AN ASSESSMENT OF FINANCIAL RESOURCES, EXPENDITURES, AND FACILITY FEATURES ASSOCIATED WITH SELECTED OKLAHOMA AGRICULTURAL MECHANICS PROGRAMS

By

TONY GENE SMITH

Bachelor of Science
East Texas State University
Commerce, Texas
1980

Master of Science
East Texas State University
Commerce, Texas
1982

Submitted to the faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
DOCTOR OF EDUCATION
May, 1985

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Thesis Approved:

Robert Terry
Thesis Adviser

James D. White

Eddy Finley

George E. Coob

Norman N. Durham
Dean of the Graduate College

ACKNOWLEDGEMENTS

The writer wishes to express his deepest appreciation to Dr. H. Robert Terry, Head of the Department of Agricultural Education, the writer's committee chairman and major adviser, for the encouragement and advice that was so thoughtfully and patiently given throughout this educational endeavor.

Sincere appreciation is expressed for the wise council and suggestions by the writer's advisory committee. In particular, Dr. Eddy Finley, whose personal commitment was untiring throughout the study, Dr. James White for council and advice, and Mr. George Cook for his continued encouragement and support.

Appreciation is extended to Dr. Wes Holley for his friendship and to Dr. Jack Pritchard, whose support will never be forgotten.

Sincere thanks are extended to the graduate assistants, Mr. Jerry Barbee, Mr. David Drueckhammer, and Dr. Darryl Mortensen, who helped to make this experience enjoyable.

An expression of gratitude is also due the thirty vocational agricultural mechanics teachers who cooperated in the survey and helped make this study possible.

Sincere gratitude is expressed to Dr. Charley Jones and Dr. Marsenna Norris who encouraged and supported the writer throughout his undergraduate and graduate studies. Without their exceptional training skills and belief in this writer, this goal could not have been achieved.

Sincere thanks are extended to the writer's vocational agriculture teachers, Mr. Richard Watson and Mr. Richard Benson, whose influence and personal commitment caused the writer to follow their examples and become a vocational agriculture teacher. A special recognition is given to Mrs. Marilyn Henson and Mrs. Kami Morris, who loyally typed endless revisions of this study.

Appreciation and gratitude are expressed to those individuals at the Oklahoma State Department of Vocational-Technical Education for their assistance. A special thanks to Verlin Hart, Agricultural Mechanics Specialist, and the Vocational Agriculture District Supervisors for all their help.

Words cannot express the love shown to the writer's parents, Odie and Fay Smith, for their guidance, religious beliefs, sacrifices, and love shown to the writer throughout his life and academic studies. Without their prayers and support, this study could not have been completed.

A special love and gratitude is expressed to Oren and Mary Hays, whose sacrifices, support, and encouragement will not ever be forgotten.

To my wife, E'Lisa, and twin daughters, Jeana and Jennifer, I humbly say thanks for the support, love, understanding, and sacrifices while encouraging me through this educational endeavor. To them this study is dedicated.

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INTRODUCTION

The establishment of vocational agriculture in local high schools in 1917 was a direct result of the passage of the Smith-Hughes Act. The passage of this legislation began a new era for agriculture in the United States, and because of the legislation, vocational agriculture became a formalized process for instructing young people in the rapidly expanding industry of agriculture.

Previous to the Smith-Hughes Act, training in agriculture was passed from father to son through a rather informal educational process. As this training moved from the traditional process to the formalized classroom, traditional methods were replaced by new and modern technologies. The advancements which were being made throughout the agricultural industry were incorporated into the vocational agriculture instructional program. Today, vocational agriculture has become both a diversified and specialized program for training in all aspects of agriculture and related skill areas. One of the related skill areas which was recognized as essential in developing industry to its fullest potential was the agricultural mechanics program. Over the years, this program has grown from one of repairing singletrees, harnesses, and wagon axles to sophisticated knowledge such as that required of the mechanics who repair injectors for diesel engines.

Two primary reasons for the growth of agricultural mechanics were the desire by people to make life easier and the development of more

economical ways of producing farm products. A contributing factor to this area of specialization was the movement of people from the farm to the urban areas and an increase in agricultural support services to the farmer. This resulted in fewer farm workers, thus many farmers began using more automated equipment in order to become more efficient.

The methods used in agricultural production have also changed. As discussed by Lee (30, p.77),

> Age-old agricultural methods will be changed in favor of more efficient crop growing practices that will require less energy and labor. For example, there is now a trend toward minimum or no tillage (plowing) of crops.

The net result of this is that the unskilled agricultural mechanics worker will find it increasingly difficult to obtain employment, therefore the workers of tomorrow will need more knowledge and skills with regard to farm equipment and repair, tools, adjustments, and operation. This was indicated by Amberson (3, p. vii) in his book relating to career preparation for agriculture. He reported,

> There are no longer homogeneous entry requirements for students leaving high school to begin careers in the agricultural industry. Fundamental technical and personal skills must be acquired, and experience for application of these skills has become a necessity.

For a worker to be competent and obtain these skills, a good education is necessary. Workers must be able to read well enough to translate technical manuals to practical application and communicate instructions. The agricultural mechanics program teaches students to make observations and to analyze situations presented as problem solving exercises which incorporate the many skills taught in the agricultural mechanics curriculum.

Because there is a need for a specialized application of agricultural mechanics in the vocational agriculture curriculum,

adequate facilities of sufficient size and modern equipment should be provided to insure that students have the opportunities for the most practical learning experience possible. Providing adequate facilities and equipment insures that students have adequate opportunities to develop hands-on skills that are essential in the learning process. This allows for the students to apply the knowledge obtained during formal classroom instruction into observable skill performance.

Providing for adequate facilities and equipment continues to be an important concern to the instructional programs in agricultural mechanics but the expenses that occur while providing and maintaining the agricultural mechanics program may be rather large outlays of capital. This may include consumable materials, hand tools, and other items that are essential for expanding and maintaining outstanding instructional programs. To offset the expenses that occur in the instructional program of agricultural mechanics, sufficient revenues should be made available. Adequate funding of today's agricultural mechanics programs is essential to allow for the equipment to be purchased that is important for skill development. As a result of these needs and concerns for providing quality instruction in Agricultural Mechanics which will increase the employability of students in today's trend toward a high-tech society, this study was undertaken.

Statement of the Problem

Due to the continuing changes of employment opportunities, the needs of students completing specialized agricultural mechanics programs should be addressed with regard to the issues which impact upon job availability and quality of instructional programs. Various factors tend to influence the quality of instructional programs in agricultural

mechanics. Many of these factors, such as instructors, facilities, repair costs, modernization costs, consumable supply costs, and facility program characteristics all impact upon the quality of agricultural mechanics programs. Additionally, the quality of programs are impacted by available funding for the agricultural mechanics programs, regardless of the source of funding. Since no information was available concerning the agricultural mechanics program and since facilities had not been analyzed relative to describing the typical agricultural mechanics facility, this study was undertaken.

Purpose of the Study

The primary purpose of this study was to assess the financial resources, expenditures, and facility features associated with selected Oklahoma Agricultural Mechanics programs. A secondary purpose of this study was to determine certain variables associated with the time spent teaching in the areas of agricultural mechanics.

Objectives of the Study

The following objectives were formulated to accomplish the purpose of this study:

1. To characterize selected vocational agricultural mechanics teachers utilizing demographic data obtained.
2. To determine whether agricultural mechanics courses are offered to adults and the amount of time devoted to such instruction per year.
3. To obtain data relative to sources of funding, annual costs of consumable supplies and/or modernization costs and/or repair

costs and/or total amounts of monies expended annually for agricultural mechanics programs.

4. To identify and describe procedures and/or techniques utilized by vocational agriculture teachers to reduce the annual program costs for project construction.
5. To identify the amount of time spent annually teaching each area of agricultural mechanics and the limitations associated with teaching all areas.
6. To inventory and describe the physical plant utilized to house the instructional program of agricultural mechanics.

Scope of the Study

The Oklahoma District Supervisors of Vocational Agriculture were asked to identify five single teacher departments and five multiple teacher departments which they considered to be "outstanding". This yielded an initial group of fifty departments which were stratified by districts and single and multiple teacher departments. From these fifty departments, thirty were randomly selected and designated as the sample. To accomplish the purpose of this study, the sample included three single teacher vocational agriculture departments and three multiple teacher vocational agriculture departments from each of the five Oklahoma supervisory districts.

Assumptions of the Study

For the purpose of this study, the following assumptions were accepted by the investigator:

1. State supervisors in agricultural education were able to identify outstanding instructional programs in agricultural mechanics based

upon their personal knowledge and experiences of what constitutes quality agricultural mechanics programs. Generally speaking, quality agricultural mechanics programs are those which are considered by many to have: a. adequate funding; b. modernized equipment; c. adequate facilities; d. well balanced curriculum in agricultural mechanics; e. quality instructors; f. produce tangible quality mechanics products; and g. other areas relative to quality instruction.

