rudolph's curriculum provided good coverage of the subject and were consistent with earlier reviewed studies. Each unit of instruction listed in Table 11 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 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 production 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

Table 11 **Needs-Based Curricular Content Goals**
Units of Instruction for Equine Management and Production
Curriculum

1. basic horse production
 2. handling and grooming
 3. handling the young unbroken horse
 4. horse health and disease prevention
 5. basic first aid
 6. parasites
 7. fundamentals of foot care
 8. foot problems, trimming and shoeing
 9. practical horse nutrition
 10. fertility and genetics of reproduction
 11. breeding efficiency and mating procedures
 12. care of mare and foal
 13. selection and marketing the horse
 14. judging
 15. transporting the horse
 16. physical facilities and stable management
 17. selection and care of tack
-

Note. From **Selected Characteristics of Equine Education Programs at Colleges and Universities** by J. A. Rudolph, 1980, Unpublished doctoral dissertation, Oklahoma State University.

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 science.

Equine Program Sources of Curricular Objectives

Lists of equine curricular objectives from four actual programs were available and were used to amass the list of objectives for this study. Sources were: Armstrong's curriculum from Kirkwood Community College, IA (1981); Cecil Community College, MD, curriculum by Ferenz (1990); Newman's program at Lord Fairfax Community College, VA (1991); and Stuska's curriculum from Virginia Highlands Community College, VA (1991a).

Literature Review Summary

The equine industry was defined as all businesses related to horses. This industry made a sizable contribution to the economy of areas in which it exists; three main sources were horse ownership costs, the economic contributions of amateur owners and riders, and the products and services provided by professional industry workers. The industry had a recreational emphasis, and was 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 (no date) and the U. S. Department of Labor (1991). The diversity among and

between equine occupations shows the need for broadly based flexibility in employee preparation.

Equine industry educational needs were 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.

College education was found to be a viable educational option for the equine industry. Forty-six associates degree programs exist; they are cataloged in a number of sources. Two-year colleges were found to be suitable educational institutions for equine education degree programs. These colleges provide the needed broad educational base. Graduate job placement in the equine industry is available. The development and requirements of college curricula are directed by regionally managed accreditation criteria. According to accreditation criteria, general education is required; the college must have stated curriculum requirements for each degree offered; and the curriculum must be established and reviewed according to established guidelines.

The foundation of the curriculum is curricular objectives which should be established by the faculty in

response to industry needs and which should change with technological advances. Curricular objectives exist for agricultural curriculum and they were mostly present in community college curricula. These objectives have a typical organizational structure, according to Bloom (1984), Vogler (1991b) and Wright et al. (1972a-e). This study follows the curricular objectives establishment techniques stated in the literature.

Ten studies of occupational requirements and/or curricular studies and four community college level equine programs were utilized as sources of curricular objectives; the syntax of the objectives varied. Burnett (1980), Love (1966), and Matteson (1966) studied agriculture requirements; the first two did task analysis and Matteson determined educational needs. Cecil Community College's DACUM study (Inventory of Skills for the Equine Manager, 1988), Byrd's Ohio State University study (1975), and Barnes' Colorado State University study (1979) did equine employers' task analyses. Cruikshank's Virginia Vocational Curriculum Study (1985) determined equine curriculum for the high school level, while Holcomb's Texas A & M study (1975) and Rudolph (1980) determined equine curriculum for the college level. Four community college programs' curricula was utilized as sources of objectives; these differed in syntax also. Vogler's System (1991a, 1991b) provided a common syntax for the research findings.

CHAPTER 3: RESEARCH DESIGN

Overview

Five steps were followed in this research. First, a list of equine occupations was developed from the literature. These were grouped according to the U. S. Department of Labor's Dictionary of Occupational Titles (1991). Second, a list of curricular content goals for an associate's degree equine program was developed from the literature and from existing equine programs. These goals were processed according to Vogler (1991a, 1991b) and the list formed the basis of the survey instruments. The content goals were clustered into 15 courses which were named according to the U. S. Department of Education's A Classification of Instructional Programs (1981). Third, 50 equine industry employers were chosen from across industry disciplines and their classifications of content goal frequency and difficulty were elicited. The data were tabulated, with more than 50% agreement sufficient to categorize the goal in that frequency and difficulty sort. Fourth, one educator was identified from each of the 46 associate's degree programs. Each educator received approximately four courses, and were asked to sort the course goals by domain and level. These data were tabulated and averaged according to Vogler (1991a, 1991b). Fifth, the content goals were prioritized based on the

survey results and according to Vogler's System (1991a, 1991b).

Descriptive Research Design and Methodology

This descriptive study described specific facts and characteristics of the equine educational and occupational system to date. Specifically, the equine industry occupations were systematically determined and classified. Equine two-year degree program curricular content goals were determined, sorted in terms of domain and level by educators, rated in terms of frequency of use and difficulty of execution in the work place by employers, and prioritized. A descriptive data base was thus created.

Limitations and Methodological Assumptions

This study was necessarily limited in its generalizability because of its focus and methodology. While not decreasing the value of the study, these limitations set boundaries on the use of the study results. The results of this study were best generalized to two-year college equine programs and entrance level equine employees. Concerning methodological assumptions, the educator's sample was representative of the 46 two-year associate's degree equine programs. The employer's sample, while not random, was representative of disciplines within the equine industry; it leaned more heavily toward the contact than the limited equine contact occupations.

Equine Occupations

Numerous discussions of equine occupations were available in the literature. The most useful, for purposes of this study, were two which gave their information in the form of lists. The American Horse Council's Educational Opportunities in the Horse Industry pamphlet (no date) listed approximately 220 occupations; the U. S. Department of Labor's Dictionary of Occupational Titles (1991) listed nearly 70 equine and equine-related occupations. These occupations ran the range from significant time to no time spent working directly with horses. In the horse related occupations without hands-on work, knowledge of horses is required.

Somewhat less useful, but contributing, sources were Henschel's Careers with Horses (1975), Handbook of Agricultural Occupations (Hoover, 1967), "Working in and out of the Horse Business" (Jones, 1979), McElroy and Brice's "Training for Occupations in the Horse Industry" (1975), McHugh's Veterinary Medicine and Animal Care Careers (1977), Working with Horses: A Roundup of Careers (O'Connor, 1980), "Careers with Horses" (Rogers, 1976), the video Unbridled Opportunities: Careers in the Horse Industry by the American Horse Council (1990a), and Work with Horses as a Career, by Williams (1963).

From the literature cited above, a list of equine occupations was developed. The U. S. Department of Labor's

Dictionary of Occupational Titles (1991) was used to divide the occupations into broad categories. The resulting data are presented in Table 14 of chapter 4.

Curricular Content Goals

A list of content goals for equine curricula was needed; it was compiled from the literature and from existing programs. A curricular content goal, according to Vogler (1991b), is a short statement that begins with a present tense action verb and ends with a direct object. The verb must lend itself to observation and measurement, and represent approximately three hours of teaching or learning time.

In order to provide an appropriate list of goals, the idea of concept goals was studied. Specifically, existing lists of general educational goals and their classifications were studied. Nowfield and Bell's work "Clarifying Objectives in Curriculum Guides" (1982) was helpful regarding the formation of objectives, and Wise's (1975) use of goals in the critique of planning by objectives was useful. Lists of content goals existed for other disciplines; Anderson (1953) developed educational criteria for agribusiness employees; Arnold (1981) worked with the machine trades; Besancon (1984) determined industrial electronics and robotics curriculum; Davenport et al. (1980) aided business machine repairers; Edwards et

al. (1980) used computers to manage veterinary curricular objectives; Hudson (1983) determined teachers' educational competencies necessary for microcomputer use in vocational agriculture; and Williamson and Samuels (1982) developed curricula for a word processing certificate with the use of content goals.

Complete knowledge of any technical subject like equine studies included cognitive knowledge, the ability to actually perform the task, and the proper attitude in which to proceed. Therefore, in order to be complete, the goal lists contained goals from all three domains. The cognitive domain included goals involving knowledge; this information was identified by determination that it would be tested by a paper and pencil exam. The psychomotor domain included content goal statements regarding skills; three questions provided guidance on the inclusion of any goal into this category. Did the content require that the student repeat and replicate the performance to develop proficiency? Was something other than a traditional classroom required? Was the content tested with other than a pencil and paper test? If one answer was affirmative, the content was considered to be psychomotor. The affective domain included attitudes, interests and values (Vogler, 1991b).

Krathwohl et al. (1984) classified affective domain

goals for general education in their Handbook 2: Affective Domain. While the goals were too general for use in this study, the ideas were used. Goals in general and, particularly, affective goals were available from Geurin's "What does Industry Look for in College Graduates?" (1971). Vogler's PEAKS CourseBuilding Software (tm) (1991a) offered affective goal suggestions. These sources were used to amass 53 affective goals that were later distributed randomly among the other course goals.

Agricultural goals, mostly too general for use in this study, had been compiled by Love (1966), and Matteson (1966). The U. S. Office of Education's Bulletin No. 4, Objectives for Vocational and Technical Education in Agriculture (1965) was of some general help. Wright, Vogler, and Curtis' (1972a-e) series in the Agriculture disciplines was a model for this research because of their complete goal lists and consistent syntax.

Particularly useful equine curriculum goals lists were available from Byrd (1975), Cruikshank (1985), Holcomb (1975) at Texas A & M University, and also Rudolph (1980) who concentrated on equine management and production. Goals from the management portion of the equine industry were available from Barnes (1979), who concentrated on equine management, and the DACUM panel Inventory of Skills for the Equine Manager (1988) at Cecil Community College. Existing programs which contributed equine curriculum goals

were Kirkwood Community College (Armstrong, 1981), Lord Fairfax Community College (Newman, 1991), and Virginia Highlands Community College (Stuska, 1991a). Kirkwood offers an Associate's degree in Equine Science Technology; Lord Fairfax and Virginia Highlands offer nine equine classes each toward Career Studies Certificates. The curricular goals developed by Ferenz (1990) for Cecil Community College's Equine Associate's degree were also used; that program was discontinued in 1991. The syntax varied among the goal sources; all goals were transformed into syntax consistent with Vogler's System (1991a, 1991b).

Once a list of hundreds of possible goals was amassed, the goals were scrutinized individually and in groups. With the help of Vogler's PEAKS (R) CourseBuilding Software (tm) (1991a), the goals were classified by domain in order to clarify the intent of each goal. The domain, or intent, was knowledge, skill or affect for each goal. Frequency and difficulty sorts of the goals, by the researcher with the help of the software, identified goals so simple that they could be included in other goals. Any goals that should be combined were included in other, broader goals. The individual goals were also scrutinized by physical manipulation of the cards on which they were written. Clusters of goals by specific task within each subject eliminated duplication, while chronological arrangement

verified completeness of the goal list. After the goals had been divided into courses, comparison of each course's goals with the average values of Vogler's System (1991a, 1991b) determined the appropriateness of the combinations of goals. The final total number of goals sent on to the respondents was 671.

The 671 goals in this list were divided into 15 courses according to typical treatment by existing equine programs. There had been no standardized division of learning material into the various courses offered by equine programs (Stuska, 1981). It was discovered through the surveys that equine educators and employers better identified with the subject breakdown of the U. S. Department of Education (1981); therefore the latter classification was utilized for this study. Table 12 shows the U.S. Department of Education's classifications in the left column, corresponding to the course title in the right column. Four of the initial titles were changed during this study; initial and final titles are listed. Goals are arranged alphabetically under each course heading; the number of goals in each course is also listed in Table 12.

Employer Population and Sample

Fifty equine employers were targeted to receive the employer survey instrument. This number was chosen to coincide with the number of associate's degree equine

Table 12

Equine Course Groupings and Number of Content Goals

| U.S. Department of Education Classification | Equine Course | |
|--|---|-----------------|
| | Title (Former Title) | No. of Goals |
| 01.01 04 Farm and Ranch Management | Equine Financial Management (Equine Management I) | 41 |
| | Equine Operational Management (Equine Management II) | 44 |
| 01.02 05 Agricultural Structures, Equipment, and Facilities | Equine Structures, Equip- ment, and Facilities (Fundamentals of Horse Management II) | 41 |
| 01.03 02 Animal Production | Equine Marketing | 58 |
| 01.05 05 Animal Training | Equine Training | 55 |
| 01.05 06 Horseshoeing | Equine Hoof Care and Farrier Science | 35 |
| 01.05 99 Agricultural Services and Supplies Other | Applied Horseback Riding | 45 |
| | Teaching Horseback Riding | 48 |
| 02.02 02 Animal Breeding and Genetics | Equine Reproduction | 43 |
| | Equine Genetics | 30 |
| 02.02 03 Animal Health | Equine Health | 68 |
| 02.02 04 Animal Nutrition | Equine Nutrition | 49 |
| | Forage and Pasture Management | 43 |
| 02.02 05 Animal Physiology | Equine Conditioning | 19 |
| 02.02 99 Animal Science Other | Introduction to Equine Science | 52 |
| | (Fundamentals of Horse Management I) | |

table continues

Equine Course Groupings and Number of Content Goals, continued

Note. The data in column 1 are from A Classification of Educational Programs (pp. 15-16) by the U. S. Department of Education, 1981, Washington, DC: National Center for Educational Statistics.

programs active when this study was begun, but 46 college programs were active at the time the results were tabulated. The total employer population was not accessible; no directory of such businesspersons is available. So, employers from many sources (judges' lists, cooperative extension service contacts, college advisory committees, advertisements, educational mailing lists, personal contacts, etc.) were chosen. These employers were qualified by virtue of active and extensive participation in the equine industry as employers, managers or supervisors. The employers were chosen to represent as many as possible of the varied facets of the equine industry. A wide geographical distribution was utilized; employers were chosen from across the United States. Among those surveyed, 4%, 24%, 20% and 52% were currently located in the West, Midwest, Mideast, and Eastern parts of the United States, respectively. Most of them had practiced their profession in at least one other location during their working careers. As many facets of the industry as possible were represented. Nearly all successful equine businesses worked under more than one category, but by strongest category, they were classified as follows. A full 16% were involved in breeding, 40% in teaching students or training horses, 12% competed in racing or some other event, and 32% were in the "other" category which

included shoeing, veterinarian, guest ranch business, etc. Both college educated and noncollege educated persons were surveyed, although the percentages were not known. The main riding styles were all represented among the employers; 36% rode (or represented) hunt seat, 20% stock seat, 10% saddle seat and the remainder, 34%, raced, drove, rode dressage, or were unknown. Most represented frequent contact categories of occupations; the focus of this study toward associate's degree equine education made this concentration appropriate.

Employer Instrumentation and Pilot Study

The employer's survey was designed to elicit a frequency and difficulty sort; the results, combined with those of the educators' surveys, allowed prioritization of the curricular content goals. Each employer was given one to six courses, depending on his or her specialties within the industry. For the goals provided, each employer was asked to check "high" or "low" for difficulty and "high" or "low" for frequency. The employers' cover letter explained that their choice for frequency should reflect how often this goal was performed on the job in relation to all other tasks performed by a two-year college equine program graduate employee. If it helped their understanding, the employers were invited to consider this a question of high or low importance instead. They were asked to check high

or low difficulty, also, for each goal, according to how difficult they felt this task was for the same average college graduate employee.

The 15 courses had been grouped according to similarity of subject in a manner that would make it likely that the employer's staff would have work duties including each of the courses mailed. For example, breeding farms could be sent both the Equine Reproduction and Equine Genetics course surveys. Course surveys grouped together were the following: group one consisted of Equine Genetics and Equine Reproduction; group two consisted of Introduction to Equine Science, Equine Structures, Equipment & Facilities, and Equine Health; group three included Equine Financial Management, Equine Operational Management, Equine Nutrition and Forage & Pasture Management; and group four with Equine Conditioning, Applied Horseback Riding, Teaching Horseback Riding, and Equine Training. Equine Marketing and Equine Hoof Care & Farrier Science were sent out as separate units either alone or in combination with other courses to employers identified as having businesses strong in these disciplines.

The survey instruments, directions and cover letter were pilot tested twice using both employers from various disciplines within the industry and lay persons. Both oral and written feedback was received.

Employer Instructions and Survey Distribution

The grouped surveys were distributed as evenly as possible across the employer population. Some employers might have received one course, while others received two of the groupings; the pool of 50 employers allowed a cross section of each of the above employer categories to receive each course instrument. In general, employers who specialized in teaching and training received the number four grouping; those who specialized in breeding received the number one group and also possibly the Equine Marketing survey. The distribution was not random, but was according to employer specialties within the horse industry.

Employer Data Collection and Recording

The initial surveys were mailed on April 2, 1992 to the 50 employers. The cover letter and one page direction sheet were included, as was return postage and a self-addressed return mailing label. The follow-up mailing of a second request letter and the same directions page was mailed July 7, 1992; return postage and a self-addressed return mailing label were included. Surveys returned a reasonable period of time after this mailing totaled 80%, and the results were tabulated. See the Appendix for cover letters, directions, and employers' survey instrument examples.

Employer Data Processing and Analysis

An employer's questionnaire sheet from each of the courses was used to tabulate the results. Frequencies were tabulated on these sheets for responses from each of the surveys returned. According to the simple majority, each goal was determined to be I high frequency/low difficulty, II high frequency/high difficulty, III low frequency/high difficulty, or IV low frequency/low difficulty. Abilities for tasks that were easy and frequently needed, priority I, were expected by the employer. Tolerance for a new employee unable to accomplish these tasks was low. Frequent but difficult actions were also expected by the employer, priority II, but their difficulty made the employer more tolerant with the recent graduate. When low frequency but difficult tasks, priority III, occurred, the employer was unlikely to expect the recent graduate to work unassisted. Last, easy tasks infrequently occurring, priority IV, were easy for the graduate to pick up on his or her own (Vogler, 1991b).

Educator Population and Sample

One educator from each of the colleges and universities that offered an associate's degree in an equine discipline was targeted to receive the educator's surveys. In some cases the educator was the head of an equine department; in other situations, he or she was an

instructor in an animal science or agriculture department. In order to maximize the survey returns, answers from any faculty member within the equine discipline were accepted. Forty-six associate's degree equine programs were active at the time the surveys were collected. The programs were listed in Table 13.

Educator Instrumentation and Pilot Study

The educator's survey was designed to elicit a domain and level sort. The domain classification was knowledge, skill or attitude of the student. This classification showed the expectation of graduates' abilities by the educators. Educators' responses to the level sort showed graduates' level of ability most commonly desired for each goal. Also included with each content goal on the survey sheet was a box to check if the educator felt the goal was not necessary. The educator's domain and level sorts, coupled with the employer's responses, allowed the researcher to prioritize the course content goals.

The 15 courses were divided into four groups according to approximate number of goals with 160 to 175 goals per group and by discipline. Equine Marketing, Equine Financial Management, and Equine Operational Management were grouped together and separately from Applied Horseback Riding and Equine Conditioning, for example. The groups were as follows: group one included Equine Genetics,

Table 13

Two-year Colleges Offering Equine Associate's Degree Curriculum

Allen County Community College, Iola, KS
Black Hawk College - East Campus, Kewanee, IL
Cazenovia College, Cazenovia, NY
Centenary College, Hackettstown, NJ
Central Texas College, Killeen, TX
Central Wyoming Community College, Riverton, WY
Colby Community College, Colby, KS
College of Southern Idaho, Twin Falls, ID
Connors State College, Warner, OK
Cooke County College, Gainesville, TX
Delaware Valley College of Science and Agriculture,
Doylestown, PA
Dodge City Community College, Dodge City, KS
Feather River College, Quincy, CA
Harcum Junior College, Bryn Mawr, PA
Hiwassee College, Madisonville, TN
Johnson and Wales University, Providence, RI
Kirkwood Community College, Cedar Rapids, IA
Lakeshore Technical Institute, Cleveland, WI
Lamar Community College, Lamar, CO
Laramie County Community College, Cheyenne, WY
Martin Community College, Williamston, NC
Merced Community College, Merced, CA
Midway College, Midway, KY
Mt. Ida College, Newton Centre, MA
Northeastern Junior College, Sterling, CO
Northwest Community College, Powell, WY
Ohio State University Agricultural Technical Institute,
Wooster, OH
Pace University at Pleasantville, Pleasantville, NY
Parkland College, Champaign, IL
Pierce College, Woodland Hills, CA
Redlands Community College, El Reno, OK
Rogers State College, Claremore, OK
Salem-Teikyo University, Salem, WV
Scottsdale Community College, Scottsdale, AZ
Shasta College, Redding, CA
Sierra College, Rocklin, CA
Southern Seminary Junior College, Buena Vista, VA
State University of New York at Cobleskill, Cobleskill, NY
State University of New York at Morrisville, Morrisville,
NY

table continues

Two-year Colleges Offering Equine Associate's Degree

Curriculum, continued

Sul Ross State University, Alpine, TX
Teikyo Post College, Waterbury, CT
University of Connecticut, Storrs, CT
University of Findlay, Findlay, OH
University of Massachusetts, Amhurst, MA
University of Minnesota Technical College at Crookston,
Crookston, MN
Wood Junior College, Mathiston, MS

Equine Marketing, Equine Financial Management, and Equine Operational Management; group two included Equine Structures, Equipment, & Facilities, Introduction to Equine Science, and Equine Health; group three included Equine Hoof Care & Farrier Science, Equine Nutrition, Forage & Pasture Management, and Equine Reproduction; and group four included Equine Conditioning, Applied Horseback Riding, Teaching Horseback Riding, and Equine Training.

The cover letter, directions and survey sheets were pilot tested by both educators and lay persons two different times. Written and oral comments were taken and suggestions incorporated into the surveys. Examples of the cover letter, directions, and educators' survey instrument are found in Appendix B.

Educator Instructions, Survey Distribution, Data Collection and Recording

With the institutions listed in order alphabetically, the survey packages were allocated in repeating order to the educators. The order was changed to allow for known strengths or emphases in certain programs. For example, programs with management classes but no riding received the first, second, or third group but not the fourth. Also, some educators requested a different group to better coincide with their program. It was anticipated that each

program would include a portion of, but not all of, the courses and course goals, and this was found to be true.

The initial surveys, dated April 2, 1992, were mailed at that time to the identified educators. The two-page direction sheet was included, as were return postage and a self-addressed return mailing label. The first request resulted in 22% responding. The follow-up mailing of a second request letter and the same directions pages was mailed July 7, 1992; return postage and a self-addressed return mailing label were included. Another 10 surveys were returned. The remaining nonrespondents were contacted by telephone during early September 1992, and these conversations were followed by a facsimile transmission requesting return of the surveys. The number of incorrectly completed educator's surveys received to date showed the need for simplification of the directions; the instructions to check only one box per goal and the invitation to view the levels as low, medium and high were included on this facsimile follow-up request. A waiting period of one and one-half months followed. A total of 30 surveys were received. The data were analyzed with this 65% return from the 46 existing programs.

Educator Data Processing and Analysis

The results of the educator's surveys were tabulated by tick marks made on master sheets. The results of those

who marked one box per goal according to directions were used. Number values were assigned to the domain and level designations as follows: C1 = 1, C2 = 2, C3 = 3, P1 = 4, P2 = 5, P3 = 6, A1 = 7, A2 = 8, and A3 = 9. This assignment was in keeping with the progressive nature of the student's attainment of the knowledge, skill and attitude domains (Vogler, 1991b). The frequencies were counted, multiplied by the numeric value for that particular domain and level, and averaged to determine the domain and level that were reported for each course goal.

CHAPTER 4: RESULTS

Overview

In chapter 4 were reported the results of the Needs-Based Curricular Content Goals for Two-Year Equine Curricula study. The results corresponded to the five research questions addressed in the study; these questions formed the basis for the four sections in chapter 4. The first section addressed research question one, which was: What were the equine industry occupations, and how were these classified? These occupations were discussed in chapter 2, and the classification list is found in Table 14 of chapter 4. The second section addressed research question two, which was: What were the two-year degree program equine curricular content goals? These goals have been determined and were listed in prioritized order in the body of chapter 4. The third section addressed research question three, which was: What were the equine curricular content goals in terms of frequency of use and difficulty of execution in the work place as rated by employers? Research question four was discussed in the fourth section; the question was: What were the equine curricular content goals in terms of domain and level as rated by educators? The frequency/difficulty and domain-level sorts for research questions three and four were conducted according to Vogler's System (1991a, 1991b), and the results are found in tabular form in chapter 4. The fifth section in

chapter 4 addressed the last research question, which was: Given the frequency and difficulty ratings by employers, and the domain and level sorts of the educators, what was the prioritized list of content goals? The prioritizations were conducted according to Vogler (1991a, 1991b), and were shown in the tables of content goals in the body of chapter 4. A summary of the affective domain goals, as rated by educators, was found in Table 59 in the last section of Chapter Four.

Research Question One: Equine Industry Occupations

The first research question was: What were the equine industry occupations, and how were these classified? The one significantly complete listing of equine occupations, American Horse Council's Educational Opportunities in the Horse Industry (no date), plus a number of articles and texts, were used to amass the occupations available. These sources were identified in chapter 2. The equine occupations were a challenge to classify because of their nature; the same occupation in different businesses may have had different tasks associated with it. Often, equine personnel performed a number of different tasks which fell under more than one occupation. Occupations in the equine industry have been classified in different ways in the literature; the classification of the Dictionary of

Occupational Titles (U. S. Department of Labor, 1991) was used for this paper, with the above-mentioned sources consulted to ensure no category of occupation was left out. The occupational categories are shown in Table 14 of chapter 4.

Research Question Two:

Two-year Equine Degree Program Curricular Content Goals

The second research question was: What were the two-year degree program equine curricular content goals? Earlier studies of equine curriculum and present equine education programs, identified in the Literature Review in chapter 2, provided a complete list of course content goals for two-year college level equine curriculum. These goals were made consistent in syntax using Vogler's System (1991a, 1991b). The 671 goals were divided into 13 subjects and 15 courses consistent with the U. S. Department of Education classification (1981). These goals were presented to equine educators in each of the 46 institutions offering two-year equine degree curriculum for domain and level sorts and to selected industry-wide equine employers for difficulty and frequency data according to research questions three and four. The prioritized content goals were found in Tables 15 through 59 in chapter 4.

Research Question Three:

Frequency/Difficulty Sorts by Employers

Research question three is: What were the equine curricular content goals in terms of frequency of use and difficulty of execution in the workplace as rated by employers? Fifty equine industry employers were asked to rank the 671 goals in terms of the frequency with which two-year equine education graduate employees might encounter them on the job. The relative difficulty in performance on the job of each goal was also elicited. Forty, 80%, responded. Results were tabulated, and the goals ranked into four categories of descending priority according to the PEAKS Coursebuild System (Vogler, 1991a, 1991b; see Table 2 in chapter 1). The employer survey results formed the answers to research question three. The tabulated results, showing percent of goals in each category in each course, are found in Tables 15 through 59 in this chapter. Within each of the four Roman numeral prioritizations, the goals were listed alphabetically.

The highest priority goals, I, had been ranked high frequency and low difficulty by the employers. Employers felt the goals in this category were often needed on the job and were relatively easy to do; they expected to see these abilities in their new employees. It was decided that equine program graduates must have these abilities.

The second highest priority goals, II, were those

Table 14**Needs-Based Curricular Content Goals**

| Three-Digit Occupational Group | Category and Occupations |
|--------------------------------------|---|
| 001 | architectural occupations building trades workers architects |
| 070 | medical and health fields workers medical/research laboratory personnel |
| 073 | veterinarians veterinary hospital assistant, veterinary hospital worker |
| 076 | recreational therapists handicapped riding instructor/assistant/program manager |
| 079 | related medical fields acupressurist acupuncturist veterinary technician |
| 090 | instructors faculty - college or university county-agricultural agent extension service specialist feed and farm management advisor Four-H club agent graduate assistant instructor, extension research laboratory personnel riding instructor |
| 097 | occupations in vocational education technical school instructor |
| 130 | writers journalist, publisher prose, fiction, nonfiction writer technical publications writer editors |
| 143 | photographers photojournalists |

table continues

Categorized Equine Industry Occupations, continued

Three-Digit Category
Occupational and
Group Occupations

- 144 artists - paint, sculpture
- 153 recreational sports/athletics workers
animal trainer
artist
breed association staff, other association staff
camp counselor
competition manager, competition personnel, announcer
competition publicity, competition sponsorship
driver
first aid personnel
guest ranch wrangler
horse exerciser
huntsman, hunt staff, whipper-in, field master
jockey, exercise rider
judge, technical delegate, steward
hoof and shoe inspector
horse show coach, trainer, rider
professional athlete
race track personnel, horse inspector
radio/TV announcer
rodeo manager, announcer, performer, stock contractor
show horse rider or driver
sports instructor
stable attendant; maintenance worker; stall cleaner
stable manager, assistant stable manager
stunt performer
- 180 agricultural managers & officials
farm manager
- 194 film and videotape recording fields
educational/sales video production
- 250 sales agents
feed marketing, feed sales
horse buyer/importer/seller/consultant
horse/farm/liability insurance personnel
publicity agent
real estate personnel
- 290 sales clerks

table continues

Categorized Equine Industry Occupations, continued

| Three-Digit Occupational Group | Category and Occupations |
|--------------------------------------|--------------------------------|
|--------------------------------------|--------------------------------|

| | |
|-----|--|
| 294 | auction staff auctioneer/auction staff |
| 349 | amusements/recreation staff animal ride attendant coach driver |
| 370 | law enforcement officers animal treatment investigator brand inspector police officer |
| 410 | livestock workers accountant artificial inseminator artificial breeding technician bloodstock agent broodmare manager cowpuncher dentist farm manager farm worker, animal caretaker feed manufacturer foal care/foaling crew groom horseshoer/farrier horse tender horse trainer livestock rancher, supervisor office personnel, bookkeeper, computer programmer pedigree analyst pest control specialist/sales ranch manager stable attendant; maintenance worker; stall cleaner stable manager, assistant stable manager stallion manager/keeper supervisor, breeding ranch supervisor, stock ranch |
| 418 | animal service occupations horseshoer artificial insemination staff |

table continues

Categorized Equine Industry Occupations, continued

| Three-Digit Occupational Group | Category and Occupations |
|--------------------------------------|--------------------------------|
|--------------------------------------|--------------------------------|

732 designers, fabricators, repairers of sporting goods,
tack, equipment, clothing

783 leather workers
harness maker, repairer
leather worker supervisor
saddle maker, repairer

904 truck drivers
horse van driver

919 horse and wagon drivers
horse drawn/mounted tour guide
packer, guide

Note. Numbered categories are three-digit occupational groups from Dictionary of Occupational Titles (1 pp. 13-289, 2 pp. 750-931) by U. S. Department of Labor, 1991, Washington, DC: Employment and Training Administration.

ranked high in frequency of use and high in difficulty of achievement by employers. College programs preparing graduates with these skills would give the employees an edge over those without college preparation and therefore justify the higher education. The ability to perform these goals well would be looked up with some leniency by employers, but employers would expect college graduates to have some capability in these items. Goals in the I and II priority sections were considered the foundation of the college educational experience.

The third highest priority goals, III, were ranked as low frequency and high difficulty. This meant that employers would not expect employees to show this knowledge, these skills, or these attitudes as often as higher priority goals. The high difficulty rating by employers of these goals indicated that college education would still be useful in preparation for these on-the-job tasks. Therefore, the college should provide these skills to its better students after they have completed the I and II priority work; individualized instruction might be used.

The fourth highest priority goals, IV, were those marked low frequency and low difficulty. Low frequency of use on the job, and low difficulty of achievement, made these goals less important for the employee to perform. These skills could be taught by the employer on the infrequent occasions of use. They were relatively easy for

the student to learn, and could even be picked up on his or her own. Goals in this category could be used in independent study work or for projects after the previous work is completed; they were not essential curriculum. Table 2 in chapter 1 showed the details of this priority breakdown.

Goals which received the majority of employer responses in the "don't know or not necessary" box on the surveys were deleted from the statistics in the course tables, eliminated in the goal list per course, and were listed in Appendix A. The results of the employer sorts were found in every third table, beginning with Table 15 and ending with Table 59; each set of three tables involved one of the 15 equine courses.