2. Vocational agricultural mechanics teachers responses would be reliable and accurate.

Definitions of Terms

Agricultural Mechanics - A program of instruction focusing on the development of mechanical abilities of students in the performance of agricultural shop activities in operating, maintaining, repairing, and adjusting farm machinery, in constructing and maintaining farm buildings, in installing and maintaining farm electrical systems, and in performing the mechanical activities in Soil and Water management programs. (37)

Curriculum - All the planned learning activities in Agricultural Mechanics that are conducted in a vocational agriculture department.

Physical Plant - The structure or building portion which is utilized for conducting agricultural mechanics programs.

Program Costs - The costs associated only with agricultural mechanics instruction including equipment, tools, and consumable supplies.

Modernization Costs - The costs that are associated with agricultural

mechanics programs that involve purchasing and/or replacing old or outdated equipment with new modern technology equipment and tools.

Power Tools and Equipment - Tools and equipment that are designed for the same purpose as hand tools. The power for operating the tools and equipment is supplied by an electric motor instead of by the operator. (37)

Hand Tools and Equipment - Tools and equipment designed for the same purpose as power tools. The power for operating the tools and equipment is supplied by the operator. (37)

Consumable Supplies - Supplies used in the instruction and/or construction of agricultural mechanics projects that can never be recovered. These include: oxygen, nitrogen, acetylene, welding rods, angle iron, steel, aluminum, and other supplies. (48)

Project Construction - Projects that are constructed by vocational agriculture students as part of their instruction in agricultural mechanics.

Laboratory Skills - The type of instructional program in which most of the students' time is spent performing hands-on experiences and developing skills in agricultural mechanics.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this chapter is to present a review of literature used in developing and conducting the study.

Many studies reviewed directly relate to facilities and equipment but very little literature was found which concerned itself directly with the costs of vocational agricultural mechanics facilities and equipment.

The literature reviewed is presented under major topic headings to facilitate clarity and organization. These headings are as follows:

1. Agricultural Mechanics in the Vocational Agriculture Program
2. The Importance of Adequate Facilities, Tools, and Equipment Utilized in Agricultural Mechanics
3. Financing Agricultural Mechanics Programs
4. Program Characteristics and Facility Standards
5. Summary

Agricultural Mechanics in the Vocational Agriculture Program

Training in agricultural mechanics is one of the more important instructional areas of vocational agriculture. Today, nearly all phases of agricultural production and processing are largely mechanized. In

recent years, there also have been many changes in the equipment and technology of agricultural mechanics. These factors have increased the demand for people who possess saleable skills in the various areas of agricultural mechanics.

In recent years, agricultural power and machinery has become more important to the agricultural industry. According to Shinn and Weston (43), everyone who depends on agricultural industry depends on machinery, power equipment and tools, and the people who know how to use them. They also maintain that the difference in the farm family of yesterday and today is technology. This technology includes equipment, machinery, tools, and techniques to produce the most efficient tools. In fact, twenty-four per cent of all American workers need some knowledge of agricultural mechanics.

Since World War I, the agricultural industry has continually risen in importance. The industry has continued to employ persons with related job skills. Lee (30, p.24) states "technology and mechanization have helped the agricultural industry to grow into one of the nation's largest industries." He also indicated that the rising era of mechanization of agriculture has increased the need for persons with specific knowledge and skills.

The students that possess a diversified knowledge of agricultural mechanics should be able to find suitable employment in an occupational area. Farmer (16) pointed out that the learning of agricultural mechanics skills is more critical now than in the past few years. He discussed the future job qualifications for persons wanting to enter professions requiring more skills in agricultural mechanics.

In a study on the importance of agricultural mechanics, Farmer (17, p.1) also stated:

> Mechanization, automation, and the use of technical information have changed the picture of the American farm and ranch. Cattle are fed by computers instead of grain scoops. Vegetables are picked by giant machines. Crop diseases are being researched using satellites. Before the Agricultural Industry can meet the needs of the future, even larger, faster, and much more economical systems of production are needed by the farmer and rancher. Even before these systems can be designed and put into use, trained persons having basic knowledge and skills in agricultural mechanics are needed in the Agricultural Industry.

Many instructional areas should be taught to the students. A variety of mechanical knowledge and aptitudes is extremely important to agricultural production. Lewis and Woodin (32) indicated that students in production agriculture must be able to operate, maintain, repair, construct and/or use the agricultural mechanics items such as machinery, equipment, structures, tools and supplies. Also, Amberson (2) noted that knowledge and skills are needed in maintenance mechanics, welding, concrete construction, uses of electricity, and other applications of mechanics in agriculture.

According to Phipps (37), the primary aim of agricultural mechanics is to train present and prospective agricultural workers to do the ordinary mechanical activities that need to be done on farms and nonfarm agricultural businesses with the available tools and equipment.

Phipps (36) also noted that instruction in agricultural mechanics is an integral part of the program in agricultural education. The student's supervised occupational experience programs offer many opportunities for desired agricultural mechanics activities. The importance of agricultural mechanics abilities is being recognized by allowing sufficient time for agricultural mechanics instruction.

Agricultural mechanics, because of the necessary "hands-on" approach to learning, has aroused the students' interests. The students when interested will become involved in the learning process. The Future Farmers of America Advisor's Handbook (35) acknowledged that agricultural mechanics programs will stimulate students to increase their abilities and knowledge. These programs should provide the occupational and educational activities that will develop the abilities necessary for performing the important processes involved in agricultural mechanics.

The Importance of Adequate Facilities, Tools, and Equipment in Agricultural Mechanics

Agricultural mechanics facilities equipped with the proper and necessary equipment are essential for successful agricultural education programs. The facilities and equipment must be provided to allow for the proper training that will enable the students to enter into one of the many agricultural related occupations that are available.

According to Amberson and Anderson (3, p.78),

> ...more and more schools are realizing the importance of the agricultural mechanics programs. The schools are investing in new agricultural mechanics laboratories and spending great amounts of money to equip them with modern tools and equipment.

Agricultural mechanics laboratories are extremely important to the overall agriculture program. The students are allowed to use the theory obtained in classroom participation by applying the theory in practical applications. It was reported by Braker (10) that the vocational agricultural mechanics laboratory is thought of as the place to make practical applications of the knowledge obtained through agricultural

mechanics. Lee (28) also reported that laboratories are needed that will maximize the efficiency in the teaching-learning process.

Adequate facilities have been a problem to vocational agriculture instructors for many decades. In a 1963 study, Dreessen (15) stated that 37 percent of the facilities rated in either a fair or poor physical condition. He noted that there was a real need to improve the shops and farm mechanics facilities in Oklahoma. Also noted was that 30 percent of the schools with agricultural mechanics programs did report excellent physical plants.

The importance of agricultural mechanics laboratories is further emphasized as being necessary for adequate training. According to a Research Committee Study of Southern Schools (41), 87 percent of the participants reported that a farm shop is necessary for adequate training in vocational agriculture. The study indicated that floor space, storage space, heating systems, and electrical systems are important aspects of proper facilities.

The shop equipment found in vocational agricultural shops is also a vital aspect of the instruction in agricultural mechanics. Pritchard (38) in his article about the importance of laboratories noted the awareness of communities of the need for up-to-date facilities, equipment, instruction, and laboratories. These will assist in the preparation of students for entry into production agriculture or agribusiness. Tugend (49) found in his study that one reason many teachers did not teach certain subjects was the lack of shop equipment.

Many instructional hand and power tools and equipment items must be purchased and placed in the farm shops. According to a Minnesota study by Hauser and Kitts (23), it was found that arc and oxy-acetylene

welders, light duty grinders, drill presses, and table saws were the most common items found in farm shops. A study by Spengler (45) revealed that shops utilized only for vocational agriculture were better equipped in farm machinery, power tools, and electrification than the shops shared with other departments, however the shared shops were better equipped for carpentry and cold metal tools. He reported that as the amount of college credits taken by the instructor in agricultural mechanics increased, so did the number of tools purchased.

A well organized and equipped shop is essential and the tools and equipment purchased must be of the proper size. Use of the tool or equipment must also be taken into consideration before purchasing. Phipps (37) indicated that tools and equipment in the agricultural mechanics shop should be of the size, kind, and quantity that is necessary in the development of students' abilities. A journal article by Cepica (12) stated that the responsibility to secure new equipment lies with the summer priorities of the teacher.

In a recent article about the importance of a well organized facility, Wallace (50) discussed the need for well organized facilities and noted they should be properly maintained. The tools and equipment should be in their proper places and in good working condition. In the discussion by Gleim (18), it was stated that you (instructor) must continually strive to keep your equipment up-to-date and in using obsolete equipment, you are cheating the students.

The selection, maintenance, and repair of tools, equipment, and facilities pose constant problems, especially to the overworked vocational agricultural teacher, but the importance of maintaining proper and adequate tools and equipment cannot be over-stressed. It is,

therefore, important and necessary to provide adequate facilities and equipment for an effective program.

Financing Agricultural Mechanics Programs

Adequate financing of the agricultural mechanics program may be the key to a successful program. Many people have different ideas as to what the successful program should include and how it should be managed. The key to successful management is to formulate a suitable operating budget and successfully manage this budget using various cost saving measures. In other words, the vocational agriculture teacher and public school administrators must be good managers regarding fiscal resources.

According to Lee (28), adequate funding is essential to a successful program. He allowed that without sufficient funds, salaries, travel, instructional materials, laboratory equipment and supplies, and other needs, a quality program will not be available.

A vocational agriculture teacher has many responsibilities. He or she does not need additional problems as a result of poor management practices. Agnew (1) recognized the major factors that caused teachers the most concern as: money, facilities, equipment and materials. Terry (48) also noted in his study that emphasis on farm mechanics training has brought several problems. These deal primarily with the administration of a shop program, financial procedures, and securing and managing equipment and supplies.

Agricultural mechanics program funding is a very costly section of the total program. The laboratories must be adequately equipped and the tools and equipment are very expensive. According to Bekkum and Horner (9), an agricultural mechanics laboratory is the largest and, no doubt,

the most costly section of the agricultural education program. Lewis and Woodin (32) pointed to the improvement and introduction of new products by manufacturers as a cause attributing to the costs of agricultural mechanics programs.

Another factor contributing to these costs was revealed by Lewis and Wakeman (31, p.210), who stated that "students must operate, maintain, repair, construct and use machinery, equipment, structures, tools, and supplies."

The quality of equipment and supplies purchased is an important consideration in financing agricultural mechanics program. Bear (6) noted that when purchasing tools and equipment, the instructor needs to buy quality merchandise which will do the intended task. Bear (6, p. 12) stated that flexible goggles cost $2 to $3 where industrial quality eyewear costs in the $5 to $6 range. He further stated: "frequently, the purchase decision is based on price rather than eyewear effectiveness, student acceptance, or the instructor's ease of enforcement of regulations." (p.12)

Bear (7) also discussed that it should not be a complete surprise that tools and equipment wear out. Some schools have a budget item called the Capital Expenditure Fund. The reserve funds should be maintained and used for items such as: (a) instructional equipment, (b) operational and maintenance equipment, and (c) replacement equipment. He reported that the initial investment for shop tools in 1976 should be in the $35,000 - $45,000 range. Annual allocations for replacement of tools and equipment should equal about 10 percent of the initial investment.

Project construction, when used as a method of teaching agricultural mechanics, is a very effective teaching tool. Reynolds

(42) noted that project construction has long been recognized as a widely accepted method for teaching agricultural mechanics skills. He discussed several problems and concerns that cause teachers difficulty in implementing the project method. One of these concerns was the increasing costs of materials. These increasing costs make it difficult for students with limited resources and add to the costs of agricultural mechanics instructors.

An alternative method to successfully reduce these costs was discussed by Agnew (1). His suggestion was to utilize the community where businesses have by-products or scrap which could be useful to the program. This is especially true for companies that utilize metal. These companies usually have scrap bins filled with various lengths of scraps which could be utilized in project construction.

Another method for financing agricultural mechanics programs noted by Terry (48), is that students should pay for the consumable supplies and materials used in constructing take home projects. He also discussed in his study that teachers and administrators are not in agreement for using FFA earnings to finance the agricultural mechanics program. He does recommend an alternative method as using a "punch-fee" card for handling payment for consumable supplies used in the farm shop.

Costs present constant problems to teachers and administrators. Many factors contribute to the development of a cost for the instructional curriculum in agricultural mechanics. In a 1970 study, Goishi (19) noted that vocational agriculture was the highest cost curriculum with a total cost per student of $934.48. The most common factor found that contributed most to expenses was the number of students enrolled. Other factors contributing were the kinds and the

amount of equipment utilized, this cost included only hand and power tools and equipment.

It is important for teachers to budget the appropriate amount of funds which will enable them to cover the costs of expenses. Lamb (27) in a 1981 study indicated the budgets for Missouri agricultural mechanics shops ranged from a high of $8,000 to a low of $300, with a study average of $3,772.

New methods must be utilized to save project construction money. Wallace (50, p.14) noted that due to the inflated cost of supplies, materials, tools and equipment, the need to devise ways to save money becomes extremely important. He lists a few of the methods to stretch the dollar as:

(1) Build the equipment needed
(2) Shop for costs and supplies
(3) Substitute used materials whenever possible
(4) Completely use scrap
(5) Justify all purchasing of equipment
(6) Sell non-functional tools and equipment
(7) Repair equipment, if possible

Agricultural mechanics instructors should realize the need for effective budget management in the purchasing of consumable supplies, equipment and tools. They should utilize all available sources to reduce these costs. A predetermined equipment and tool list is necessary for an agricultural mechanics program which will meet the needs and interests of the students.

Program Characteristics and Facility Standards

Due to the special requirements for vocational agriculture programs, many teachers and administrators do not realize the importance of adequate facilities. It is apparent that adequate facilities are

extremely important in regard to the quality of instruction. It is much easier to teach agricultural mechanics in a facility that meets the needs of the particular area to be taught. There are many essential sections of an agricultural mechanics facility that must meet certain standards. These standards may include: proper work space, storage space, tool storage space, and project construction space.

Most agricultural buildings are located in a building adjacent to the main school building. There are many advantages as well as disadvantages to having a separate facility. Other areas that should be considered include: classrooms, washrooms, laboratories, ventilation systems, lighting, and heating and cooling systems.

Adequately ventilated and lighted facilities are necessary for the safety of agricultural mechanics students. According to Phipps (36), the need for an adequately ventilated and lighted facility is important. Thirty foot candles of artificial light should be provided for work areas. Carter (11) noted in his discussion on facilities that 35-40 foot candles of lighting is recommended with additional units to be provided over workbenches and power tools.

Space also presents a constant problem to instructors. Adequate space should be provided to allow for sufficient instruction. Phipps (36) noted that a one teacher program needs approximately 3,500 to 6,500 square feet for the classroom, office, toilet, and agricultural mechanics shop. Bear (5) recommended that 150 feet of floor space per student plus 1,400 square feet of dead space be provided for adequate facilities. Carter (11) suggested 4,000 square feet of floor space be provided per teacher. Bekkum (8) in an Iowa State study, recommended the laboratory area to be a minimum of 3,000 square feet with a floor

space of 150 square feet per student and 1,700 square feet allowed for open floor space. The open floor space allows for placement of stationary equipment, welding booths and benches. Dreessen (15) also suggested 150 square feet of floor space per student for the laboratory with an additional 1,200 square feet needed for work benches, power tools and other equipment. The minimum width of the facility should be 40 feet. Hart (22) also agrees with the others, as he recommended 150 square feet per student plus 1,200 square feet for tools and equipment.

Lamb (27) indicated the average size shop in Missouri contained 3,002 square feet. The average dimension of the shop was approximately 43 ft. wide by 68 ft. long. He also indicated a mean size of facilities by using 40 states' Facility Planning Guides. The states' guidelines recommended: (1) 808 square feet for classroom space, (2) 128 square feet for classroom storage, (3) 129 square feet for office space, (4) 560 square feet for storage materials, and (5) 3,008 square feet for shop space.

The Texas Facility Standards Guide for Agricultural Education Programs (40) suggested some of the factors to consider when planning and determining shop space needs as: safety, flow of material and personnel, equipment to be included, need for an area to assemble projects, and the number of student enrolled.

To have an effective shop, many tools must be conveniently stored when not in use. Hart (22) suggested the size of the room depends on how it is to be used. If metal is to be stored, it should be at least 24 feet long to accommodate for long metal. Carter (11) suggested 200-400 square feet for storage. Bekkum and Hoerner (9) suggested that storage space for tools and supplies are important. A separate room for

each is desirable although one large area may be enough.

A ventilation system should be provided to allow for the removal of gasses, fumes and exhausts. The Texas Facility Standards Guide (40) recommended for general ventilation that a minimum rate of 2,000 cfm of air per welder and 1,000 cfm per individual welding station. Hart (22) in his discussion suggested that some means of exhausting smoke be provided. If individual exhaust fans are not available, then a large exhaust fan located in the wall should be provided. Phipps (36) agrees with this statement by suggesting that exhaust fans for agricultural mechanics shops be provided.

There are many other items which probably should be considered in facility and program design before construction begins. Some of these include: water and air outlets, outside storage, painting facilities, drains, ventilation, overhead doors, lighting, power outlets and ceiling height, and possibly community building codes and regulations.

Summary

Agricultural mechanics instruction has become an integral part of the vocational agriculture curriculum. With the increased technology in the mechanization of machinery and equipment, highly skilled personnel will be needed continually. The many skills that can be learned in an agricultural mechanics laboratory are essential to those entering vocational occupational fields. Many studies and articles have been written to publicize the demand for agricultural mechanics.

To enable teachers to successfully instruct students, an adequate facility equipped with necessary and quality tools and equipment is essential. Many instructors and administrators have recognized the

importance and have re-equipped or constructed new agricultural mechanics facilities. These improved facilities enhance the opportunity for students to grasp the knowledge and skills that are available through agricultural mechanics program instruction.