Research Question Four:

Domain-Level Sorts by Educators

Research question four was: What were the equine curricular content goals in terms of domain and level as rated by educators? The 671 content goals from research question two, divided into 15 courses, were distributed to the 46 two-year associate's degree program equine educators. An example instrument sheet is shown in Appendix B. Thirty educators, 65%, responded. The educators sorted the goals by domain and level; this sort

showed the extent of knowledge expected by the educators of their graduates. The educator sort formed the basis for the answers to research question four. The numeric results of the fourth research question are found every third table, beginning with Table 16 and ending with Table 58; the findings are discussed in each course section in the body of chapter 4.

The educators' data took the form of a domain and level sort. The extent of knowledge expected of graduates by educators took the form of three domains: "C," "P," and "A." "C" signified the cognitive domain of knowledge. Vogler (1991b) defined cognitive as dealing with the student's knowledge, and explained that this knowledge is the forerunner to the other two domains in a cumulative fashion. According to Vogler's System (1991a, 1991b), the student would be expected to hold knowledge at numerically labeled increasing domains: (1) to know facts, possibly additionally to (2) understand concepts, and even additionally to (3) apply this knowledge in a paper-and-pencil situation. These skills were most often taught in the classroom; knowledge was likely tested with paper and pencil examinations.

"P" signified the psychomotor, or skill, domain. In addition to knowledge of the subject, the student was expected to hold ability at one or more of the successively numbered psychomotor domains: (1) to imitate the skill

under the watchful eye of the instructor, additionally possibly to (2) practice this technique on his or her own, and maybe additionally to (3) perform the skill as a habit which took the student about two times as long as it would take the instructor or a seasoned employee. Psychomotor goals required additional teaching materials and would be practiced by the students as skills. These may be taught in the classroom by other than lecture mode, in the laboratory, or by practical experience at the stable.

"A" designated the affective, or attitude, domain. According to Vogler (1991b), in addition to knowledge and skill abilities, the student would possess one or more of the successive levels of affective ability: (1) to show awareness, possibly be able to (2) distinguish attitudes, and maybe additionally to (3) integrate the attitude into his or her own personality. Affective domain goals were extremely important, and the student who had acquired these abilities was sought after by employers. These affective attributes, however, were usually difficult to teach for many instructors; many students will continue to learn these concepts well after they enter the equine industry.

Within each of the three domains, the three numeric levels (Vogler, 1991b) of complexity were: (1) relatively simple, (2) moderate, and (3) relatively complex. These rankings were made by the responding educators, and showed the

extent of competency the educators felt graduates should have. These rankings may serve as guidelines within the educational sphere and equine industry for educational standards. These results are found in every third table, beginning with Table 16 and ending with Table 58 in this chapter; each set of three tables constituted the data for one of the 15 courses.

Research Question Five

Combined Employer, Educator and PEAKSystem Results: Prioritized List of Two-year College Degree Equine Program Content Goals by Course

Research question five was: Given the frequency and difficulty ratings by employers, and the domain and level sorts of the educators, what was the prioritized list of content goals? This question involved utilization of the employers' frequency and difficulty sorts and the educators' domain and level ratings to determine a prioritized curriculum for a two-year equine degree program curriculum. The results of this question were arranged in 15 courses, corresponding with the U.S. Department of Education classification of educational programs (1981); a listing of the 15 courses was found in Table 12 in chapter 3. The body of chapter 4 was divided into the 15 courses. Each course had a section of findings, followed by a table of educator's results statistics, a table of employer's

results statistics, and a table of that course's goals in numeric categories of priority and alphabetical arrangement of goals. This pattern was repeated 15 times to include each of the 15 courses.

The number of semester credit hours necessary for each course was suggested based on SACS' (1991) requirement of 30 semester hours of specialty program credit for an associate's degree and Vogler's (1991a) recommendation that approximately 15 content goals added to one semester hour of credit. SACS (1991) did not make a distinction between lecture and laboratory credit hours, but Vogler (1991a) suggested goals be psychomotor for two-thirds of the content of an occupationally oriented program. This suggestion was consistent with his definition of and three tests for psychomotor goals. It is a pedagogical decision where to teach - classroom, laboratory, or stable; each instructor will make his or her own choice. While all laboratory work is not necessarily stable work, all stable work is by definition laboratory work.

Equine Financial Management

Equine Financial Management included 35 goals; 31 were found in the I through III priority categories. This was a two or three semester hour credit course. The majority, 60%, of the goals were considered high frequency; these were valued highly by employers. The subject matter of

this course, and the high number of graduates entering management (Stuska, 1991c), made this course a requirement for graduates. Its I priority goals should be passed by all students. The II priority goals represented the skills the students were enrolled in college to master; all students should attain these before graduation. The lower level management students will attain the II goals, while the higher level management, brighter students, will attain these and the III category goals. The IV category goals may be picked up on the job. The majority of course goals, 71%, were psychomotor in domain and would be well presented in one or two semester credit hours of laboratory, but not necessarily stable, work. The subject matter would be appropriate in difficulty for a second year course, and would be more meaningful after mathematics and in conjunction with accounting or economics course work (see Tables 15, 16 and 17).

Table 15 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Financial Management as
Rated by Employers

| | Frequency | Difficulty | | Total |
|-------|-----------|------------|------|-------|
| | | Low | High | |
| High | | 29 | 31 | 60 |
| Low | | 11 | 29 | 40 |
| Total | | 40 | 60 | |

Note. N = 9. The values represented percentages of 35 total goals.

Table 16 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Financial Management as
Rated by Educators

| Level | Domain | | | Total | |
|-------|---------------|-------------|--------------|---------------|----|
| | Cognitive | Psychomotor | Affective | | |
| 1 | Fact | 0 | Imitation 11 | Awareness 20 | 31 |
| 2 | Understanding | 0 | Practice 29 | Distinguish 3 | 31 |
| 3 | Application | 6 | Habit 31 | Integrate 0 | 37 |
| Total | | 6 | 71 | 23 | |

Note. N = 6. The values represented percentages of 35 total goals.

Table 17

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Financial Management

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | dispense supplies | P | 3 |
| | evaluate purchasable equipment | P | 2 |
| | maintain "idea" notebook | P | 3 |
| | maintain horse production records | A | 1 |
| | maintain supplies inventory | A | 1 |
| | operate farm vehicles & equipment | P | 3 |
| | organize work | P | 3 |
| | plan daily horse exercise | P | 2 |
| | show independence | A | 1 |
| | show initiative | A | 2 |
| II Second priority | | | |
| | analyze cash flow | P | 2 |
| | contrast horse production costs & profits | P | 2 |
| | delineate safe chemical use & storage | P | 3 |
| | develop business plan | P | 2 |
| | develop self confidence | A | 1 |
| | display professional ethics | A | 1 |
| | employ safe farm equipment use techniques | P | 3 |
| | identify potential farm safety hazards | P | 3 |
| | maintain farm vehicles & equipment | P | 2 |
| | plan ahead | A | 1 |
| | project maturity | A | 1 |
| III Third priority | | | |
| | cite new business planning and starting steps | P | 1 |
| | collect client owed funds | P | 3 |
| | compare insurance policys' coverage | C | 3 |
| | consult financial planning (accountants) personnel | C | 3 |
| | determine board, breeding, sales, lesson, etc. prices | P | 2 |
| | develop financial plan | P | 3 |
| | develop horse farm budget | P | 3 |
| | follow IRS business guidelines | P | 2 |
| | illustrate business tax principles | P | 1 |

table continues

Prioritized Content Goals for Equine Financial Management,
continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| III Third priority, continued | | | |
| | maintain up-to-date IRS-suitable financial records | P | 2 |
| IV Lowest priority | | | |
| | evaluate new business trends | P | 1 |
| | pay bills | P | 3 |
| | perform equipment inventory | P | 2 |
| | produce horse and business insurance applications | P | 1 |

Note. This table contained 35 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Operational Management

Equine Operational Management's 41 goals included 37 goals in the first three priority categories; this was a three semester credit hour course. These goals were 80% high frequency, pointing to necessary achievement, particularly due to the high number of two-year equine degree programs' graduates in management occupations (Stuska, 1991c). The level I priority goals in this course were a challenge for traditional students to master but were likely to be routine for those who attended for job advancement reasons. The II priority goals were more difficult but equally vital for the average student. The best students would work toward the goals in the III category, while the four goals in the IV category were not vital enough to be addressed in the normal course work. The majority of course goals, 63%, were in the psychomotor domain; these goals were best presented in the classroom first and then practiced in the laboratory or stable. The subjects in this course were a logical sequence to Introduction to Equine Management and, if presented before Equine Financial Management, would give a good base for the latter course. Second or third term offerings of Equine Operational Management would be ideal for these reasons. The goals in this course were shown in Table 20, with the statistics in Tables 18 and 19.

Table 18 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Operational Management as
Rated by Employers

| Frequency | Difficulty | | Total |
|-----------|------------|------|-------|
| | Low | High | |
| High | 59 | 22 | 80 |
| Low | 10 | 10 | 20 |
| Total | 68 | 32 | |

Note. N = 9. The values represented percentages of 41 total goals.

Table 19 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Operational Management as
Rated by Educators

| Level | Domain | | | Total |
|-------|-----------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 0 | Imitation 20 | Awareness 22 | 41 |
| 2 | Understanding 7 | Practice 22 | Distinguish 2 | 32 |
| 3 | Application 5 | Habit 22 | Integrate 0 | 27 |
| Total | 12 | 64 | 24 | |

Note. N = 6. The values represented percentages of 41 total goals.

Table 20

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Operational Management

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | apply brands, bill of sale, ownership, and transportation laws | P | 2 |
| | assist farrier | P | 3 |
| | create horse performance records | P | 2 |
| | demonstrate constructive fellow professionals interactions | P | 3 |
| | display humane attitude | A | 1 |
| | display professional ethics | A | 2 |
| | evaluate job performance | P | 1 |
| | keep "idea" notebook | A | 1 |
| | keep employee records | P | 1 |
| | maintain clean, presentable facilities | P | 3 |
| | maintain good vendor relations | P | 2 |
| | maintain property appearance | A | 1 |
| | observe fellow professionals' abilities | P | 3 |
| | perform general office work | P | 2 |
| | prepare employee schedules | P | 1 |
| | produce horse registration and brand records | P | 3 |
| | set good staff example | A | 1 |
| | show constructive veterinarian interaction | A | 1 |
| | show detail attentiveness | A | 1 |
| | show employee hiring principles | C | 3 |
| | support open employee communication | P | 2 |
| | sustain healthy stable climate | A | 1 |
| | teach stall cleaning methods | P | 3 |
| | use legal board, training, and breeding contracts | P | 3 |
| II Second priority | | | |
| | appreciate non-financial horse business records importance | P | 1 |
| | demonstrate appropriately voiced self confidence | A | 1 |
| | establish employee performance standards | C | 2 |
| | evaluate personnel needs | C | 2 |
| | extend constructive employee criticism | P | 1 |
| | prescribe horse business lawsuit precautions | P | 1 |

table continues

Equine Operational Management, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| <hr/> | | | |
| II | Second priority, continued | | |
| | show employee supervision principles | P | 2 |
| | synthesize personal leadership | A | 1 |
| | utilize horse exercise needs knowledge | P | 3 |
| III | Third priority | | |
| | conduct employee meetings | P | 2 |
| | conduct personnel interviews | P | 2 |
| | design employee incentives | C | 2 |
| | terminate employees | C | 3 |
| IV | Lowest priority | | |
| | consult contract writing legal advisor | P | 1 |
| | create horse production records | P | 2 |
| | critique manure handling and storage methods | P | 3 |
| | prepare transportation schedule | P | 1 |

Note. This table contained 41 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Structures, Equipment, and Facilities

Equine Structures, Equipment, and Facilities was a two semester credit hour course; it consisted of 31 goals, 27 of which were in the I, II and III categories. The importance of these goals to nearly all of the occupations made this course a requirement. See Table 14 for the list of occupations. Also, a number of two-year program graduates worked in occupations requiring these skills (Stuska, 1991c). Within the course, the I priority skills were review for those students who already had some industry experience and could be acquired in the practical part of the course; these were mostly psychomotor goals. The II priority goals were necessary for all students, as were the safety-related goals under the III classification. The remaining III goals were addressed by the best students after completion of the earlier work. The IV priority goals may be left out at the educator's discretion. The necessity of classroom work was shown by the 58% cognitive goals in this course. The 42% psychomotor goals in this subject indicated practical stable work must be included. The II and III groupings included 61% in these high difficulty categories, therefore this course should not be offered as a first term course. Data are found in Tables 21 through 23.

Table 21 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Structures, Equipment,
and Facilities as Rated by Employers

| | Frequency | Difficulty | | Total |
|-------|-----------|------------|------|-------|
| | | Low | High | |
| High | | 26 | 26 | 52 |
| Low | | 13 | 35 | 48 |
| Total | | 39 | 61 | |

Note. N = 9. The values represented percentages of 31 total goals.

Table 22 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Operational Management as
Rated by Educators

| Level | Domain | | | Total |
|-------|------------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 6 | Imitation 39 | Awareness 0 | 45 |
| 2 | Understanding 29 | Practice 3 | Distinguish 0 | 32 |
| 3 | Application 23 | Habit 0 | Integrate 0 | 23 |
| Total | 58 | 42 | 0 | |

Note. N = 6. The values represented percentages of 31 total goals.

Table 23

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Structures, Equipment, and Facilities

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | critique exercise areas | C | 3 |
| | identify stable area hazards | P | 1 |
| | maintain training surface | C | 3 |
| | perform preventative maintenance | P | 1 |
| | perform routine repairs | P | 1 |
| | perform routine maintenance checks | P | 1 |
| | repair unsafe facility conditions | P | 1 |
| | report unsafe facility conditions | P | 1 |
| II Second priority | | | |
| | appreciate equipment | C | 2 |
| | compare facility component costs | P | 1 |
| | conduct periodic safety inspections | C | 3 |
| | establish written safety procedures | C | 2 |
| | maintain physical facilities | P | 1 |
| | maintain property, equipment, horse, and people safety standards | P | 1 |
| | manage manure | C | 3 |
| | manage water supply | C | 2 |
| III Third priority | | | |
| | categorize equine industry jobs | C | 2 |
| | compare fencing options | P | 1 |
| | critique physical stable location criteria | C | 3 |
| | delegate work | P | 1 |
| | develop property, equipment, and facility maintenance schedule | C | 2 |
| | establish emergency procedures | C | 3 |
| | paraphrase exercise area requirements | C | 2 |
| | perform fire protection steps | C | 2 |
| | plan fire emergency steps | P | 1 |
| | plan safe chemical storage | C | 1 |
| | simplify stable ventilation requirements | C | 2 |

table continues

Equine Structures, Equipment, and Facilities, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| IV Lowest priority | | | |
| | choose stall bedding | P | 2 |
| | explain rodent control | C | 2 |
| | explain stable furnishing requirements | C | 1 |
| | request building materials costs | C | 3 |

Note. This table contained 31 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Marketing

Equine Marketing's 58 goals included 52 in the three highest priority categories; this course could amount to three or four semester credit hours. The majority of the goals, 60%, were ranked in the high frequency category; this was an important course. The 47% of goals in the psychomotor domain was the highest of all the courses; practical application of the work should be included throughout the course. The high number of psychomotor goals in the I priority category, and their subject matter, pointed to skills that might be learned at the cognitive level in the classroom then perfected at the psychomotor level during an internship. Priority II goals were general goals that may also be learned and perfected in this way. The priority III goals developed with the student's experience on the job, while the IV goals were less important and may be acquired on the student's own. The second highest affective domain percent for all the courses, 26%, appeared here. With more than one quarter of the goals affective, and 100% of the affective goals in the I and II priority categories, this course material was difficult but important to teach. Acquisition of these affective goals by the student, in at least the lowest levels, was essential to the kind of graduate success in the equine industry that was desirable for the college's good reputation. Therefore, these goals must be stressed.

Because of the number of affective goals, the place in the curriculum of this course could be left up to the student and his or her advisor. This course should not be offered to the first term student, except in retraining situations, because of the knowledge of the industry that was required; an increased knowledge of the industry should first be acquired in the other early curriculum equine courses (see Tables 24, 25 and 26).