In the budget crisis of today, funding for facilities, adequate tools and equipment, and consumable supplies are becoming harder to obtain. An effective vocational agricultural instructor must manage his funds as efficiently as possible without sacrificing the quality of the items needed for skill development. This allows for the innovative teacher to utilize more community resources. This may be a "blessing in disguise" for the future of many of the agricultural mechanics programs.

With this crisis, the need has become greater for teachers to develop efficient budgets and utilize methods which will reduce these costs, however, before they can do so, they must have adequate information regarding costs in order to make sound management decisions.

CHAPTER III

DESIGN AND METHODOLOGY OF THE STUDY

Introduction

The purpose of this chapter is to describe the methods and procedures utilized in conducting this study. In order to collect the data which would provide information pertaining to the purpose and objectives of this study, the sample was determined and the personal interview instrument was developed for collection of the data. Also, a procedure for data collection was established and the methods for data analysis were selected. The information was collected during the months of August and October 1984.

The Study Population

To accomplish the purpose of this study, it was not considered feasible from the standpoint of time and money to survey the entire population of vocational agricultural mechanics programs in Oklahoma using the personal interview method of data collection. Thus, there was a need to select a smaller group of respondents. This was accomplished by first asking the district supervisors to identify the programs in their respective districts which they considered to be "outstanding". This yielded an initial group of fifty departments.

Sampling Method

The sampling procedure selected was the stratified random sampling technique obtained from Steel (47). The sample was stratified by each of the five vocational agriculture supervisory districts and further stratified by single and multiple teacher departments.

The number of vocational agricultural mechanics programs to be surveyed was determined by input from the investigator's graduate committee members. It was perceived that since the research involved extensive travel throughout the state of Oklahoma to conduct personal interviews, thirty programs would provide sufficient evidence to accomplish the objectives of this study. The sample of agricultural mechanics programs was chosen in such a way that each program had an equal chance of being included in the sample.

According to Steel, (47, p.9),

> A sample is a part of a population. (In some situations, a sample may include the whole of the population.) Usually, it is desired to use sample information to make an inference about a population. For this reason, it is particularly important to define the population under discussion and to obtain a representative sample from the population defined.

Several steps were followed in the sampling procedure. The first step included assigning a number to each of the fifty programs identified by the district supervisors.

The second step involved using the table of random numbers (47) using as many numbers that were necessary to obtain the required sample size for each district. For example, the Southwest supervisory district required three randomly selected programs. Once the three randomly selected programs were obtained, the selection procedure ceased for that supervisory district. It is important to note that the numbers that did

not correspond or were duplicated were ignored by the investigator and the next nonduplicate number was selected to be included in the sample. Only those programs whose assigned number corresponded to the randomly selected number were included in the sample. The preceding process of the random selection of programs was repeated for each of the supervisory districts until the desired sample size was obtained.

The resulting sample size can be seen in Table I for the vocational agricultural mechanics programs for the entire sample population. The list of selected programs by supervisory district and the geographical location of the selected programs is shown in Appendix A.

TABLE I

SAMPLE SIZE BY SUPERVISORY DISTRICT

Supervisory District	N	Distribution	
		Percentage of Total Sample (%)	Percentage of District (%)
Northwest	6	20.00	9.09
Southwest	6	20.00	7.59
Central	6	20.00	8.45
Northeast	6	20.00	7.50
Southeast	6	20.00	9.83
Total	30	100.00	

Development of the Personal Interview Instrument

In the development and formulation of the personal interview instrument to meet the objectives of the study, related literature was thoroughly searched for instruments used in previous research. Educational research books on the development of survey instruments were studied to determine the correct procedures.

In the formulation of the instrument, suggestions for revision were offered to the investigator by the graduate committee, Agricultural Education faculty and other doctoral candidates in the department. Input from the agricultural mechanics instructor at Oklahoma State University and the Agricultural Mechanics Specialists for the Oklahoma State Department of Vocational-Technical Education was utilized in the development of the personal interview instrument.

In analyzing various methods of data gathering techniques, the structured personal interview method was determined the most appropriate to meet the objectives of the study and was selected.

Isaac and Michaels (24, p. 138) discuss the advantages of an interview as follows:

1. Permits greater depth
2. Permits probing to obtain more complete data
3. Makes it possible to establish and maintain rapport with respondent or at least determine when rapport has not been established
4. Provides a means of checking and assuring the effectiveness of communication between the respondent

Although the personal interview type of data collection was perceived to be expensive, the investigator decided this would be an appropriate method to follow. Not only did this insure the investigator a 100 percent yield of data which is not always apparent in other data gathering techniques, but it also provided the opportunity to personally

visit each department included in the study.

The opportunity to personally visit the programs proved to be important while administering the interview instrument. The researcher had the opportunity to clarify questions and answer questions regarding the interview instrument. Further, it allowed the researcher to personally explain the educational significance of the research and the importance of the programs' selection by the district supervisor. The importance of reliable answers and data was further emphasized which is also not apparent when using the mailed questionnaire or when using the telephone type of data collection methods.

There are many advantages to using a personal interview for data collection. Key (26, p. 94) notes several advantages in his book on research design. Some of the selected advantages thought to be relevant to this study are:

1. It allows the interviewer to clarify questions.
2. It is a means of obtaining personal information, attitudes, perceptions and beliefs.
3. It reduces anxiety so that threatening topics can be studied.

The interview was structured to allow for the same questions to be asked to each teacher to insure reliable responses. Key (26, P. 95) notes a structured interview as being rigidly standardized and formal. He listed the advantages to a structured interview as:

1. The same questions are presented in the same manner and order to each subject
2. The choice of alternative answers is restricted to a predetermined list
3. The same introductory and concluding remarks are used
4. They are more scientific in nature than unstructured interviews
5. They introduce controls that permit the formulation of scientific generalizations

In preparing the personal interview, it was important to compile a list of questions that pertained to identifying agricultural mechanics

teachers. In addition, questions pertaining to availability and sources of funds for the programs were determined as pertinent. Other questions which involved consumable supply costs, facility characteristics and dimensions, and the time allowed for teaching in the areas of agricultural mechanics were perceived to be important and were added. Input regarding the questions to be asked was secured from several people and revisions and/or additions were made accordingly. It was also necessary to make the necessary revisions and test the applicability and continuity of the questions to be used.

A coding system was needed to provide a method of identifying the selected programs and for ease and consistency in keypunching the interview data sheets. Therefore, a built-in coding system was developed for coding each of the questions on the personal interview data sheets.

Upon receiving a final approval from the investigator's graduate committee, the personal interview instrument was considered ready to be administered to the selected vocational agricultural mechanics teachers.

In its final form, most of the questions required the forced-response format with an option for "other". This format allowed data of a quantitative nature to be obtained. The "other" or open-ended response category allowed the teacher to add areas which were not included in the questionnaire. The option for the "other" on the interview instrument proved to be invaluable throughout the personal interviews with the selected teachers. This allowed for the teachers to indicate other methods which were not presented on the interview instrument. The final form of the personal interview survey instrument may be found in Appendix B.

The personal interview survey instrument used for this study contained six questions related to characterizing agricultural mechanics teachers, six questions specifically related to distribution and sources of funds, four questions dealing with techniques and/or the procedures used for minimizing program costs, and twenty-five questions to solicit answers pertaining to facility size and program characteristics.

Pilot Testing

A pilot study was conducted at the Hennessey and Idabel, Oklahoma vocational agricultural mechanics departments. Isaac and Michaels (24, pp. 34-35) in their book on research and evaluation techniques discuss the advantages of a pilot study:

1. It permits a preliminary testing of the hypotheses that leads to testing more precise hypotheses in the main study.
2. It often provides the research worker with ideas, approaches, and clues not foreseen prior to the pilot study.
3. It permits a thorough check of the planned statistical and analytical procedures.
4. It greatly reduces the number of treatment errors, because unforeseen problems revealed in the pilot study may be overcome by redesigning the main study.
5. It may save the research worker a major expenditure of time and money on a research project that will yield nothing.
6. In many pilot studies, it is possible to get feedback from research subjects and other persons involved that leads to important improvements in the main study.
7. In the pilot study, the research worker may try out a number of alternative measures, and then select those that produce the best results for the main study.

As a result of the pilot study, several valid comments and questions were discussed by the participating teachers. The specific areas needing improvement were: marking procedures on personal interview data sheets, fluency of questions, amount of time taken to conduct the interview and the necessary changes were made to strengthen the interview. It should be noted that a member of the graduate

advisory committee accompanied the investigator to one of the pilot study locations. Additional comments and recommendations made by him were also incorporated into the interview. The investigator's graduate committee chairman reviewed a copy of the personal interview instrument and his recommendations and comments proved to be invaluable as the research was conducted.

Procedure for Data Collection

In July 1984, an introductory letter was mailed to the selected vocational agricultural mechanics program teachers. The introductory letter indicated why their program was selected by the district supervisor and the purpose of the study was also briefly mentioned. The letter requested the opportunity for a personal interview and indicated that they would personally be contacted to establish a convenient meeting time. The introductory letter was co-signed by the head of the Agricultural Education Department at Oklahoma State University and the appropriate district supervisor. (Appendix C).