Table 24 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Marketing as Rated by Employers

| | Frequency | Difficulty | | Total |
|-------|-----------|------------|------|-------|
| | | Low | High | |
| High | | 33 | 28 | 60 |
| Low | | 10 | 29 | 40 |
| Total | | 43 | 57 | |

Note. N = 10. The values represented percentages of 58 total goals.

Table 25 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Marketing as Rated by Educators

| Level | Domain | | | Total | |
|-------|---------------|-------------|--------------|----------------|----|
| | Cognitive | Psychomotor | Affective | | |
| 1 | Fact | 2 | Imitation 21 | Awareness 16 | 38 |
| 2 | Understanding | 3 | Practice 14 | Distinguish 10 | 28 |
| 3 | Application | 22 | Habit 12 | Integrate 0 | 34 |
| Total | | 28 | 47 | 26 | |

Note. N = 5. The values represented percentages of 58 total goals.

Table 26

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Marketing

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | attend clients' competitions | P | 3 |
| | complete sales paperwork | C | 3 |
| | display visitor hospitality | A | 1 |
| | evaluate sale horse's pedigree | C | 3 |
| | exhibit stock | P | 2 |
| | exhibit professional cooperation | A | 1 |
| | handle telephone and mail inquiries | P | 2 |
| | keep "idea" notebook | P | 2 |
| | obey competition rules | P | 2 |
| | observe competitors | P | 3 |
| | observe entire industry | P | 3 |
| | observe fellow professionals' abilities | A | 1 |
| | record potential clients | P | 3 |
| | schedule client visits | P | 1 |
| | show honesty | A | 2 |
| | show ethical competition behavior | A | 2 |
| | show sportsmanlike competition behavior | A | 2 |
| | support horse industry | A | 1 |
| | utilize written sales and breeding contracts | P | 1 |
| II Second priority | | | |
| | demonstrate self confidence | P | 3 |
| | display professional ethics | A | 1 |
| | embody confidence | A | 1 |
| | encourage expanded industry products and services market | P | 1 |
| | evaluate sale horse's accomplishments | C | 3 |
| | exhibit professionalism | A | 2 |
| | identify horse purchase methods | C | 3 |
| | identify horse sales methods | C | 2 |
| | illustrate ethics | A | 1 |
| | maintain clean presentable facilities | A | 1 |
| | maintain entire industry interests | P | 2 |
| | maintain good public relations | A | 2 |
| | maintain property appearance | A | 1 |
| | market self | A | 2 |

table continues

Equine Marketing, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| II Second priority, continued | | | |
| | pursue client contacts | P | 3 |
| | utilize veterinary soundness exam results | C | 3 |
| III Third priority | | | |
| | advertise business | P | 3 |
| | analyze horse sales profit margin | P | 1 |
| | analyze stallion service sales profit margin | P | 1 |
| | choose horse purchase business plan | C | 3 |
| | close horse sale | P | 1 |
| | coach competing clients | C | 3 |
| | compare business marketing methods | P | 1 |
| | compare stallion marketing methods | C | 3 |
| | construct business advertising program | C | 3 |
| | consult horse buying professional | P | 1 |
| | critique horse sales advertisements | C | 3 |
| | critique stallion marketing advertisements | C | 3 |
| | cultivate press' interest | P | 2 |
| | judge horse show classes | P | 2 |
| | paraphrase offspring performance incentives | C | 1 |
| | prepare competition schedules | P | 1 |
| | produce promotional and sales videos | P | 1 |
| IV Lowest priority | | | |
| | assemble promotional displays | P | 1 |
| | attend horse sales | P | 2 |
| | deliver public horse lectures | P | 1 |
| | monitor advertising results | C | 3 |
| | register competition horses | C | 3 |
| | write news releases | C | 2 |

Note. This table contained 58 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Training

Educator responses indicated that some programs do not offer Equine Training curriculum; this course could be optional based on the job interests and skills of the student and the focus of the degree program. For example, students who worked toward limited contact occupations may not need this course, but 12 to 14 of the 20 two-year program educators who responded to Stuska's survey (1991c) indicated that they had graduates working as trainers. When Equine Training is offered, the goals in the I and II priority categories must be included. Category I goals were the basic abilities that were absolutely necessary for training. The majority of students did not enter college with these skills and so must gain them; classroom sessions to learn the cognitive backgrounds of these goals followed by the horse experience necessary to achieve the psychomotor proficiency was necessary. Category II goals were the meat of the course, but fulfillment of these was a little ambitious. The best students may not get past the II goals, but if they do, the III goals will be useful additional work. Equine training included 54 goals. The 51 goals which were in the I, II and III priority categories and the progressive nature of the skills showed the need for two successive semesters of Equine Training totaling three or four semester credit hours. Nearly three-fourths, 72%, of the 54 goals were high frequency,

which showed the importance to employers of these skills for work with horses. This course included the second highest percent of psychomotor goals of all courses, 69%. Work with horses would be required in the curriculum for most of these goals. Twenty-eight percent of the goals were cognitive in domain, which showed the need for classroom work as well. By definition, psychomotor goals required cognitive understanding as a background; this background may be achieved in the class room. Applied Horseback Riding would be a necessary prerequisite. Students who did not do well in the Riding course should be advised away from attempting training as a career but they would still benefit from the course because the principles may be applied whenever the student works with horses. These data are shown in Tables 27 through 29.

Table 27 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Training as Rated by
Employers

| | Frequency | Difficulty | | Total |
|-------|-----------|------------|------|-------|
| | | Low | High | |
| High | | 43 | 30 | 72 |
| Low | | 6 | 22 | 28 |
| Total | | 48 | 52 | |

Note. N = 10. The values represented percentages of 54 total goals.

Table 28 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Training as Rated by
Educators

| Level | Domain | | | Total |
|-------|-----------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 13 | Imitation 39 | Awareness 2 | 54 |
| 2 | Understanding 0 | Practice 15 | Distinguish 0 | 15 |
| 3 | Application 15 | Habit 15 | Integrate 2 | 31 |
| Total | 28 | 69 | 4 | |

Note. N = 6. The values represented percentages of 54 total goals.

Table 29

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Training

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | apply horse restraints | P | 3 |
| | communicate training project goals and progress | C | 1 |
| | continue student's training method education | C | 1 |
| | discern proper and improper horse behavior | P | 3 |
| | display proper horse handling attitude | A | 3 |
| | exhibit safe work practices | P | 2 |
| | follow industry training level standards | P | 2 |
| | handle horse's feet | P | 2 |
| | identify tack and equipment parts & function | C | 3 |
| | implement training program | P | 1 |
| | incorporate cavalletti | P | 2 |
| | longe green horse | P | 1 |
| | show effective riding position | P | 2 |
| | use protective horse equipment | P | 1 |
| | use training equipment | P | 1 |
| | use voice aids | P | 1 |
| | utilize ethical training methods | P | 3 |
| | utilize grooming equipment | P | 1 |
| | utilize horse sense | P | 3 |
| | utilize protective boots & wraps | P | 1 |
| | utilize written training contracts | C | 3 |
| | value horse comfort | P | 3 |
| | value quality work | P | 3 |
| II Second priority | | | |
| | apply horse training psychology | P | 3 |
| | assess horse reactions | P | 2 |
| | avoid training-related horse injuries | C | 1 |
| | complete promised training project | C | 1 |
| | detect training-related horse injuries | P | 3 |
| | explain training evasions | C | 3 |
| | halter break horse | P | 1 |
| | identify progressive horse training stages | P | 1 |
| | long line green horse | P | 1 |
| | saddle green horse | P | 1 |

table continues

Equine Training, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| II Second priority, continued | | | |
| | show horse's current abilities | P | 1 |
| | teach bit response | P | 1 |
| | tie train green horse | P | 1 |
| | train recently backed horse | P | 1 |
| | use bits and biting expertise | P | 2 |
| | utilize horse senses and instincts | A | 1 |
| III Third priority | | | |
| | develop written training contracts | C | 1 |
| | evaluate athletic conformation | C | 1 |
| | evaluate horse's potential development | P | 2 |
| | explain halter breaking methods | C | 3 |
| | gentle green horses | C | 3 |
| | ground drive unriden green horse | P | 1 |
| | perform reining training | C | 3 |
| | perform specialized event training | C | 3 |
| | polish green-broke horse | P | 1 |
| | repair training equipment | P | 1 |
| | select training prospects | P | 1 |
| | trailer train horse | P | 1 |
| IV Lowest priority | | | |
| | choose training facilities & area | P | 1 |
| | determine training fees | C | 1 |
| | pony green horse | C | 3 |

Note. This table contained 54 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Hoof Care and Farrier Science

Equine Hoof Care and Farrier Science included 34 goals; 30 of these goals were ranked in the top three priority categories. With this number of goals, this course could be presented as a two or three semester credit hour course. This course contained essential skills in the I, II, and III categories. The majority, 76%, of the goals were rated high frequency by employers; these I and II category goals were often used on the job and therefore were necessary for graduates to know. Also, 53% were ranked high frequency and low difficulty; this meant that more than one half of the goals fell into the I category. The I priority skills would not likely be present in incoming students unless the students had worked in the industry and were attending college for further training; these and the II priority skills would need to be addressed. The subject matter of the III goals suggested that all students be exposed to them; the better students might look into these topics more closely. The IV goal "review horse limb anatomy" would be useful for remedial students, as this information would have been addressed in the Introductory course. The concepts addressed in Equine Hoof Care and Farrier Science were predominantly, 62%, cognitive, which gave this course a classroom training emphasis. The 29% psychomotor goals were to be achieved at the first level only; this was a theory class and not a

horseshoeing class. Survey results showed that graduates were not expected to actually shoe horses on a regular basis. Instead, they were required to be able to interact competently with the professional farrier while performing routine hoof care. Stuska (1991c) found only six of the 20 two-year programs with graduates who worked as farriers; the specialized skills for this occupation would likely be learned in a special school. However, nearly all occupations required some knowledge of horse hoof care. The large percent high frequency and low difficulty goals made this an ideal first year course. The data were shown in Tables 30, 31 and 32.

Table 30 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Hoof Care & Farrier
Science as Rated by Employers

| Frequency | Difficulty | | Total |
|-----------|------------|------|-------|
| | Low | High | |
| High | 53 | 24 | 76 |
| Low | 12 | 12 | 24 |
| Total | 65 | 35 | |

Note. N = 11. The values represented percentages of 34 total goals.

Table 31 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Hoof Care and Farrier
Science as Rated by Educators

| Level | Domain | | | Total |
|-------|------------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 0 | Imitation 18 | Awareness 3 | 21 |
| 2 | Understanding 15 | Practice 9 | Distinguish 3 | 26 |
| 3 | Application 47 | Habit 3 | Integrate 3 | 53 |
| Total | 62 | 29 | 9 | |

Note. N = 6. The values represented percentages of 34 total goals.

Table 32

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Hoof Care and FarrierScience

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | appreciate competent shoeing | C | 3 |
| | attend industry events, seminars | C | 3 |
| | balance hooves | P | 1 |
| | cold shape shoes | C | 3 |
| | decide shoeing necessity | P | 2 |
| | demonstrate shoe removal | P | 1 |
| | desire horse well-being | P | 1 |
| | determine shoeing frequency | P | 1 |
| | display dependability | A | 2 |
| | drive and clench nails | C | 2 |
| | embody neatness | A | 1 |
| | establish professional contacts | A | 3 |
| | exhibit safe work habits | P | 3 |
| | prepare unshod hoof | C | 2 |
| | prescribe proper hoof care | P | 2 |
| | select farriers tools and equipment | C | 3 |
| | select proper size shoe | C | 3 |
| | shoe different breeds | C | 2 |
| II Second priority | | | |
| | analyze gaits movement | C | 3 |
| | apply hoof and leg physiology | C | 3 |
| | avoid hoof preparation and shoeing faults | P | 1 |
| | critique leg and hoof conformation | C | 3 |
| | diagnose lameness | C | 2 |
| | discern leg and hoof conditions/diseases | C | 3 |
| | shoe different horse uses | C | 3 |
| | utilize appropriate horse restraints | P | 1 |
| III Third priority | | | |
| | apply hoof pads | C | 3 |
| | manipulate horses feet | P | 2 |
| | select and apply corrective shoes | C | 3 |
| | treat hoof and leg conditions | C | 3 |

table continues

Equine Hoof Care and Farrier Science, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| IV Lowest priority | | | |
| | appreciate shoeing history | C | 2 |
| | discern incorrect hoof and leg conformation | C | 3 |
| | review horse limb anatomy | C | 3 |
| | utilize clips | C | 3 |

Note. This table contained 34 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Applied Horseback Riding

More than three quarters, 78%, of the goals in Applied Horseback Riding were psychomotor in domain and involved work directly with horses; this was the highest percent of psychomotor goals in any course and labels this as a laboratory/stable course. The few cognitive goals could be presented in a classroom setting or along with the psychomotor skills at the stable. Eighteen percent of the goals were listed in the affective domain. While making up only one-fifth of the goals, these attitudes were vitally important for the well being of the horse and must be emphasized to all riders regardless of their ultimate interest. Students who worked toward limited contact occupations might not need the Applied Horseback Riding course. A limited number of their employers were polled in this study. The majority of equine graduate students will, however, need this series, as shown by the employers surveyed rating 100% of the goals high frequency. This was the highest course percent, by 10 percentage points, of high frequency goals. While riding may not be in the job descriptions of many of the occupations, an understanding of this facet of the industry was shown to be important. Also, many who have acquired equine degrees will not ultimately work in the industry, but will retain horses as a satisfying hobby. This course provided a lifetime skill for such students, and for students outside the degree

program who were attracted to these courses particularly if riding filled physical education requirements. Fees from students outside the degree program helped with the high overhead expenses of a riding program. With the progressive nature of the skills included in Applied Horseback Riding, the 45 goals would be best presented as four successive terms of one semester credit hour laboratory each. The I priority skills would need to be reviewed, even if the student entered college with them. Most students would need much practice on these concepts. The II priority goals were progressive after the Is, and would be suitable content for the third and fourth terms' offerings (see Tables 33, 34 and 35).

Table 33 Needs-Based Curricular Content Goals
Percentages of Content Goals for Applied Horseback Riding as
Rated by Employers

| | Frequency | Difficulty | | Total |
|-------|-----------|------------|------|-------|
| | | Low | High | |
| High | | 67 | 33 | 100 |
| Low | | 0 | 0 | 0 |
| Total | | 67 | 33 | |

Note. N = 10. The values represented percentages of 45 total goals.

Table 34 Needs-Based Curricular Content Goals
Percentages of Content Goals for Applied Horseback Riding as
Rated by Educators

| Level | Domain | | | | | | Total |
|-------|---------------|---|-------------|----|-------------|----|-------|
| | Cognitive | | Psychomotor | | Affective | | |
| 1 | Fact | 0 | Imitation | 36 | Awareness | 7 | 42 |
| 2 | Understanding | 2 | Practice | 31 | Distinguish | 9 | 42 |
| 3 | Application | 2 | Habit | 11 | Integrate | 2 | 16 |
| Total | | 4 | | 78 | | 18 | |

Note. N = 5. The values represented percentages of 45 total goals.