The questionnaire was timed during the pilot studies and it was determined that it could be conducted in approximately twenty to thirty minutes. This was taken into consideration when scheduling the vocational agriculture teachers to be interviewed so that none or very little time from their class would be taken.

Realizing that vocational agriculture teachers are busy people and not wanting to disturb the vocational agriculture classes, the majority of the research was conducted during the summer months. The investigator personally contacted each of the selected program teachers by telephone and a time and date were established for the interview.

Several of the selected programs were scheduled each day according to geographic location to minimize travel time and expense. A very rigid time schedule was established and every effort was made to adhere to the time schedule. While traveling to personally visit each of the selected programs, the researcher was allowed to view diverse facilities and types of programs in the different geographic locations of the state which greatly assisted the researcher while analyzing the data. The research began on August 17, 1984, and all programs had been visited and the data collected by October 16, 1984. The investigator travelled 3,233 miles throughout the state of Oklahoma while conducting the research.

Analysis of Data

The personal interview survey involved questions which resulted in quantitative data. The personal interview survey was also designed to quantify the responses which allowed for the use of statistical procedures to aid in the interpretation of the data.

It should be noted that the respondents were allowed to answer in the "other" category on some of the questions. This allowed the participants to add responses or comments differing from categories on the personal interview instrument. When a respondent indicated an answer to a question that was not forced choice or answered in the "other" category, these types could not be keypunched on IBM cards and analyzed by the computer. Therefore, this type of data was hand calculated and analyzed and the appropriate statistical method was applied by hand. Some questions allowed the participants to respond to more than one area, thus the total number of responses varied according to the question.

The information collected from the personal interview instrument was keypunched on IBM cards and a Statistical Analysis System (SAS) (4) was utilized in initiating statistical computations by the IBM System 370 Model 158 computer. The quantitative data were recorded on a computer print out sheet and were tallied by the investigator and the distribution (numbers and percentages) reported.

After consultation with graduate committee members, it was decided that descriptive statistics would be the most appropriate method to use for analysis of the data. Key (26, p. 3) described descriptive statistics as:

> ...to describe information or data through the use of numbers. The characteristics of groups of numbers representing information or data are called descriptive statistics.

The statistical program utilized by SAS was a frequency procedure: "The FREQ procedure can produce one-way to n-way frequency and cross-tabulation tables. Tables can be produced for either numeric or character variables" (4, p. 120). The frequency procedure included frequency counts and percentages.

One question required the respondents to rank order according to the amount of time spent teaching, five areas of agricultural mechanics. The method that was thought to be the most appropriate and was used to rate the areas was a Likert scale. The scale was designed so that the areas could be rated, according to the amount of time spent teaching, on a scale with a range of one to five; one signifying the least amount of time and a five indicating the greatest amount of time. The response categories are as follows:

Response	Scale	Range Limits
Greatest Amount of Time Teaching	5	4.50 - 5.00
	4	3.50 - 4.49
	3	2.50 - 3.49
	2	1.50 - 2.49
Least Amount of Time Teaching	1	1.00 - 1.49

Since the primary use of descriptive statistics is to describe information or data through the use of numbers, the analysis of data for some of the questions were expressed in the form of an arithmetic mean.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The purpose of this chapter is to describe selected costs, sources of funds, and facility features for outstanding Oklahoma vocational agricultural mechanics programs. Finally, it analyzes data and interprets the results.

The data collected in this study are from a stratified random sample of teachers of vocational agricultural mechanics programs. In section one of this chapter, the characteristics of the selected program vocational agricultural mechanics teachers are reported in distributions. In the second section, the distribution of the responses to questions on program costs and the sources of funds are presented. Distributions of responses to the questions pertaining to procedures and techniques utilized to minimize program costs are included in section three. In the final section, the distribution of the responses regarding program and facility characteristics are presented.

Background of the Sample

The population of this study included teachers of 30 vocational agricultural mechanics programs in Oklahoma. The programs represented a state wide survey with six programs studied from each of the five

Oklahoma vocational agriculture supervisory districts. The programs were dispersed among twenty-six Oklahoma counties. The thirty respondents comprised 100 percent of the sample.

Demographic Data That Characterize Vocational Agricultural Mechanics Teachers

The survey instrument contained six questions designed to obtain personal information from each program teacher concerning the institution where their B.S. degree was obtained, what degree they presently hold, number of years teaching, number of years teaching at the selected school, number of college hours in agricultural mechanics, whether or not they teach agricultural mechanics courses for adults/Young Farmers and the number of hours.

In Table II, the number (N) and percentage (%) of respondents according to the institution where they received their B.S. degree are reported. Of the thirty respondents, thirty (100%) indicated they received their B.S. degree from Oklahoma State University.

Presented in Table III is the distribution of respondents by college degrees. The largest percentage (70.00%) of the respondents had not obtained an advanced degree. Only 30.00 percent of the respondents had obtained the M.S. degree. None of the respondents had obtained any degree higher than the M.S. degree.

In Table IV, the number and percentage of respondents by total years of teaching vocational agriculture are presented. Eight of the respondents (26.67%) indicated that they had taught vocational agriculture for more than twenty years. It should be noted that 93.33 percent of the respondents had been teaching vocational agriculture for more than four years.

TABLE II

DISTRIBUTION OF RESPONDENTS ACCORDING TO INSTITUTION WHERE B.S. DEGREE WAS OBTAINED

Institution	Distribution N	(%)
Oklahoma State University	30	100.00
Total	30	100.00

TABLE III

DISTRIBUTION OF RESPONDENTS BY COLLEGE DEGREES

Degree	Distribution N	(%)
B.S.	21	70.00
M.S.	9	30.00
Total	30	100.00

TABLE IV

DISTRIBUTION OF RESPONDENTS BY TOTAL YEARS VOCATIONAL AGRICULTURE TEACHING EXPERIENCE

Total Number of Years	Distribution N	(%)
1-2	2	6.67
3-4	0	0.00
5-6	4	13.33
7-8	2	6.67
9-10	4	13.33
11-12	3	10.00
13-14	1	3.33
15-16	4	13.33
17-18	2	6.67
19-20	0	0.00
More than 20	8	26.67
Total Responses	30	100.00

The number and percentage of respondents according to the number of years taught at the selected school are reported in Table V. Twenty-two respondents (73.34%) had been teaching at the selected school for twelve years or fewer. The largest percentage of respondents (20.00%) indicated they had been teaching at the selected school from five to six years.

TABLE V

DISTRIBUTION OF RESPONDENTS BY YEARS TAUGHT AT THE PRESENT SCHOOL

Total Years	Distribution N	(%)
1-2	3	10.00
3-4	5	16.66
5-6	6	20.00
7-8	2	6.67
9-10	3	10.00
11-12	3	10.00
13-14	1	3.33
15-16	2	6.67
17-18	2	6.67
19-20	2	6.67
More than 20	1	3.33
Total Responses	30	100.00

In Table VI, the number and percentage of the respondents' college hours of agricultural mechanics instruction is presented. Fifteen respondents (50.00%) reported that they had accumulated from eleven to fifteen hours of agricultural mechanics instruction. Five respondents (16.67%) had six to ten hours of instruction and ten respondents (33.33%) had sixteen to twenty hours of instruction.

TABLE VI

DISTRIBUTION OF RESPONDENTS BY THE NUMBER OF COLLEGE HOURS OF AGRICULTURAL MECHANICS INSTRUCTION

Hours of Agricultural Mechanics Instruction	Distribution N	(%)
6-10	5	16.67
11-15	15	50.00
16-20	10	33.33
Total Responses	30	100.00

The distribution of the number and percentages of respondents according to whether they teach or offer agricultural mechanics instruction for adults/young farmers is presented in Table VII. The largest percentage of respondents (56.67%) reported that no agricultural mechanics courses were offered. Thirteen of the respondents (43.33%) indicated that adult courses were offered.

Of those who identified that agricultural mechanics courses for adults/young farmers were taught is summarized in Table VIII, 53.84 percent, or seven respondents, indicated more than twenty-five hours were taught. Two respondents (15.39%) indicated that eleven to fifteen hours were taught and two respondents (15.39%) indicated sixteen to twenty hours were taught.

TABLE VII

DISTRIBUTION OF RESPONDENTS BY WHETHER THEY TEACH OR OFFER AGRICULTURAL MECHANICS FOR ADULTS/YOUNG FARMERS

Offer Courses	Distribution N	(%)
Yes	13	43.33
No	17	56.67
Total Responses	30	100.00

TABLE VIII

SUMMARY OF NUMBER OF HOURS AGRICULTURAL MECHANICS TAUGHT FOR ADULTS/YOUNG FARMERS

Hours of Instruction	Distribution N	(%)
6-10	1	7.69
11-15	2	15.39
16-20	2	15.39
21-25	1	7.69
More than 25	7	53.84
Total Responses	13	100.00

Budgets and Sources of Funds

In order to obtain information from the respondents pertaining to the distribution of funds and the available sources of funds, several related questions were developed and included in the interview schedule. In total, six questions constituted the budget and source of funds section of the instrument. It is important to note that all but one of these was a four-part question.