Table 35

Needs-Based Curricular Content Goals

Prioritized Content Goals for Applied Horseback Riding

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|------------------------------------|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | adjust tack & equipment | P | 2 |
| | answer instructor's questions | P | 1 |
| | apply bandaging techniques | P | 2 |
| | appreciate instruction | A | 3 |
| | ask questions | A | 2 |
| | bathe horse | P | 1 |
| | catch, lead, tie horses | P | 2 |
| | choose correct tack | P | 2 |
| | clean tack & equipment | P | 1 |
| | clean barn working areas | P | 1 |
| | cool hot horse | P | 1 |
| | exemplify safety | P | 3 |
| | groom horse | P | 2 |
| | mount & dismount horse | P | 2 |
| | observe arena riding etiquette | P | 2 |
| | perform three trot positions | P | 1 |
| | recall gait descriptions | P | 1 |
| | return equipment | P | 3 |
| | ride arena figures | P | 2 |
| | ride two canter positions | P | 1 |
| | safety check equipment | P | 2 |
| | seek improvement | A | 2 |
| | show blanketing | P | 1 |
| | show concentration | P | 1 |
| | show even temper | A | 1 |
| | synthesize self discipline | P | 3 |
| | tack horse | P | 1 |
| | trim & clip horse | P | 1 |
| | use horse empathy | A | 2 |
| | utilize protective horse equipment | P | 1 |
| II Second priority | | | |
| | analyze riding position | P | 1 |
| | critique own progress | A | 2 |
| | develop good riding balance | P | 2 |
| | develop pace sensitivity | P | 2 |

table continues

Applied Horseback Riding, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| II Second priority, continued | | | |
| | display correct riding position | P | 3 |
| | display proper horse handling attitude | A | 1 |
| | execute gait transitions | P | 2 |
| | execute lateral movements | P | 2 |
| | exhibit horse sense | A | 1 |
| | identify improper horse behavior | C | 3 |
| | make riding ability progress | P | 1 |
| | perform reining | C | 2 |
| | ride uneven terrain | P | 2 |
| | show horse senses awareness | P | 3 |
| | utilize natural and artificial aids | P | 1 |

Note. This table contained 45 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Teaching Horseback Riding

The Teaching Horseback Riding course included the second highest percent of high frequency goals; 90% of the 48 goals fell into this category. This course was optional for students preparing for limited contact occupations, whose employers were not polled as heavily as the others', but would be vital for the other graduates. It has been shown that a high percent of graduates work as instructors in some capacity for at least some of their careers (Stuska, 1991c), so this preparation was necessary. The progressive nature and high affective percent - this course showed the highest affective percent, 31%, of all courses - pointed to the material being presented and practiced over a two or three term sequence; the introduction could be presented in the classroom and the skills could be practiced by students assisting the Applied Horseback Riding classes. The I priority goals built on the goals of the Introductory and Applied courses. The II goals were the meat of the course and students will show varying degrees of success with them; the more capable graduates in this area will go on to teach higher level riders. The III goal was an enrichment goal for the more capable students, while the student may pick up the IV goals on his or her own. Tables 36, 37 and 38 show the data for this series of courses.

Table 36 Needs-Based Curricular Content Goals
Percentages of Content Goals for Teaching Horseback Riding as
Rated by Employers

| | Frequency | | Difficulty | | Total |
|-------|-----------|-----|------------|------|-------|
| | High | Low | Low | High | |
| High | 46 | | 44 | | 90 |
| Low | | 8 | | 2 | 10 |
| Total | | 54 | | 46 | |

Note. N = 10. The values represented percentages of 48 total goals.

Table 37 Needs-Based Curricular Content Goals
Percentages of Content Goals for Teaching Horseback Riding as
Rated by Educators

| Level | Domain | | | | | | Total |
|-------|---------------|----|-------------|----|-------------|----|-------|
| | Cognitive | | Psychomotor | | Affective | | |
| 1 | Fact | 2 | Imitation | 27 | Awareness | 29 | 58 |
| 2 | Understanding | 2 | Practice | 25 | Distinguish | 2 | 29 |
| 3 | Application | 8 | Habit | 4 | Integrate | 0 | 13 |
| Total | | 13 | | 56 | | 31 | |

Note. N = 4. The values represented percentages of 48 total goals.

Table 38

Needs-Based Curricular Content Goals

Prioritized Content Goals for Teaching Horseback Riding

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | amass horseback games list | C | 1 |
| | amass rider exercises list | C | 2 |
| | analyze schooling movements | C | 3 |
| | appreciate protective headgear importance | P | 2 |
| | choose lesson horse tack | P | 3 |
| | communicate information | P | 1 |
| | contrast riding styles | P | 1 |
| | define standard riding and schooling terms | P | 2 |
| | encourage riders | A | 2 |
| | enforce stable rules | A | 1 |
| | espouse honesty | A | 1 |
| | exhibit sincerity | A | 1 |
| | longe student | P | 2 |
| | minimize lawsuits | C | 3 |
| | pass first aid course | P | 1 |
| | respect students | A | 1 |
| | show personability | A | 1 |
| | teach arena etiquette | P | 2 |
| | teach and observe safety factors | P | 1 |
| | utilize arena figures | P | 2 |
| | utilize articulate communication | P | 1 |
| | utilize uneven terrain | C | 3 |
| II Second priority | | | |
| | analyze horse reactions | P | 2 |
| | analyze lesson horse suitability | P | 2 |
| | apply teaching and learning principles | P | 1 |
| | avoid overfacing students | A | 1 |
| | challenge students | A | 1 |
| | correct position faults | P | 3 |
| | develop riding students' parent rapport | P | 2 |
| | differentiate horse from rider problems | P | 2 |
| | discipline students | A | 1 |
| | establish positive student relationships | A | 1 |
| | exhibit professionalism | A | 1 |
| | identify main student position problem | P | 2 |

table continues

Teaching Horseback Riding, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| II Second priority, continued | | | |
| | inspire confidence | A | 1 |
| | know show regulations | P | 1 |
| | manage school horse exercise schedule | P | 1 |
| | match school horses & students | P | 1 |
| | sequence lesson material | P | 2 |
| | set good example | A | 1 |
| | show patience | A | 1 |
| | show riding proficiency | P | 2 |
| | speak tactfully | A | 1 |
| III Third priority | | | |
| | train lesson horses | P | 1 |
| IV Lowest priority | | | |
| | maintain professional organization membership | C | 3 |
| | recognize industry trends | P | 1 |
| | teach tack and equipment use | P | 1 |
| | write lesson plans | P | 1 |

Note. This table contained 48 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Reproduction

Equine Reproduction included 32 of its 39 goals in the I, II and III priority categories, making a two or three semester credit hour course. Nearly two-thirds, 62%, of the goals were rated low difficulty by employers, therefore this was a good first year course. The importance of this course to graduates was seen in the 59% high frequency, I and II priority, goal ratings; abilities in these areas were expected by employers. This was reinforced by the fact that many two-year programs (Stuska, 1991c) reported graduates in production occupations. The III priority goals may be worked on by the higher achieving students, while the IV goals may be picked up on the job. The goals were divided nearly equally, 46% and 54%, between the cognitive and psychomotor domains; this showed approximately half classroom and half laboratory or stable work to be necessary. The goals show a prerequisite in biology to be advisable (see Tables 39, 40 and 41 for the data).

Table 39 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Reproduction as Rated by Employers

| Frequency | Difficulty | | Total |
|--------------|------------|-----------|-------|
| | Low | High | |
| High | 44 | 15 | 59 |
| Low | 18 | 23 | 41 |
| Total | 62 | 38 | |

Note. N = 11. The values represented percentages of 39 total goals.

Table 40 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Reproduction as Rated by Educators

| Level | Domain | | | Total |
|--------------|-----------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 0 | Imitation 51 | Awareness 0 | 51 |
| 2 | Understanding 8 | Practice 0 | Distinguish 0 | 8 |
| 3 | Application 38 | Habit 3 | Integrate 0 | 41 |
| Total | 46 | 54 | 0 | |

Note. N = 8. The values represented percentages of 39 total goals.

Table 41

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Reproduction

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | assist artificial insemination | P | 1 |
| | compare teasing methods | P | 1 |
| | contrast semen collection methods | C | 3 |
| | contrast weaning techniques | C | 2 |
| | decipher pregnancy determination techniques | C | 2 |
| | diagram mare's estrous cycle | C | 3 |
| | evaluate semen | P | 1 |
| | maintain horse breeding recordkeeping system | P | 1 |
| | organize first month foal training techniques | P | 1 |
| | perform breeding season hygiene | P | 1 |
| | provide mare care | P | 1 |
| | seek professional advice | P | 1 |
| | sequence mare and stallion breeding cycle | | |
| | photoperiod control | C | 3 |
| | show artificial vagina preparation | C | 3 |
| | show newborn foal care | C | 3 |
| | specify stallion care | P | 1 |
| | utilize mare and stallion breeding soundness exams | C | 3 |
| II Second priority | | | |
| | critique stallion breeding shed training techniques | C | 3 |
| | exhibit safe horse work habits | P | 3 |
| | explain mare and stallion infertility conditions | P | 1 |
| | formulate foal nutrition program | P | 1 |
| | prepare breeding schedule | P | 1 |
| | sequence normal, abnormal, and vet-required foaling process | C | 3 |
| III Third priority | | | |
| | cite conception rate factors | C | 3 |
| | describe general horse breeding industry concerns | C | 3 |
| | describe stallion and mare hormones' influence | P | 1 |
| | document abortion causes | P | 1 |

table continues

Equine Reproduction, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| III Third priority, continued | | | |
| | interpret artificial insemination process | P | 1 |
| | prescribe orphan or rejected foal care | P | 1 |
| | prevent abortions | P | 1 |
| | synchronize mares' estrus cycles | C | 3 |
| | write breeding contracts | P | 1 |
| IV Lowest priority | | | |
| | compare breeding systems | P | 1 |
| | contrast castration options | C | 2 |
| | critique foal heat breeding | C | 3 |
| | describe gestation process | C | 2 |
| | paraphrase venereal disease prevention information | C | 3 |
| | specify mare, foal, and stallion housing facilities requirements | P | 1 |
| | state transported semen philosophy | C | 3 |

Note. This table contained 39 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Genetics

Equine Genetics' subject matter showed it advisable to precede this course with Equine Reproduction. This one semester credit hour, 22 goal course, showed all its goals in the first three priority categories. While the subject matter was vital to an understanding of selection for breeding, this course was less vital to the average employed graduate than others because relatively few graduates' job descriptions required selection of breeding animals. Students who entered the course with industry experience should already have the basis of the I priority goals, while those without prior industry experience would need to study them in college. Both would further develop the I priority goals while studying the II and III goals which are the college level work. The III priority goals were more complex, and students will show differing abilities for these at graduation. Equine Genetics would be best scheduled for fourth term based on 86% of the goals having been rated high in difficulty. Some laboratory work would be desirable, based on the 41% psychomotor goals. The details are shown in Tables 42, 43 and 44.

Table 42 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Genetics as Rated by
Educators

| | Frequency | Difficulty | | Total |
|-------|-----------|------------|------|-------|
| | | Low | High | |
| High | | 14 | 50 | 64 |
| Low | | 0 | 36 | 36 |
| Total | | 14 | 86 | |

Note. N = 11. The values represented percentages of 22 total goals.

Table 43 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Genetics as Rated by
Educators

| Level | Domain | | | Total |
|-------|-----------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 9 | Imitation 23 | Awareness 9 | 41 |
| 2 | Understanding 9 | Practice 0 | Distinguish 0 | 9 |
| 3 | Application 32 | Habit 18 | Integrate 0 | 50 |
| Total | 50 | 41 | 9 | |

Note. N = 4. The values represented percentages of 22 total goals.

Table 44

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Genetics

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | assess performance records | C | 3 |
| | follow directions | A | 1 |
| | support breed registry efforts | P | 3 |
| II Second priority | | | |
| | appreciate purposeful far-sighted breeding plans | P | 1 |
| | avoid emotional breeding selection involvement | P | 1 |
| | desire breed improvement | P | 1 |
| | display patience | P | 3 |
| | display promptness | P | 3 |
| | maintain open mind | A | 1 |
| | produce quality work | P | 3 |
| | recognize genetic hereditary influence | C | 3 |
| | recognize genetically transmitted unsoundness tendencies | P | 1 |
| | recognize inherited abnormalities | P | 1 |
| | reiterate athletic ability and conformation relationship | C | 2 |
| III Third priority | | | |
| | analyze genetic defect transmission | C | 3 |
| | assess pedigree | C | 3 |
| | contrast heredity and environment effects | C | 3 |
| | evaluate related animal mating theories | C | 1 |
| | explain planned trait selection | C | 2 |
| | identify superior genotype breeding animals | C | 3 |
| | plan inherited abnormalities incidence decrease | C | 1 |
| | utilize breeding stock genetic selection methods | C | 3 |

Note. This table contained 22 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Health

Equine Health's 59 I, II, and III priority goals were best included in a three or four semester credit hour course. Another possibility would be to divide the goals into two courses, offering them two successive terms for two semester credit hours each. The I priority goals were the basics that could be approached during the first term of the class. Approximately half, 55%, of the 66 total goals were ranked as high difficulty; more of these goals could be included in the second semester of the course because they were more difficult but are still necessary. The 56% high frequency ranking, the subject matter, and analysis of the potential graduate's occupations showed this course to be a requirement for all equine degree candidates. Some laboratory and/or stable work would be necessary for the 42% of the goals in the psychomotor domain. The basic knowledge data are shown in Tables 45 through 47.

Table 45 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Health as Rated by
Employers

| | Frequency | Difficulty | | Total |
|-------|-----------|------------|------|-------|
| | | Low | High | |
| High | | 35 | 21 | 56 |
| Low | | 11 | 33 | 44 |
| Total | | 45 | 55 | |

Note. N = 9. The values represented percentages of 66 total goals.

Table 46 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Health as Rated by
Educators

| Level | Domain | | | Total | | | |
|-------|---------------|-------------|-----------|-------|-------------|---|----|
| | Cognitive | Psychomotor | Affective | | | | |
| 1 | Fact | 2 | Imitation | 30 | Awareness | 2 | 33 |
| 2 | Understanding | 24 | Practice | 9 | Distinguish | 5 | 38 |
| 3 | Application | 23 | Habit | 3 | Integrate | 3 | 29 |
| Total | | 48 | | 42 | | 9 | |

Note. N = 6. The values represented percentages of 66 total goals.

Table 47

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Health

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | amass individual horse health case histories | P | 2 |
| | appreciate mildest effective restraint use | P | 3 |
| | assist veterinarian | P | 2 |
| | compare skin conditions | C | 3 |
| | create healthy environment | P | 1 |
| | demonstrate correct equipment use | P | 1 |
| | design external parasite control program | P | 1 |
| | display helpfulness | A | 2 |
| | exhibit caring attitude | A | 3 |
| | exhibit conscientious horse health care | A | 2 |
| | identify veterinarian-required situations | C | 3 |
| | inventory medical supplies | P | 1 |
| | maintain horse health recordkeeping system | P | 2 |
| | maintain internal parasite control schedule | P | 2 |
| | medicate horses | P | 2 |
| | obtain horse health certificate | P | 1 |
| | prescribe blanketing | P | 1 |
| | prescribe hoof care | P | 1 |
| | prevent colic | P | 1 |
| | recite equine external anatomy | C | 3 |
| | show first aid wrapping techniques | P | 1 |
| | store drugs | C | 2 |
| | utilize non-chemical restraints | P | 1 |
| II Second priority | | | |
| | administer first aid | P | 2 |
| | avoid disease exposure | C | 3 |
| | diagnose lameness | P | 1 |
| | differentiate unsoundness & blemish | C | 3 |
| | encourage cooperation | A | 1 |
| | evaluate horse mental health | P | 1 |
| | evaluate physical health | P | 1 |
| | evaluate soundness use suitability | P | 1 |
| | exhibit cheerfulness | A | 3 |
| | exhibit safe work practices | A | 2 |
| | interpret disease symptoms | C | 2 |

table continues

Equine Health, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| II Second priority, continued | | | |
| | recognize health problems | C | 3 |
| | treat lameness | P | 1 |
| | treat disease symptoms | P | 1 |
| III Third priority | | | |
| | apply vital signs data | P | 3 |
| | appreciate euthanasia | P | 1 |
| | cite dead animal disposal methods | C | 2 |
| | compare digestive system diseases/conditions | C | 2 |
| | deduce parasitic infection symptoms & damage | C | 3 |
| | differentiate respiratory diseases' symptoms; treatment | C | 3 |
| | evaluate postmortem exam need | C | 3 |
| | explain rhinopneumonitis | C | 2 |
| | explain hoof and leg conditions | C | 3 |
| | expound plant poisonings | C | 2 |
| | identify skeletal system physiology | C | 2 |
| | illustrate encephalomyelitis | C | 2 |
| | paraphrase Potomac Fever information | C | 2 |
| | paraphrase strangles/distemper information | C | 2 |
| | recognize inherited anatomical lameness tendency | C | 2 |
| | recognize medical emergencies | C | 3 |
| | reiterate digestive system function | C | 2 |
| | restate rabies information | C | 1 |
| | show hypodermic syringe use & precautions | P | 1 |
| | simplify influenza | C | 2 |
| | simplify navicular disease syndrome | C | 2 |
| | state tetanus information | C | 2 |
| IV Lowest priority | | | |
| | design dental program | C | 3 |
| | design vaccination program | P | 1 |
| | employ disinfection principles | C | 2 |
| | outline founder/laminitis | C | 3 |
| | outline first aid kit inclusions | P | 1 |
| | outline teeth care | C | 3 |
| | utilize veterinary soundness examination | C | 3 |

table continues

Equine Health, continued

Note. This table contained 66 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Nutrition

Equine Nutrition should be required for all equine degree candidates, based on the subject matter, the 63% high frequency I and II goals, and the number of two-year program educators who placed graduates in fields where proper nutrition was vital (Stuska, 1991c). The I and II priority goals were extremely important and must be both taught and learned. The III points may be covered, but all students will not do as well in this work. The IV goals may be achieved on the job. This course was an ideal first year offering because of the high number, 46%, of high frequency and low difficulty goals which marked easier concepts and the 56% cognitive total which was necessary for future psychomotor or affective achievement. The 38 of the 48 total goals which ranked in the top three priority categories must be offered; they would add to a three semester credit hour course. The majority, 56%, were shown by educators to belong in the cognitive domain; the laboratory work for the 42% psychomotor goals could be done mainly in the classroom. Basic mathematics and biology would be helpful as prerequisites or in conjunction with this course because of some technical and mathematical information presented here (see Tables 48, 49 and 50 for the data).