In Table IX, the frequency distribution is reported for the amount and source of funds budgeted for purchasing power tools, equipment, and hand tools for the current year. Of the thirty respondents, nine or 30.00%, indicated that local funds ranging in amounts from $1 to $500 was provided for this purpose and twenty-one respondents (70.00%) indicated they would receive from $501 to $2501 dollars or more from the local school.

Thirteen of the respondents (43.34%) indicated that $501 to $1000 would be available from state funds to purchase tools and equipment. Four respondents (13.33%) indicated that from $1001 to $1500 would be obtained from state sources. The remaining twelve respondents (40.00%) indicated they would secure $500 or less for this purpose. This is primarily matching money from the State Department of Vocational-Technical Education for equipment purchases and varies according to the number of teachers in the department. It should be noted that one respondent (3.33 percent) indicated that no state funds or matching money is accepted by the school.

Four of the respondents (13.34%) indicated that their FFA chapters had budgeted up to $500 for purchasing power tools, equipment, and hand tools. One respondent (3.33%) reported from $501 - $1000 was budgeted

and one respondent (3.33%) indicated that between $1001 - $1500 would be spent. It should be noted that the largest percentage (80.00%) or twenty-four respondents indicated that no FFA funds were budgeted for purchasing equipment and tools. No respondents reported that funds were budgeted through "other" sources.

To report how much was spent last year for purchasing power tools, equipment, and hand tools and the sources of these funds, Table X was developed. As reported here, nine of the respondents (30.00%) indicated that amounts ranging up to $500 were spent last year from local funds. Six respondents (20.00%) indicated that from $501 to $1000 was spent and four respondents (13.33%) indicated amounts of $1001 to $2000 were spent from the local school budget. One respondent (3.33%) indicated that between $2001 to $2500 was spent and five respondents (16.67%) indicated that $2501 or more from local funds was allocated to obtain power tools, equipment, and hand tools. Five of the respondents (16.67%) reported that no local money was spent.

Twenty-seven respondents (90.00%) reported that no state funds were used for purchasing equipment. One respondent (3.33%) indicated $500 or less was spent and two respondents (6.67%) reported spending from $501 to $1000 from state funds. The largest percentage (90.00%) of the respondents indicated that no state funds were spent. Of those who indicated state funds were used, the primary reason was for building new facilities.

The largest percentage of the respondents (83.34%) indicated that no FFA funds were spent. Four respondents (13.33%) indicated $500 or less was spent and one respondent (3.33%) reported between $500 to $1000 from the FFA account was used for such purchases.

TABLE IX

BUDGETS FOR PURCHASING POWER TOOLS, EQUIPMENT, AND HAND TOOLS AND SOURCES OF FUNDS

Sources and Amount of Funds	Distribution N	(%)
Local		
$1-$500	9	30.00
$501-$1000	7	23.33
$1001-$1500	1	3.33
$1501-$2000	5	16.67
$2001-$2500	3	10.00
$2501 or more	5	16.67
Total Responses	30	100.00
State		
0	1	3.33
$1-$500	12	40.00
$501-$1000	13	43.34
$1001-$1500	4	13.33
Total Responses	30	100.00
FFA		
0	24	80.00
$1-$500	4	13.34
$501-$1000	1	3.33
$1001-$1500	1	3.33
Total Responses	30	100.00

Twenty-eight of the respondents (93.34%) indicated that no funds were obtained from "other" sources. One respondent (3.33%) indicated $501 to $1000 was obtained and one respondent (3.33%) reported that $2001 to $2500 was spent from "other" sources. Both of these respondents indicated money was obtained from donations.

Presented in Table XI is the distribution of responses as to the sources of funds and the amount for purchasing consumable supplies. The largest percentage (40.00%) indicated that $1000 to $2000 was budgeted by the local school. Seven respondents (23.34%) indicated $2501 or more was budgeted on the local level. Three respondents (10.00%) reported $1 to $500 and three respondents (10.00%) indicated $501 to $1000 was budgeted. One respondent (3.33%) indicated $2001 to $2500 was budgeted. Four respondents (13.33%) indicated that no local money was budgeted from the local school for purchasing consumable supplies.

Twenty-one respondents (70.00%) indicated that no FFA funds were budgeted while three respondents (10.00%) indicated $1 to $500 was budgeted. Three respondents (10.00%) indicated $501 to $1000 and one respondent (3.33%) reported $1001 to $2000 was budgeted. Two respondents (6.67%) indicated that $2501 or more was budgeted in the FFA account for this purpose.

Of the thirty respondents, twenty-eight indicated that no funds were budgeted from "other" sources. Two respondents did indicate money was budgeted from this source. One respondent (3.33%) indicated $501 to $1000 and the other indicated that $2501 or more was budgeted for consumable supplies. Respondents indicated that the "other" sources included activity funds or alumni donations. No respondents reported that state funds were budgeted for purchasing consumable supplies.

TABLE X

SUMMARY OF MONEY SPENT FOR POWER TOOLS, EQUIPMENT, AND HAND TOOLS AND SOURCES OF FUNDS

Sources and Amount of Funds	Distribution N	(%)
Local		
0	5	16.67
$1-$500	9	30.00
$501-$1000	6	20.00
$1001-$2000	4	13.33
$2001-$2500	1	3.33
$2501 or more	5	16.67
Total Responses	30	100.00
State		
0	27	90.00
$1-$500	1	3.33
$501-$1000	2	6.67
Total Responses	30	100.00
FFA		
0	25	83.34
$1-$500	4	13.33
$501-$1000	1	3.33
Total Responses	30	100.00
Other		
0	28	93.34
$1-$500	0	0.00
$501-$1000	1	3.33
$1001-$2000	0	0.00
$2001-$2500	1	3.33
$2501 or more	0	0.00
Total Responses	30	100.00

As reported in Table XII, when asked to identify the sources and the amounts of funds spent for purchasing consumable supplies, twenty-six of the respondents (86.67%) reported that some local funds were used. Of this, nine respondents (30.00%) indicated that $1001 - $2000 of the local school's money was spent. Six respondents (20.00%) indicated $501 to $1000 and three respondents (10.00%) indicated $1 to $500 was spent. Two respondents (6.67%) reported $2001 to $2500 in local monies spent. The remaining six respondents (20.00%) indicated $2501 or more was spent for consumable supplies.

The largest percentage of the respondents (66.66%) reported that no FFA funds were spent for purchasing consumable supplies. Of those respondents who did use FFA funds, three (10.00%) indicated $1 to $500 was spent, and another three (10.00%) responded that $501 to $1000 was spent. Two respondents (6.67%) reported spending $1001 to $2000 and two more indicated $2501 or more of such funds being spent.

Twenty-seven respondents (90.00%) reported that "other" sources were not used for purchasing consumable supplies. One respondent (3.33%) indicated $1 to $500 from this source was spent and two others indicated $501 to $1000 was spent. The three respondents reporting "other" sources identified these as alumni members, activity funds, or gifts from adults. No respondents reported that state funds were spent for purchasing consumable supplies.

Another area of investigation was the sources and money spent for repair costs to power tools, equipment, and hand tools. The distribution of the responses related to these is presented in Table XIII. The largest percentage of the respondents, (80.00%), indicated $1 to $500 of the local money was spent for repair costs to tools and equipment. One

respondent (3.33%) indicated $501 to $1000 and one respondent (3.33%) indicated $1001 to $2000 was spent from local sources for repair costs.

TABLE XI

SUMMARY OF AMOUNTS AND SOURCES OF FUNDS BUDGETED FOR PURCHASING CONSUMABLE SUPPLIES

Sources and Amount of Funds	Distribution N	(%)
Local		
0	4	13.33
$1-$500	3	10.00
$501-$1000	3	10.00
$1001-$2000	12	40.00
$2001-$2500	1	3.33
$2501 or more	7	23.34
Total Responses	30	100.00
FFA		
0	21	70.00
$1-$500	3	10.00
$501-$1000	3	10.00
$1001-$2000	1	3.33
$2001-$2500	0	0.00
$2501 or more	2	6.67
Total Responses	30	100.00
Other		
0	28	93.34
$1-$500	0	0.00
$501-$1000	1	3.33
$1001-$2000	0	0.00
$2001-$2500	0	0.00
$2501 or more	1	3.33
Total Responses	30	100.00

Twenty-eight respondents (93.34%) indicated that FFA funds were not spent for repair costs. Two respondents (6.66%) indicated that $1 to $500 of the FFA money was spent for such purposes. It should be noted that no respondents reported state funds or "other" funds used for repair costs of power tools, equipment and hand tools.