Table 48 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Nutrition as Rated by
Employers

| Frequency | Difficulty | | Total |
|-----------|------------|------|-------|
| | Low | High | |
| High | 46 | 17 | 63 |
| Low | 19 | 19 | 38 |
| Total | 65 | 35 | |

Note. N = 9. The values represented percentages of 48 total goals.

Table 49 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Nutrition as Rated by
Educators

| Level | Domain | | | Total |
|-------|-----------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 0 | Imitation 35 | Awareness 2 | 38 |
| 2 | Understanding 8 | Practice 6 | Distinguish 0 | 15 |
| 3 | Application 48 | Habit 0 | Integrate 0 | 48 |
| Total | 56 | 42 | 2 | |

Note. N = 8. The values represented percentages of 48 total goals.

Table 50

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Nutrition

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | apply horse feeding time schedules | C | 3 |
| | choose mineral supplements | C | 3 |
| | choose vitamin supplements | C | 3 |
| | cite teeth care factors | C | 3 |
| | compare horse feed types | C | 3 |
| | contrast grains | P | 1 |
| | describe grain and hay storage requirements | P | 1 |
| | describe hay selection factors | P | 1 |
| | design internal parasite control program | C | 3 |
| | desire correctly-fed healthy horses | P | 2 |
| | feed horses | P | 1 |
| | follow strenuous activity feeding practices | P | 2 |
| | identify feeding practice mismanagement dangers | C | 3 |
| | identify horse feed usages | P | 1 |
| | implement internal parasite control program | P | 1 |
| | interpret feed tags | C | 3 |
| | prepare feed rations | P | 1 |
| | project enthusiasm | A | 1 |
| | satisfy diet roughage requirements | C | 3 |
| | scrutinize water container (waterer) suitability | C | 3 |
| | show efficiency | P | 2 |
| | specify horse water requirements | C | 3 |
| II Second priority | | | |
| | balance particular horse circumstances ration | C | 3 |
| | calculate least cost feedstuff | C | 3 |
| | contrast weather related feeding and nutrition situations | C | 3 |
| | demonstrate eyeball feed requirement method | P | 1 |
| | determine horse feed additives usage | P | 1 |
| | recognize illness symptoms | P | 1 |
| | recognize nutritional deficiency symptoms | C | 3 |
| | simplify growing horse diet-related diseases | C | 3 |
| III Third priority | | | |
| | apply hay sample analysis results | C | 3 |

table continues

Equine Nutrition, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| III Third priority, continued | | | |
| | assess local crop nutritional characteristics | P | 1 |
| | calculate available TDN | C | 3 |
| | calculate horse nutrient requirements | C | 3 |
| | choose concentrate mixes | C | 3 |
| | explain digestion related diseases | C | 2 |
| | expound diet related diseases | C | 2 |
| | name nutrient functions | C | 3 |
| | validate horse feed additives' quality | P | 1 |
| IV Lowest priority | | | |
| | analyze available water | P | 1 |
| | contrast hays | P | 1 |
| | critique horse feed containers | P | 1 |
| | describe commercial feed selection factors | P | 1 |
| | document horse feed quality | P | 1 |
| | explain horse digestive system | C | 2 |
| | post poison-control center hotline phone number | C | 2 |
| | tour horse feed processing mill | C | 3 |
| | utilize local (extension agency) feeding experts | C | 3 |

Note. This table contained 35 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Forage and Pasture Management

Forage and Pasture Management should be required for equine degree candidates, as shown by the 34 of 43 goals in the I, II and III categories of priority and the subject matter. Many equines were sustained on pasture and others had some degree of their nutritional needs met by this means. Nearly all stable managers and workers needed a clear understanding of this pasture resource. The I priority goals were basics that must be achieved while the II goals were the college level requirements. Better students might take on the III goals, but only after achieving the first two priority groups. The IV category goals may be obtained on the job. Laboratory work would be required for the nearly half, 49%, psychomotor goals in this course, while the 51% cognitive goals could be presented in the classroom. The number of goals indicated a three semester credit hour class with a laboratory section. Based on the subject matter of the two courses, Equine Nutrition should be a prerequisite to Forage and Pasture Management. Data are in Tables 51, 52 and 53.

Table 51 Needs-Based Curricular Content Goals
Percentages of Content Goals for Forage and Pasture Management as
Rated by Employers

| Frequency | Difficulty | | Total |
|-----------|------------|------|-------|
| | Low | High | |
| High | 33 | 23 | 56 |
| Low | 21 | 23 | 44 |
| Total | 53 | 47 | |

Note. N = 9. The values represented percentages of 43 total goals.

Table 52 Needs-Based Curricular Content Goals
Percentages of Content Goals for Forage and Pasture Management as
Rated by Educators

| Level | Domain | | | Total |
|-------|-----------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 0 | Imitation 40 | Awareness 0 | 40 |
| 2 | Understanding 5 | Practice 7 | Distinguish 0 | 12 |
| 3 | Application 47 | Habit 2 | Integrate 0 | 49 |
| Total | 51 | 49 | 0 | |

Note. N = 6. The values represented percentages of 43 total goals.

Table 53

Needs-Based Curricular Content Goals

Prioritized Content Goals for Forage and Pasture Management

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | avoid toxic feed additives | C | 3 |
| | critique horse weight | C | * 3 |
| | desire maximally productive pasture | P | 2 |
| | determine pasture yield | C | 2 |
| | document fertilizer requirements | P | 1 |
| | estimate lime requirements | C | 3 |
| | explain bush hogging/mowing | C | 3 |
| | prioritize jobs | P | 1 |
| | provide water | C | 3 |
| | provide safe economical fencing | P | 1 |
| | read industry magazines, literature | P | 2 |
| | reduce pasture parasite load | P | 1 |
| | use common sense | P | 3 |
| | utilize dry lot | P | 1 |
| II Second priority | | | |
| | apply pasture rotation concepts | C | 3 |
| | control toxic plant growth | P | 1 |
| | critique hay harvesting value | P | 1 |
| | determine supplement necessity | P | 1 |
| | discern toxic plants | C | 3 |
| | espouse soil conservation concepts | P | 1 |
| | identify forages | C | 3 |
| | plan pasture forage upgrading | C | 3 |
| | prevent pastured horse health problems | C | 3 |
| | recognize pastured horse health problems | P | 1 |
| III Third priority | | | |
| | choose appropriate local planting forages | C | 3 |
| | choose horse requirement meeting concentrate | C | 3 |
| | describe grazing systems | P | 1 |
| | determine horse nutrient requirements | C | 3 |
| | generalize grazing system theory | P | 1 |
| | illustrate poisoning symptoms | P | 1 |
| | interpret hay and forage sampling test results | P | 1 |
| | interpret soil test results | C | 3 |

table continues

Forage and Pasture Management, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--------------------------------|-------------------|-----|
| | | CPA | 123 |
| III Third priority, continued | | | |
| | plan four-season pasture | C | 3 |
| | specify forage mixes | C | 3 |
| IV Lowest priority | | | |
| | contrast fencing types | C | 3 |
| | determine overseeding schedule | P | 1 |
| | explain pasture dragging | C | 3 |
| | explain pasture creep feeding | C | 3 |
| | map pasture land | C | 2 |
| | plan pasture shelters | C | 3 |
| | sample soil | P | 1 |
| | specify needed farm equipment | P | 1 |
| | utilize stockpiling | P | 2 |

Note. This table contained 35 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Equine Conditioning

The Equine Conditioning course included 17 goals; 15 were in the top three priority categories and could be combined with one of the more advanced offerings of Applied Horseback Riding or Equine Training or offered as a one semester credit hour course. Sixty-five percent of the goals were rated high frequency by employers, which showed the importance of these skills to graduates working with horses. Also, the equine occupation list on Table 14 and the graduate placement study (Stuska, 1991c) showed that occupations related to working horses were popular among graduates. Of those who do choose to work toward these skills during college, only the best students may achieve the III priority skills, while the I and II skills are of more general importance. The IV skills do not necessarily need to be covered. Therefore, Equine Conditioning could be an optional course for students not pursuing frequent contact careers. The three-fourths majority of goals, 76%, were grouped in the cognitive category; this was the second highest percent of cognitive goals across all the courses and pointed to a majority of classroom work (see Tables 54, 55 and 56 for Equine Conditioning data).

Table 54 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Conditioning as Rated by Employers

| Frequency | Difficulty | | Total |
|-----------|------------|------|-------|
| | Low | High | |
| High | 47 | 18 | 65 |
| Low | 12 | 24 | 35 |
| Total | 59 | 41 | |

Note. N = 10. The values represented percentages of 17 total goals.

Table 55 Needs-Based Curricular Content Goals
Percentages of Content Goals for Equine Conditioning as Rated by Educators

| Level | Domain | | | Total |
|-------|------------------|-------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 0 | Imitation 0 | Awareness 18 | 18 |
| 2 | Understanding 18 | Practice 0 | Distinguish 0 | 18 |
| 3 | Application 59 | Habit 6 | Integrate 0 | 65 |
| Total | 76 | 6 | 18 | |

Note. N = 5. The values represented percentages of 17 total goals.

Table 56

Needs-Based Curricular Content Goals

Prioritized Content Goals for Equine Conditioning

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | accept responsibility | A | 1 |
| | ask clarification questions | A | 1 |
| | choose perseverance | P | 3 |
| | condition show horses | C | 3 |
| | condition working horse | C | 3 |
| | implement conditioning program | C | 3 |
| | pace moving horse | C | 2 |
| | utilize varying terrain | C | 3 |
| II Second priority | | | |
| | accept constructive criticism | A | 1 |
| | explain overweight horse feed & conditioning schedule | C | 3 |
| | prepare thin horse feeding & conditioning schedule | C | 3 |
| III Third priority | | | |
| | condition event horse | C | 3 |
| | design conditioning program | C | 3 |
| | interpret working horse "TPRs" | C | 2 |
| | prepare competition schedules | C | 2 |
| IV Lowest priority | | | |
| | condition halter sale horses | C | 3 |
| | prepare transportation schedules | C | 3 |

Note. This table contained 35 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Introduction to Equine Science

The 60% high frequency goals in Introduction to Equine Science were split nearly evenly between low, 29%, and high, 31%, difficulty. This 60% majority, and the introductory nature of the subject matter, pointed to this being offered as an introductory class; it should be a prerequisite to all other courses except for the few of appropriate difficulty and subject matter to be offered in conjunction with it. Thirty-five of the course goals were I, II and III priority and must be offered. The I and IV goals may be review for some students, but those students with little prior experience will need them immediately. It should be determined that all students are competent at these two groups of goals before advancing. The II and III goals were necessary background for later courses. This course contained 82% cognitive goals, which was the highest cognitive percentage of all 15 courses. The high percent of cognitive goals in an introductory course give the student the opportunity to learn the theory of horse science first, and build on that knowledge with later psychomotor and affective achievements. This introductory course will therefore form a substantial base for future course work (see Tables 57 through 59 for these data).

Table 57 Needs-Based Curricular Content Goals
Percentages of Content Goals for Introduction to Equine Science
as Rated by Employers

| Frequency | Difficulty | | Total |
|-----------|------------|------|-------|
| | Low | High | |
| High | 29 | 10 | 39 |
| Low | 31 | 29 | 61 |
| Total | 61 | 39 | |

Note. N = 11. The values represented percentages of 51 total goals.

Table 58 Needs-Based Curricular Content Goals
Percentages of Content Goals for Introduction to Equine Science
as Rated by Educators

| Level | Domain | | | Total |
|-------|------------------|--------------|---------------|-------|
| | Cognitive | Psychomotor | Affective | |
| 1 | Fact 4 | Imitation 12 | Awareness 0 | 16 |
| 2 | Understanding 24 | Practice 2 | Distinguish 4 | 29 |
| 3 | Application 55 | Habit 0 | Integrate 0 | 55 |
| Total | 82 | 14 | 4 | |

Note. N = 5. The values represented percentages of 51 total goals.

Table 59

Needs-Based Curricular Content Goals

Prioritized Content Goals for Introduction to Equine Science

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| I Highest priority | | | |
| | accept authority | A | 2 |
| | apply horse show class rules | C | 2 |
| | choose horse restraint method | P | 2 |
| | cite safety importance | P | 1 |
| | classify horse usage | C | 2 |
| | complete tasks | A | 2 |
| | identify horse restraint methods | C | 3 |
| | prevent stable vices | C | 3 |
| | recall external anatomy | C | 3 |
| | recognize quality tack | C | 3 |
| | recognize stable vices | C | 3 |
| | recognize tack function | P | 1 |
| | reiterate safe horse handling practices | P | 1 |
| | select tack | C | 2 |
| | use mildest effective horse restraint | P | 1 |
| II Second priority | | | |
| | compare performance judging placement factors | C | 3 |
| | critique conformation | C | 3 |
| | manage stable vices | C | 3 |
| | rank unsoundnesses | C | 3 |
| | relate conformational unsoundness | P | 1 |
| III Third priority | | | |
| | analyze functional conformation | C | 3 |
| | cite horse buying considerations | C | 3 |
| | contrast riding styles | C | 3 |
| | discriminate problem conformation | C | 3 |
| | estimate horse age | C | 2 |
| | explain halter judging placement factors | C | 3 |
| | interpret horse selection criteria | C | 3 |
| | judge halter class | C | 3 |
| | judge horse show | C | 2 |
| | judge performance class | C | 3 |
| | list horse information sources | C | 2 |
| | match internal anatomy | C | 2 |

table continues

Introduction to Equine Science, continued

| Frequency/ Difficulty Priority | Goal | Do- main Level | |
|--------------------------------------|---|-------------------|-----|
| | | CPA | 123 |
| III Third priority, continued | | | |
| | perform horse-oriented library research | C | 3 |
| | recognize athletic conformation | C | 3 |
| | reiterate horse buying procedures | C | 3 |
| IV Lowest priority | | | |
| | arrange evolutionary development stages | C | 1 |
| | choose riding instructor | C | 3 |
| | consult horse associations | C | 2 |
| | contrast equine competitions | C | 3 |
| | contrast horse coat colors | C | 3 |
| | determine horse coat color | P | 1 |
| | develop personal equine reference library | C | 3 |
| | diagram gait footfall patterns | C | 3 |
| | differentiate breeds | C | 3 |
| | discern breed characteristic body type | C | 2 |
| | distinguish horse breed classifications | C | 2 |
| | explain horse judging system | C | 3 |
| | identify breed characteristics | C | 2 |
| | identify white body markings | C | 2 |
| | recognize riding styles | C | 3 |
| | repair tack | C | 1 |

Note. This table contained 35 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

Affective Domain Goal Summary

The 76 goals rated by educators as being in the affective domain were included in the tables and discussions for each course. They were also summarized in this section because of their importance, the fact that they are perhaps more difficult to teach for some faculty than cognitive or psychomotor goals and therefore require particular attention, and because there was a certain amount of flexibility in which course(s) they were presented. These affective goals were listed in Table 60. The importance of these affective goals was seen in the employers' ranking of all of them as high frequency; all 76 of these goals therefore must be covered in the college level equine curriculum. Vogler (1991b) discussed the affective goals as being more challenging to impart to students than cognitive or psychomotor goals; the knowledge and skills involved must be learned first. The majority of the goals may be covered in any of the courses because of their general nature; in fact, many were inserted into the 15 courses at random before surveys were distributed.