The money spent during the past year to "update" agricultural mechanics equipment is summarized in Table XIV. Seven respondents (23.33%) indicated no money being spent to "update" equipment. Nine respondents (30.00%) indicated $1 to $250 was spent last year for this purpose, while five respondents (16.67%) indicated $251 to $500 and two respondents (6.67%) reported $501 to $750 was expended. Also, two respondents (6.67%) indicated $750 to $1000 was spent and one respondent (3.33%) spent $1251 to $1500. Four respondents (13.33%) spent more than $1501.

The availability of financial resources for the past year as compared to previous years is presented in Table XV. Twelve respondents (40.00%) ranked the availability of the previous year's financial resources as average. Fourteen respondents (46.67%) assessed 1983-84 financial resources as either above average or well above average. Four respondents (13.33%) rated the availability of funds last year as either below or well below the average of previous years.

TABLE XII

SUMMARY OF SOURCES AND AMOUNTS OF FUNDS SPENT FOR PURCHASING CONSUMABLE SUPPLIES

Sources and Amount of Funds	Distribution N	(%)
Local		
0	4	13.33
$1-$500	3	10.00
$501-$1000	6	20.00
$1001-$2000	9	30.00
$2001-$2500	2	6.67
$2501 or more	6	20.00
Total Responses	30	100.00
FFA		
0	20	66.66
$1-$500	3	10.00
$501-$1000	3	10.00
$1001-$2000	2	6.67
$2001-$2500	0	0.00
$2501 or more	2	6.67
Total Responses	30	100.00
Other		
0	27	90.00
$1-$500	1	3.33
$501-$1000	2	6.67
Total Responses	30	100.00

TABLE XIII

SUMMARY OF SOURCES AND AMOUNTS OF FUNDS SPENT FOR REPAIR COSTS OF POWER TOOLS, EQUIPMENT, AND HAND TOOLS

Sources and Amount of Funds	Distribution N	(%)
Local		
0	4	13.34
$1-$500	24	80.00
$501-$1000	1	3.33
$1001-$2000	1	3.33
Total Responses	30	100.00
FFA		
0	28	93.34
$1-$500	2	6.66
Total Responses	30	100.00

TABLE XIV

SUMMARY OF FUNDS SPENT THE PREVIOUS YEAR TO UPDATE EQUIPMENT ASSOCIATED WITH AGRICULTURAL MECHANICS

Amount	Distribution N	(%)
0	7	23.33
$1-$250	9	30.00
$251-$500	5	16.67
$501-$750	2	6.67
$751-$1000	2	6.67
$1001-$1250	0	0.00
$1251-$1500	1	3.33
More than $1501	4	13.33
Total Responses	30	100.00

TABLE XV

RATINGS OF AVAILABILITY OF FINANCIAL RESOURCES FOR EQUIPMENT FOR THE PAST YEAR AS COMPARED TO PREVIOUS YEARS

Rating	Distribution N	(%)
Well above average	4	13.33
Above average	10	33.34
Average	12	40.00
Below average	3	10.00
Well below average	1	3.33
Total Responses	30	100.00

Techniques and/or Procedures Used for Minimizing Program Costs

In order to obtain information from the respondents pertaining to the procedures and/or techniques used to minimize program costs, several questions were developed and included in the interview instrument.

Table XVI features the distribution of responses pertaining to the assessment of a laboratory fee in agricultural mechanics. Four respondents (13.33%) reported that a lab fee was charged to the students. The largest number, twenty-six respondents (86.67%) reported a lab fee was not charged. The four respondents who reported a lab fee indicated the charge ranged from $4.50 to $18.00.

TABLE XVI

DISTRIBUTION OF RESPONDENTS ACCORDING TO ASSESSMENT OF AN AGRICULTURAL MECHANICS LAB FEE

Charged	Distribution N	(%)
Yes	4	13.33
No	26	86.67
Total Responses	30	100.00

As reported in Table XVII, twenty respondents (66.67%) indicated that students were required to pay for supplies used for personal projects constructed in the vocational agriculture shop. Ten respondents (33.33%) indicated that students were not required to pay for such supplies.

TABLE XVII

DISTRIBUTION OF RESPONDENTS ACCORDING TO ASSESSMENT FOR SUPPLIES USED IN PERSONAL PROJECT CONSTRUCTION

Students Required to Pay	Distribution N	(%)
Yes	20	66.67
No	10	33.33
Total Responses	30	100.00

Presented in Table XVIII are the responses of the thirty respondents who were asked to identify the procedures and/or techniques used to cover the costs of consumable supplies used in personal project construction. Twenty-seven respondents (90.00%) indicated they bought in quantity. Thirteen of the respondents (43.34%) reported that scrap metal was purchased and twenty-six respondents (86.67%) indicated they sold used metal back to a scrap dealer. Twenty-one respondents (70.00%) reported that students were required to bring their own supplies. All thirty respondents (100.00%) reported that students were required to pay for the metal used. Two respondents (6.67%) reported the students were required to pay for welding rods and cutting gasses and twenty-seven respondents (90.00%) indicated projects were built and sold to cover expenses. As mentioned in an earlier question, four respondents (13.33%) indicated students were required to pay a lab fee.

Table XIX reports the distribution or responses as to how the yearly budget for the agricultural mechanics program is formulated. Eight respondents (26.67%) indicated that school administration formulated the budget. Ten respondents (33.33%) indicated the teacher formulated the budget and twelve respondents (40.00%) indicated the teacher and school administration jointly formulated the budget. None of the respondents indicated "advisory council," "teacher-advisory council jointly," "vocational director," "teacher-vocational director jointly," "teacher-vocational director-administration jointly" or "others" formulated the budget.

TABLE XVIII

SUMMARY OF PROCEDURES AND/OR TECHNIQUES USED TO COVER COSTS OF CONSUMABLE SUPPLIES FOR PROJECT CONSTRUCTION

Procedures and/or Techniques Used*	Distribution N	(%)
Buy in Quantity	27	90.00
Purchase Scrap Metal	10	33.33
Sell Used Metal Back to Scrap Dealer	26	86.67
Students Bring Own Supplies	21	70.00
Students Required to Pay for Metal Used	30	100.00
Students Required to Pay for Welding Rods and Cutting Gasses	2	6.67
Build Projects for Sale	27	90.00
Pay a Lab Fee	4	13.33

* Respondents were allowed to indicate more than one procedure and/or technique if it applied to their program.

TABLE XIX

SUMMARY OF PERSONS INVOLVED IN FORMULATING THE YEARLY BUDGET FOR AGRICULTURAL MECHANICS

Persons Formulating the Budget	Distribution N	(%)
School Administration Formulates	8	26.67
Teacher Formulates	10	33.33
Teacher-School Administration Jointly Formulates	12	40.00
Total	30	100.00

Facility Size and Program Characteristics

In order to obtain information from the respondents describing the facility and program characteristics, twenty-five questions were developed and included in the interview form. It is important to note that several of the questions were multi-part which allowed for more than one answer.

In Table XX, the distribution is reported for the number of students using the facility per year. Thirteen respondents (43.33%) indicated that twenty-one to forty students use the agricultural mechanics facility annually. Ten respondents (33.33%) reported that forty-one to sixty students use the facilities. Two respondents (6.67%) indicated sixty-one to eighty students and two respondents (6.67%) reported that eighty-one to one hundred students use the facility. Two respondents (6.67%) reported high levels of student participation with

121 to 140 students and one respondent (3.33%) indicated a very small student enrollment with fourteen students using the agricultural mechanics facility each year.

To summarize if tools and equipment in the facility were marked or identified in some manner, Table XXI presents the number and percentage of the responses received from the respondents. Twenty-six respondents (86.67%) indicated the tools and equipment were identified. Four respondents (13.33%) indicated that tools and equipment were not identified. Twenty-six respondents reported they identified the tools and equipment. Two respondents (7.70%) indicated that a specially engraved number is utilized to identify tools. Eight respondents (30.76%) indicated that special paint was used as an identification procedure. Three respondents (11.54%) reported that they used a tag with a number. The largest number or thirteen respondents (50.00%) indicated that "other" methods were used. Of the thirteen "other" respondents, the school name or FFA chapter name was engraved on the tools and equipment in twelve departments and one respondent indicated the school name and the date bought were engraved on tools and equipment.

In Table XXII, the distribution of respondents is reported for the question which asked: "Is the facility shared with another department in the school?" The largest number of respondents, twenty-eight (93.33%), indicated the facility was not shared with another department. Only two respondents (6.67%) indicated the facility was shared with another department. Of the two respondents that shared facilities with other departments, one facility was shared with an auto-mechanics class and the other with a CVET woodshop class.

TABLE XX

SUMMARY OF THE NUMBER OF STUDENTS ANNUALLY USING THE VOCATIONAL AGRICULTURAL MECHANICS FACILITY

Number of Students	Distribution N	(%)
0-20	1	3.33
21-40	13	43.33
41-60	10	33.33
61-80	2	6.67
81-100	2	6.67
101-120	0	0.00
121-140	2	6.67
Total Responses	30	100.00

TABLE XXI

SUMMARY OF IDENTIFICATION PROCEDURES USED TO IDENTIFY TOOLS AND EQUIPMENT

Identification Procedure	Distribution N	(%)
Do not identify tools	4	13.33
Specially engraved number	2	6.67
Special paint	8	26.67
Tag with number	3	10.00
Other	13	43.33
Total Responses	30	100.00

TABLE XXII

SUMMARY OF SHARED AGRICULTURAL MECHANICS FACILITIES

Shared Facilities	Distribution N	(%)
Yes	2	6.67
No	28	93.33
Total Responses	30	100.00

The distribution of respondents who are required to conduct an inventory of tools and equipment and who required such a procedure is presented in Table XXIII.