The 44 affective domain goals rated high frequency and low difficulty by employers were listed first in Table 59; those rated high frequency and high difficulty were listed second. The 44 low difficulty goals were (Vogler, 1991b) (a) highest priority to teach, (b) easier for the students to learn than the high difficulty goals therefore good to

cover earlier in the curriculum, (c) necessary for all students to be exposed to and to pass, and (d) the highest, I, priority. The 33 high frequency goals were (a) also important, (b) more difficult for students, in fact, some students may not pass, (c) suitable for later course work, and (d) the second highest, II, priority. Within the two highest Frequency/Difficulty categories shown in Table 59, the level of each goal was shown; the higher levels were listed first. There were 5 highest level goals which required the student to integrate the listed attitudes into their personality; 20 goals asked students to distinguish the listed attitudes in theirs and others' work, and 52 goals dictated that the students show awareness of the appropriate attitudes in their work. The goals are listed alphabetically under each heading in Table 60.

Table 60

Needs-Based Curricular Content Goals

Summary of Affective Domain Educator Response Goals in All Courses

| Frequency/ Difficulty Priority | Priority Description | Goal | Total Goals |
|--------------------------------------|---|------|----------------|
| IV | Highest priority; ranked high frequency, low difficulty by employers | | 44 |
| | 3rd level; most complex (student will integrate) | | 4 |
| | appreciate instruction display proper horse handling attitude establish professional contacts exhibit caring attitude | | |
| | 2nd level; moderately complex (student will distinguish) | | 15 |
| | accept authority ask questions complete tasks display dependability display helpfulness display professional ethics encourage riders exhibit conscientious horse health care seek improvement show ethical competition behavior show honesty show initiative show sportsmanlike competition behavior use horse empathy | | |
| | 1st level; least complex (student will show awareness) | | 25 |
| | accept responsibility ask clarification questions display humane attitude display visitor hospitality embody neatness enforce stable rules espouse honesty exhibit professional cooperation exhibit sincerity | | |

table continues

Summary of Affective Domain Educator Response Goals in All Courses, continued

| Frequency/ Difficulty Priority | Priority Description | Goal | Total Goals |
|--------------------------------------|---|--|----------------|
| | 1st level; least complex (student will show awareness), continued | <ul style="list-style-type: none"> follow directions keep "idea" notebook maintain horse production records maintain property appearance maintain supplies inventory observe fellow professionals' abilities project enthusiasm respect students set good staff example show constructive veterinarian interaction show detail attentiveness show even temper show independence show personability support horse industry sustain healthy stable climate | |
| III | Second priority; ranked high frequency, high difficulty by employers | | 33 |
| | 3rd level; most complex (student will integrate) | <ul style="list-style-type: none"> exhibit cheerfulness | 1 |
| | 2nd level; moderately complex (student will distinguish) | <ul style="list-style-type: none"> critique own progress exhibit safe work practices exhibit professionalism maintain good public relations market self | 5 |
| | 1st level; least complex (student will show awareness) | <ul style="list-style-type: none"> accept constructive criticism avoid overfacing students challenge students demonstrate appropriately voiced self confidence | 27 |

table continues

Summary of Affective Domain Educator Response Goals in All Courses, continued

| Frequency/ Difficulty Priority | Priority Description | Goal | Total Goals |
|--------------------------------------|-------------------------|--|----------------|
| | | 1st level; least complex (student will show awareness), continued | |
| | | develop self confidence | |
| | | discipline students | |
| | | display professional ethics (in two different courses) | |
| | | display proper horse handling attitude | |
| | | embody confidence | |
| | | encourage cooperation | |
| | | establish positive student relationships | |
| | | exhibit horse sense | |
| | | exhibit professionalism | |
| | | illustrate ethics | |
| | | inspire confidence | |
| | | maintain clean presentable facilities | |
| | | maintain open mind | |
| | | maintain property appearance | |
| | | plan ahead | |
| | | project maturity | |
| | | set good example | |
| | | show patience | |
| | | speak tactfully | |
| | | synthesize personal leadership | |
| | | utilize horse senses and instincts | |

Note. This table contained 76 goals.

CHAPTER 5: FINDINGS SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Purpose of Study

The purpose of this study was to develop a validated content goal list for two-year college equine education consistent with accreditation standards. Specifically, the investigator synthesized the extant literature; classified equine industry jobs; and determined, rewrote in consistent syntax, categorized, and prioritized two-year equine program content goals into equine curricula. The findings summary, conclusions, and recommendations of this study are found in this chapter.

Respondents

The 40 employers who responded to the frequency- and difficulty- sorting survey instrument possess a cross-section of equine industry experience. They are qualified by virtue of active and extensive participation in the equine industry as employers, managers, or supervisors. Their present locations extended across the United States, where their primary business foci include breeding, teaching, training, competition, shoeing, and veterinary work. The 30 equine educators who responded to the domain and level sorting survey instruments are active instructors or administrators in the 46 existing two-year associate's degree equine programs.

Literature Review

Findings

The equine industry, defined as including all businesses related to horses, makes a sizable contribution to the economy of areas in which it exists. The industry has a recreational emphasis, and animal value is determined largely by performance. Technological changes are resulting in changes in the industry. Employment in the equine industry is characterized by requirements of flexibility, diverse skills, and ongoing education. The equine job market is highly competitive.

Forty-six institutions award two-year associate's degrees in equine studies; these institutions have placed graduates in 52 occupations in six broad equine industry categories as presented in Table 3 in chapter 2. Controls on college curriculum by regionally managed accreditation organizations provide for required general education courses which provide a broad base and make for more flexible employees. Regulations also guide the colleges in establishing and reviewing equine curricula. Accredited colleges are required to state curricular requirements for each degree offered and to establish and review their curricula according to established guidelines.

Curricular objectives are the foundation of the curriculum and may be stated and organized according to

Vogler (1991a, 1991b). Existing equine curriculum is organized by courses which vary by institution.

Conclusions

The equine industry's strong economic influence, the existence of numerous occupations, and the placement of two-year associate's degree graduates in the industry justifies the need for well trained employees in the equine industry. Community college education is a viable educational option for equine industry preparation, in part because of the broad educational base that it offers. The broad educational base is necessary for successful graduate employment, given the variations within equine occupations and the diversity of occupations.

Recommendations

Equine curricula should be aligned with the skills needed for employment in the horse industry. It should be reviewed periodically and updated in accordance with technological advances which change the industry. This study should be repeated in 3 to 5 years to realign the curricula with current industry standards: the content goal list must be reevaluated, and employers and educators must be surveyed as to their expectations of employee abilities and student achievements.

Equine Industry Occupations

Findings

Research question 1 involved classified equine industry occupations. Numerous equine occupations exist, and have been classified according to the U. S. Department of Labor (1991) and the American Horse Council (no date); see Table 14 in chapter 4. Equine occupations are many and varied, and a wide variety of skills are needed within any one position.

Conclusions

Equine employees require a broad knowledge, skill and attitude base in order to find work and to progress well throughout their careers because of the wide variety of occupations.

Equine Curricular Content Goals

Findings

The second research question asked for the two-year degree program equine curricular content goals. This researcher amassed a strictly evaluated list of equine curricular objectives from existing programs and from the literature. The objectives were made consistent in syntax and organized according to Vogler (1991a, 1991b), then arranged by subject into courses under the U.S. Department of Education's Classification of Educational Programs

(1981), see Table 12 in chapter 3. The findings are the lists of content goals, arranged by course, in Tables 15 to 59 of chapter 4. There are 613 goals in the 15 courses.

Conclusions

These listed goals make up the equine curricula. The goals may be used in the 15 listed courses or arranged according to an educational program's specifications. According to Vogler (1991b), approximately 15 content goals equal one semester credit hour; SACS (1991) dictates 30 semester credit hours specialty credit to be taken for the equine associate's degree. Therefore, the number of semester credit hours for each course was determined. An associate's degree in equine studies would involve approximately 450 content goals of specialty material (see Table 61).

Recommendations

Equine Marketing, Teaching Horseback Riding, Equine Training, Equine Health, Forage and Pasture Management, and Equine Reproduction are listed in Table 61 with ranges of semester credit hours. Individual equine education programs may utilize these courses and hours as is appropriate. For example, Equine Marketing might be offered as a 2 or 3 credit hour course with students obtaining an additional 1 or 2 semester hours credit for internships in this subject area. Teaching Horseback

Riding and the Equine Training course would best be offered with initial lecture classes of 1 or 2 credit hours; then students may obtain practical teaching or training experience for an additional 1 or 2 credit hours. Equine Health may be offered as one 3 or 4 credit hour course, or as two successive courses of which the 1 year certificate students would be required to take only the first part. Forage and Pasture Management and Equine Reproduction may be offered in any of the above ways, depending on the emphasis of the individual equine educational program.

Employer Frequency/Difficulty Sorts

Findings

The third research question was "What were the equine curricular content goals in terms of frequency of use and difficulty of execution in the work place as rated by employers?" Employers surveyed ranked the goals as high or low frequency of use on the job and high or low difficulty of execution by recent graduates. The statistics for the Frequency/Difficulty sorts are found in the first table for each course in chapter 4.

Conclusions

The Frequency/Difficulty sorts of the employers determined the priority of the goals according to Vogler (1991b). Goals of high frequency and low difficulty were ranked I (highest); high frequency and high difficulty were

ranked II; low frequency and high difficulty were ranked III; and low frequency and low difficulty were ranked IV (lowest) priority. Within each course, the goals ranked I by employers were crucial for the graduate to acquire. Employers expected that these abilities would be present in new employees. This category marked the basic goals within any subject; if the incoming student did not have enough of a background in the horse industry to have acquired these skills, then they must attain them early in their college years. The priority II goals would be expected of college graduates by employers; they formed the main work of any course. The priority III abilities represented more specialized and advanced work, and abilities in these areas would be looked upon with some leniency by employers. The brighter, more highly motivated, students might be presented with the III goals after completing the previous work. Category IV goals were relatively easy for the student to pick up on his or her own, and could be used in independent study work or for projects as other course work is being completed; they were not essential curriculum.

Recommendations

An educator who desires to aptly prepare students for a cross-section of jobs in the horse industry must cover all 256 goals in the I category. The 161 goals in the II

priority grouping were also essential, and these skills separated the college graduate from the employee without such schooling. These two groups included 417 of the 450 $\pm 10\%$ goals suggested by Vogler (1991a) as comprising 30 semester hours of specialty credit hours required by SACS (1991). Less important, but still valuable, were the 136 goals in the III priority group; the educator chose goals from this category to total the full 30 semester hours of specialty course credit. The best prepared student, who would lend credibility to his or her college program and also be a successful competitor for equine industry jobs, will have attained the standards of the I, II, and most of the III priority goals. So, educators may freely combined the higher priority goals into any course configuration, depending on the students' needs and the emphasis of the educational program.

Educator Domain-Level Sorts

Findings

The fourth research question was, "How were the equine curricular content goals sorted in terms of domain and level by educators?" The cognitive, or knowledge domain; the psychomotor or skill domain, and the affective or attitude domain are of progressive learning stages for students. The levels one through three within the educator sort results indicated the extent of competency educators

felt graduates should have. These findings are shown in the second table under each course heading in chapter 4.

Conclusions

Goals listed as cognitive domain should be learned by students in the initial setting of the classroom. Evaluation of cognitive goal attainment should be by paper and pencil examination. Psychomotor goals require additional teaching materials and should be practiced by the students as skills. These are to be taught in a laboratory situation by changing the classroom protocol from lecture mode, or by practical experience in the stable. Affective domain goals are extremely important, and students who acquire these abilities will be sought after by employers. These attributes are, however, difficult for some faculty to teach and some students to learn, and many students will continue to learn these affective concepts after they enter the equine industry as employees. The teaching locations of courses will correspond to the relative percentages of cognitive, psychomotor, and affective goals in each course and by the subject matter. See the Teaching Locations column of Table 61. While all work by students in the stable may be termed laboratory work, all laboratory work will not necessarily take place in the stable setting.

Introduction to Equine Science is the ideal

introductory course for equine studies curriculum because of the subject matter and because the goals are to be attained at the cognitive level only. This is the prerequisite course for all other courses; students will progress in their abilities through more complex cognitive domain goals and to psychomotor and affective goals after the groundwork of the introductory course. Other prerequisites have been established based on the domain sorts of the goals and the subject matter. See the Prerequisites column in Table 61.

Recommendations

The domain and levels of the content goals may also serve as educational guidelines for teaching and testing. The content delivery location was determined for courses by this study. Further research needs to be done to determine delivery systems for the individual content goals and the best methods of evaluation.

Prioritized Equine Educational Content Goals

Findings

Findings of the fifth research question, which asked "Given the frequency and difficulty ratings by employers and the domain and level sorts of the educators, what was the prioritized list of content goals?" were summarized in the third table for each of the courses listed in chapter 4. These are the prioritized equine course goals.

Conclusions

Given the prioritized equine course goals, the 15 courses named according to the U.S. Department of Education classification (1981) were arranged in different ways for a one-year equine studies certificate program and for a two-year associate's degree program. These curricula are found in Table 61.

The affective goals were all ranked I and II priority level, making them of the highest or second highest priority for inclusion in the curriculum. They may be placed in various courses by faculty discretion when goals to round out a course were needed.

The terms of study for the 2 year program - 1, 2, 3, 4 correspond with the difficulty of the subject matter as determined by the educator sorts and the course prerequisites as concluded by the domain sort and the subject matter (see Table 61). The percent of I, II, III and IV goals determined this placement to some extent: courses with a higher number of II and III goals, for example, which are high difficulty, should be undertaken later in the student's academic experience than those with a higher percentage of I and IV goals. Courses which take place over more than one term, for example Applied Horseback Riding, were designated as "1 & 2," etc., while courses with more than one suitable term of study were designated with "2 or 3," etc.

The subject matter, employer sorts, and number of programs reporting graduates in that area determined whether the courses were required for either one- or two-year programs (see Table 61). Essential subject matter, like Equine Health and Equine Nutrition, is required. Employer sorts showing a high percentage of I and II priority goals led to required courses. A high number of programs reporting graduates in that area resulted in required over recommended courses. Courses listed as recommended may be adopted according to the emphasis of the individual equine education program or made available according to individual students' interests.

Prerequisite courses are either equine or general college curriculum. The sequence was determined by the subject matter, by the difficulty sorts by employers and by the results of the domain sorts by educators. In some cases, a student's performance in one course might determine his future course of studies. For example, a certain level of expertise in Applied Riding is necessary to enter the Equine Training course.

The two-year degree program required 21 to 23 semester credit hours, with an additional 12 to 16 recommended for the faculty to choose. The number of specialty hours in a two-year degree program, according to SACS (1991), was to total 30. The one-year degree required 13 to 14 semester

credit hours; an additional 11 to 13 were available for faculty to choose (see Table 61).

The course goals listed in chapter 4 may also be utilized as lists of tasks to be performed. These lists may be utilized by employers for job descriptions when hiring, for employee performance evaluation, or for comparing jobs in different businesses. Educators, employers, and students may use these task lists in determining the content of internship work. Additionally, students might use the goal lists to evaluate equine education programs prior to enrolling or to chart their progress during their course of study.

The curricula that results from this study meets Southern Association of Colleges and Schools accreditation standards, and, because this organization is generally recognized as the most strict concerning occupational programs, it is applicable in other accreditation regions. The content goals and curricula of this study are to be used to revise, supplement, augment or justify those of existing or new equine educational programs.

Recommendations

Communications between equine educators and employers must be facilitated for the benefit of both and to the ultimate gain of the student. An organization such as the Equine Educational Network, begun in 1992 by this author in

collaboration with Clare Holcomb of Moonraker Equestrian Academy, Catlett, Virginia, and Dr. N. Lee Newman, DVM, of Lord Fairfax Community College, Middletown, Virginia, would be an excellent vehicle.

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APPENDIX A

Table 62 Needs-Based Curricular Content Goals
Educators' Domain-Level Sorts for Goals Deleted from Curriculum
Based on Majority of Employers Answering Don't Know or Not
Necessary

| Course Title | Goal | Do-main Level | |
|---|---|---------------|-----|
| | | CPA | 123 |
| Equine Financial Management | | | |
| | cite business financing options | P | 1 |
| | cite employee financing laws | C | 2 |
| | enumerate borrower credit criteria | C | 2 |
| | evaluate investment opportunities | C | 3 |
| | identify needed liability, property, and live-stock insurance | P | 2 |
| | predict horse production economics | C | 3 |
| Equine Operational Management | | | |
| | critique horse business computer use | P | 1 |
| | prepare payroll | C | 3 |
| | write employee advertisements | C | 3 |
| Equine Structures, Equipment, and Facilities | | | |
| | apply construction codes | C | 3 |
| | apply zoning laws | C | 3 |
| | compare rental and owned facility costs | C | 2 |
| | design equine facility structures | C | 3 |
| | design safe convenient appropriate facilities | C | 3 |
| | determine available business financing | C | 2 |
| | list fencing options | C | 2 |
| | paraphrase stable construction requirements | C | 1 |
| | plan property layout | C | 2 |
| | select facility site | C | 2 |
| Equine Training | | | |
| | obtain professional licenses | C | 2 |
| Equine Hoof Care and Farrier Science | | | |
| | hot shape shoes | C | 1 |

table continues

Goals Deleted from Curriculum, continued

| Course Title | Goal | Do- main Level | |
|---------------------------------------|--|-------------------|-----|
| | | CPA | 123 |
| Equine Reproduction | | | |
| | illustrate embryo transfer techniques | P | 1 |
| | sequence embryo transfer process | C | 2 |
| | state embryo transfer philosophy | C | 3 |
| | synthesize artificial insemination theory | C | 3 |
| Equine Genetics | | | |
| | cite sex chromosome function | C | 2 |
| | construct heritable trait introduction model | C | 2 |
| | define genetic terms | C | 2 |
| | diagram cell division | C | 2 |
| | diagram single gene inheritance | C | 2 |
| | explain chromosome function | C | 2 |
| | outline single gene inheritance complicating factors | C | 1 |
| | utilize heritability estimates | C | 2 |
| Equine Health | | | |
| | illustrate E.I.A. | C | 2 |
| | list infectious disease vectors | C | 2 |
| Equine Nutrition | | | |
| | utilize Pearson square | C | 3 |
| Equine Conditioning | | | |
| | assess swimming conditioning programs | C | 2 |
| | prepare treadmill conditioning program | C | 2 |
| Introduction to Equine Science | | | |
| | describe breed registry function | C | 2 |

Note. This table contained 39 goals. C = cognitive; P = psychomotor; A = affective. 1 = relatively simple, 2 = moderate, and 3 = relatively complex levels of competency expected.

APPENDIX B
INSTRUMENT EXAMPLES, COVER LETTERS, DIRECTION PAGES,
FOLLOWUP LETTERS

Appendix B is arranged according to the following list:

1. Cover letter to educators.
2. Direction pages to educators.
3. Followup letter to educators.
4. Fascimile followup letter to educators.
5. Sample instrument to educators.
6. Cover letter to employers.
7. Direction page to employers.
8. Followup letter to employers.
9. Sample instrument to employers.



AMERICAN YOUTH HORSE COUNCIL

Sue Stuska
73 Tulip Grove Cir. #9
Bristol, TN 37620
(615) 652-1887

April 2, 1992

Dear Educator,

The equine industry needs well-prepared employees, and associate's degree programs have the ability to turn out these individuals. What is taught at the colleges must reflect both the educators' understanding of curriculum and the industry employers' and employees' savvy of the working world.

Attached is a partial list of instructional goals. YOU ARE ONE OF A FEW WITH THIS PARTICULAR LIST, SO YOUR INVOLVEMENT IS CRITICAL. With your responses, and those of employers, PEAKS Coursebuilding Software (tm) will allow me to compile a prioritized list of instructional goals; I will pass the prioritized list on to you for your use.

I appreciate your expertise. This questionnaire has been coded for followup purposes. Please return the completed questionnaire using the postage and label enclosed, within one week. Thank you very much.

Sincerely,

Sue Stuska

Directions (see sample below)

1. Consider the performance you expect from students graduating from an associate's degree equine program.

2. There are no right or wrong answers. All individual responses will be kept confidential; the results will be reported as group data.

3. The INSTRUCTIONAL GOALS below have been gleaned from the literature and existing courses. You have been given one quarter of the entire list; if you would like to suggest additional goals IN THE SUBJECT AREA you've been given, please do.

4. For each goal, choose ONE which you expect STUDENTS should have at GRADUATION:

KNOWLEDGE of this subject,
SKILL in this subject, or
ATTITUDES or values regarding this subject.

5. Then look across the KNOWLEDGE, SKILL or ATTITUDE row and check the level of ability you expect in the GRADUATE.

Examples

AT GRADUATION, THE STUDENT WILL:

| Goal | Goal Classification | Level of Ability | | |
|-----------------------------------|--|--------------------------|--------------------------------------|---|
| | | Simple | More Complex | Most Complex |
| 1. identify breed characteristics | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input checked="" type="checkbox"/> |
| | SKILL: imitate | <input type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input type="checkbox"/> |
| | <input type="checkbox"/> NOT NECESSARY | | | |

(This example shows that the educator expects graduates to apply knowledge of breed characteristics.)

Notice that the complexity increases from left to right, and that each lower LEVEL is subsumed in the higher level (for example, "understand" assumes the student knows the "fact").

Definitions for Levels

- fact: a piece of knowledge
 understand: two or more facts linked together
 apply: student applies factual knowledge to situation
- imitate: to be able to do under the watchful eye of the instructor
 practice: to be able to perform on his/her own, given unlimited time
 habit: to be able to perform in (at least) half the time as a beginning employee
- aware: to be aware of the concept
 distinguish: to be able to differentiate acceptable and unacceptable behavior
 integrate: displaying appropriate multiple behaviors

AT GRADUATION, THE STUDENT WILL:

| Goal | Goal Classification | Level of Ability | | |
|-------------------------|---------------------|-------------------------------------|--------------------------------------|------------------------------------|
| | | Simple | More Complex | Most Complex |
| 2. administer first aid | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input type="checkbox"/> |
| | SKILL: imitate | <input checked="" type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input type="checkbox"/> |
| | | <input type="checkbox"/> | NOT NECESSARY | |

(The educator expects graduates to be able to perform first aid under the watchful eye of the instructor.)

| | | | | |
|----------------------------|-----------------|--------------------------|--------------------------------------|---|
| 3. exhibit professionalism | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input type="checkbox"/> |
| | SKILL: imitate | <input type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input checked="" type="checkbox"/> |
| | | <input type="checkbox"/> | NOT NECESSARY | |

(The educator expects graduates to display professional behaviors.)



AMERICAN YOUTH HORSE COUNCIL

Sue Stuska
73 Tulip Grove Cir. #9
Bristol, TN 37620
(615) 652-1887

July 20, 1992

Dear Educator,

I don't have a record of your returning the survey I sent you last Spring. I have received numerous others, and am compiling the data for a PRIORITIZED LIST OF INSTRUCTIONAL GOALS.

I would like to send you the resulting list, which I believe you will find helpful for assessment studies, for preparing new courses or revising existing ones, and to help guide new instructors.

However, I value and need input from your institution. Please take 20 minutes and check off the boxes that indicate your opinions. I've enclosed return postage and an address label.

If you cannot complete the survey for any reason, would you kindly pass it on to someone in your department who will do so?

I hope my timing will allow you to act before your Fall classes take priority.

Thank you very much.

Sincerely,

Sue Stuska

Please deliver to: _____

Total number of pages: _____

Transmission problems? Survey questions? Call Sue Stuska at Virginia Highlands Community College, Abingdon, Virginia at (703) 628-6094 x 272.

EQUINE CURRICULUM SURVEY DIRECTIONS

Thank you for your timely response to this important matter; your efforts will allow me to develop prioritized equine curriculum based on both employers' and educators' responses.

1. Check one box for each goal.
2. If you would test the goal by a paper & pencil exam, think KNOWLEDGE; if not, think SKILL. ATTITUDES are just that.
3. The three boxes across represent levels of ability: low, medium, high, relative to other goals. Mark one box on one line.

AT GRADUATION, THE STUDENT WILL:

| Goal | Goal Classification | Level of Ability | | |
|-----------------------------------|--|--------------------------|--------------------------------------|---|
| | | Simple | More Complex | Most Complex |
| 1. identify breed characteristics | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input checked="" type="checkbox"/> |
| | SKILL: imitate | <input type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input type="checkbox"/> |
| | <input type="checkbox"/> NOT NECESSARY | | | |

Please FAX your results to me on the FAX line (703) 628-7576.

Thank you very much!


Sue Stuska
Equine Instructor

Questionnaire on Subject: Management I

AT GRADUATION, THE STUDENT WILL:

| Goal | Goal Classification | Level of Ability | | |
|--|--|--------------------------|--------------------------------------|------------------------------------|
| | | Simple | More Complex | Most Complex |
| 1. analyze cash flow | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input type="checkbox"/> |
| | SKILL: imitate | <input type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input type="checkbox"/> |
| | <input type="checkbox"/> NOT NECESSARY | | | |
| 2. cite business financing options | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input type="checkbox"/> |
| | SKILL: imitate | <input type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input type="checkbox"/> |
| | <input type="checkbox"/> NOT NECESSARY | | | |
| 3. cite employee financing laws | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input type="checkbox"/> |
| | SKILL: imitate | <input type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input type="checkbox"/> |
| | <input type="checkbox"/> NOT NECESSARY | | | |
| 4. cite new business planning and starting steps | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input type="checkbox"/> |
| | SKILL: imitate | <input type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input type="checkbox"/> |
| | <input type="checkbox"/> NOT NECESSARY | | | |
| 5. collect client owed funds | KNOWLEDGE: fact | <input type="checkbox"/> | understand <input type="checkbox"/> | apply <input type="checkbox"/> |
| | SKILL: imitate | <input type="checkbox"/> | practice <input type="checkbox"/> | habit <input type="checkbox"/> |
| | ATTITUDE: aware | <input type="checkbox"/> | distinguish <input type="checkbox"/> | integrate <input type="checkbox"/> |
| | <input type="checkbox"/> NOT NECESSARY | | | |



AMERICAN YOUTH HORSE COUNCIL

Sue Stuska
73 Tulip Grove Cir. #9
Bristol, TN 37620
(615) 652-1887

Dear Employer,

The equine industry needs well prepared employees, and associate's degree programs have the ability to turn out these individuals. What is taught at the colleges must reflect the needs of the equine industry employers.

Attached is a partial list of educational goals. YOU ARE ONE OF A FEW WITH THIS PARTICULAR LIST, SO YOUR INVOLVEMENT IS CRITICAL. With your responses, and those of educators, PEAKS Coursebuilding Software (tm) will allow me to compile a prioritized list of instructional goals THAT REFLECT THE NEEDS OF INDUSTRY EMPLOYERS; I will pass the prioritized goals on to you for your use.

I appreciate your expertise. This questionnaire has been coded for followup purposes. Please return the completed questionnaire using the postage and label enclosed, within one week. Thank you very much.

Sincerely,

Sue Stuska

Sue Stuska

Directions (see example below)

1. Base your answers on the performance you expect from employees who have just graduated from an associate's degree equine program.

2. There are no right or wrong answers. All individual responses will be kept confidential; the results will be reported as group data.

3. The INSTRUCTIONAL GOALS below have been gleaned from the literature and from existing courses. You have been given one quarter of the entire list; if you wish to add additional goals WITHIN YOUR GIVEN SUBJECTS feel free.

4. For each INSTRUCTIONAL GOAL, check one box under FREQUENCY. The frequency indicates how often this goal is performed on the job. If it is easier for you to think of this classification as importance, please do. You should compare each task to all other tasks performed by this college graduate employee. Don't be tempted to create a medium category; high and low are specific enough.

5. Then check one box under DIFFICULTY. This reflects how hard this goal is to perform on the job by the recent graduate. Again, do not be tempted to create a medium category; high and low are specific enough.

Definitions

INSTRUCTIONAL GOAL: what student will learn in college
 FREQUENCY or importance: how often the beginning employee will use this expertise
 DIFFICULTY: your estimate of how hard it is for the beginning employee to accomplish this on the job

Examples

The recent graduate will:

| INSTRUCTIONAL GOAL | FREQUENCY | | DIFFICULTY | | DON'T KNOW OR NOT NECESSARY |
|---|--|---|--|---|-----------------------------|
| | high | low | high | low | |
| 1. administer first aid | high <input checked="" type="checkbox"/> | low <input type="checkbox"/> | high <input checked="" type="checkbox"/> | low <input type="checkbox"/> | <input type="checkbox"/> |
| 2. amass individual horse health case histories | high <input type="checkbox"/> | low <input checked="" type="checkbox"/> | high <input checked="" type="checkbox"/> | low <input type="checkbox"/> | <input type="checkbox"/> |
| 3. assist farrier | high <input checked="" type="checkbox"/> | low <input type="checkbox"/> | high <input type="checkbox"/> | low <input checked="" type="checkbox"/> | <input type="checkbox"/> |



AMERICAN YOUTH HORSE COUNCIL

Sue Stuska
73 Tulip Grove Cir. #9
Bristol, TN 37620
(615) 652-1887

July 24, 1992

Dear Present or Potential Employer of Two-year College
Equine Graduates:

I don't have a record of your returning the survey I sent you last Spring. I have received numerous others, and am compiling the data for a PRIORITIZED LIST OF INSTRUCTIONAL GOALS.

It is essential for the good of the horse industry that colleges train equine professionals TO INDUSTRY STANDARDS. You now have the opportunity to help determine these standards.

I value your opinion. Would you please check the boxes on the inclosed surveys (or ask another experienced person in your business to do it) and mail it back with the postage I have included?

I will send you the resulting list, which I believe you will find helpful for determining job descriptions and conducting interviews of potential employees. Possibly you can even work with your local college in training workers to your specifications!

I have already begun compiling data, and hope you will do this at your earliest convenience.

Thank you very much.

Sincerely,

Sue Stuska

Questionnaire on Subject: Management I

The recent graduate will:

| <u>INSTRUCTIONAL GOAL</u> | <u>FREQUENCY</u> | | <u>DIFFICULTY</u> | | <u>DON'T KNOW OR NOT NECESSARY</u> |
|---|------------------|--------------------------|-------------------|--------------------------|------------------------------------|
| 1. analyze cash flow | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |
| 2. cite business financing options | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |
| 3. cite employee financing laws | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |
| 4. cite new business planning and starting steps | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |
| 5. collect client owed funds | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |
| 6. compare insurance policys' coverage | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |
| 7. consult financial planning (accountants) personnel | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |
| 8. contrast horse production costs & profits | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |
| 9. delineate safe chemical use & storage | high | <input type="checkbox"/> | high | <input type="checkbox"/> | <input type="checkbox"/> |
| | low | <input type="checkbox"/> | low | <input type="checkbox"/> | |

VITA

PERSONAL

Susan Jolene Stuska
Birth: August 1, 1958
Address: 73 Tulip Grove Circle, #9 (home)
Bristol, TN 37620

P.O. Box 828 (academic year work)
Abingdon, VA 24210

P.O. Box 237 (summer work)
Kremmling, CO 80459

EDUCATION

1992 Ed.D., Community College Education, Virginia
Polytechnic Institute and State University

1981 M.S. Agriculture, Murray State University

1980 B.S. Equestrian Science, William Woods College

EMPLOYMENT

1987 - 1993 Virginia Highlands Community College

1987 - 1993 (summers) Latigo Guest Ranch

1985-1987 Virginia Intermont College

1981-1985 Virginia Polytechnic Institute and State
University

PUBLICATIONS

Horsemanship Handbook, 6th Ed. Alpha Editions

Equine Educational Programs Directory, privately printed