All thirty respondents reported a tool inventory was required and also indicated who required the inventory. It should be noted, the respondents were allowed to indicate more than one response if it pertained to their program. When asked to identify who required the inventory, twelve respondents (40.00%) indicated it was required by "themselves." Twenty respondents (66.66%) indicated an inventory was required by the "school administration." All thirty respondents (100.00%) indicated federal or state government agencies required the inventory. None of the respondents indicated an inventory was required by the "district supervisor," "vocational director," or "other" sources.

TABLE XXIII

SUMMARY OF RESPONSES REGARDING INVENTORY OF TOOLS AND EQUIPMENT

Who Requires Inventory	Distribution N*	(%)
Inventory Required	30	100.00
Yourself	12	40.00
Administration	20	66.67
Federal or State Government	30	100.00

* Respondents were allowed to respond to more than one response if it pertained to their program.

In Table XXIV, the number and percentages of respondents by whether or not tools are controlled by means of a tool check-out system are presented. Nine respondents (30.00%) indicated a tool check-out system was utilized. Twenty-one respondents (70.00%) indicated a tool check-out system was not used.

The distribution of respondents according to whether the tool room has a marked or designated place for the tools is presented in Table XXV. The largest number of respondents, twenty (66.67%), reported a marked or designated place for the tools. Ten of the respondents (33.33%) indicated that a designated or marked place for tools was not provided.

Presented in Table XXVI is a summary of respondents' ratings of the areas of agricultural mechanics according to the amount of time they spend teaching in each area. The respondents were asked to place a "5" in the blank beside the area in which most time was spent teaching. The next area in which the most time was spent was indicated by a "4". This was repeated until all areas were rated. Also, it should be noted that the teachers were allowed to rank each area with the same number if equal amounts of time were spent teaching in each area. Of the thirty respondents, the largest group, twenty-eight (93.33%) indicated the greatest amount of time was spent teaching farm shop skills. This area received a mean rating of 4.93. Agricultural Structures with a rating of 3.23 was emphasized to the next highest extent. This was followed in descending order of time spent by Farm Power and Machinery, Soil and Water Management, and Electricity, with respective mean ratings of 2.70, 2.53, and 2.16.

TABLE XXIV

DISTRIBUTION OF SCHOOLS ACCORDING TO WHETHER OR NOT TOOLS ARE CONTROLLED BY A CHECK-OUT SYSTEM

Tools Controlled by Tool Check-Out System	Distribution N	(%)
Yes	9	30.00
No	21	70.00
Total Responses	30	100.00

TABLE XXV

DISTRIBUTION OF SCHOOLS ACCORDING TO WHETHER OR NOT THE TOOL ROOM HAS A MARKED OR DESIGNATED PLACE FOR TOOLS

Marked or Designated Place	Distribution N	(%)
Yes	20	66.67
No	10	33.33
Total Responses	30	100.00

TABLE XXVI

SUMMARY OF RESPONSES BY AREAS OF INSTRUCTION AND AMOUNT OF TIME SPENT TEACHING

Agricultural Mechanics Area	Distribution According To Time Spent Teaching										Total		Mean Rating
	Least 1		2		3		4		Greatest 5				
	N	%	N	%	N	%	N	%	N	%	N	%	
Farm Shop Skills	-	-	-	-	-	-	2	6.67	28	93.33	30	100.00	4.93
Electricity	13	43.33	6	20.00	4	13.34	7	23.33	-	-	30	100.00	2.16
Farm Power and Machinery	6	20.00	7	23.33	7	23.33	10	33.34	-	-	30	100.00	2.70
Soil and Water Management	6	20.00	9	30.00	8	26.67	7	23.33	-	-	30	100.00	2.53
Agricultural Structures	1	3.33	5	16.67	12	40.00	10	33.33	2	6.67	30	100.00	3.23

Those interviewed were asked to identify the most important reason why they spent more time in the area designated in the previous question. As can be seen in Table XXVII, ten respondents (33.33%) indicated they taught more in the designated area because they possessed "more knowledge in the subject area." Two respondents (6.67%) indicated "appropriate facilities" was the major factor influencing instruction. Two respondents (6.67%) indicated "appropriate tools and equipment" was the major factor. Twelve respondents (40.00%) reported more time was spent in the area because it was important to the geographic location. Four respondents (13.33%) indicated "other" factors influenced the instruction time. Of the four respondents that indicated "other," one disclosed more time was spent in the area because it was desired by the administration. Two respondents reported student interest and demand was the influencing factor. One respondent reported it was the major method of financing the program.

To report what factors prevent devoting an equal amount of time to teaching all areas of agricultural mechanics, Table XXVII was developed. It summarizes the number and percentage of the responses elicited. It should be noted, the respondents were allowed to respond to more than one item if they felt it was a limitation to equal emphasis in teaching agricultural mechanics subjects. One respondent (3.33%) indicated there were "no limitations" to the teaching of agricultural mechanics. Twelve respondents (40.00%) indicated "time" was a limitation. Three respondents (10.00%) indicated "facilities" were the limiting factor. "Tools and equipment" was the response from five respondents (16.67%). The largest percentage of respondents, eighteen (60.00%), indicated "lack of knowledge" to be what prevented them from equally emphasizing the sub-

ject areas. Six respondents (20.00%) indicated "other" factors limited equal instruction in agricultural mechanics. Of the six respondents who indicated "other" factors influenced the extent of teaching emphasis, two respondents reported the geographic location, two other respondents indicated students' interest, one reported that he did not like to teach a subject and one respondent indicated the lack of demand.

In Table XXIX, the distribution is reported for the question: "Who, besides yourself, has access to the tools and equipment in the vocational agricultural facility?" All of the respondents, thirty (100.00%) indicated the students had access to the tools and equipment. Eleven respondents (36.67%) indicated "administration" had access to the tools and equipment. Five respondents (16.67%) indicated "general faculty" and two respondents (6.67%) indicated "teachers from another department" have access to tools and equipment. A large number of respondents, twenty (66.67%) indicated "janitorial staff" has access to tools and equipment. Two respondents (6.67%) indicated "other" people had access. Of the other respondents indicating "other", one respondent indicated maintenance personnel (bus mechanics) and one respondent reported other vocational agriculture teachers in the area had access to the tools and equipment.

TABLE XXVII

SUMMARY OF REASONS WHY SELECTED AREAS OF INSTRUCTION ARE EMPHASIZED

Reasons for Emphasis	Distribution N	(%)
More knowledge of subject area	10	33.33
Appropriate facilities	2	6.67
Appropriate tools and equipment	2	6.67
Important to geographic location	12	40.00
Other	4	13.33
Total Responses	30	100.00

TABLE XXVIII

SUMMARY OF FACTORS WHICH PREVENT TEACHERS DEVOTING EQUAL AMOUNTS OF TIME TO TEACHING THE AREAS OF AGRICULTURAL MECHANICS

Limitation Factors*	Distribution N	(%)
No limitations	1	3.33
Time	12	40.00
Facilities	3	10.00
Tools and equipment	5	16.67
Lack of knowledge of the subject	18	60.00
Other	6	20.00

* Respondents were allowed to respond to more than one response if it pertained to their program.

TABLE XXIX

SUMMARY OF RESPONSES AS TO WHO HAS ACCESS TO TOOLS AND EQUIPMENT

Who Has Access to the Tools*	Distribution N	(%)
Students	30	100.00
Administration	11	36.67
General Faculty	5	16.67
Teacher from another department	2	6.67
Janitorial staff	20	66.67
Other	2	6.67

* The respondents were allowed to respond to more than one response.

In Table XXX, the distribution of respondents by mean size and range in square feet for the total facilities, shop, classroom, teachers' office, and tool storage areas are reported. The total facility sizes ranged from 2,394 to 12,000 square feet with a mean size of nearly 5,908 square feet. The shop areas ranged from 1,250 to 7,200 square feet with a mean size of just over 3,738 square feet. The classroom areas ranged in size from 400 to 1,300 square feet with a mean size of 780.5 square feet. Of the twenty-nine respondents (100.00%), a mean size of 285.5 square feet was reported for the teachers' office areas. The area ranged from 72 to 502 square feet. It should be noted, one respondent indicated a teachers' office facility was not provided.

The tool room areas ranged in size from 48 to 300 square feet. The mean size for the twenty-nine tool rooms reported was nearly 142 square feet. One respondent indicated a tool storage area was not provided.

Thirty respondents (100.00%) indicated overhead doors were provided. Table XXXI presents the distribution of the respondents by the number of overhead doors. Twelve respondents (40.00%) indicated one overhead door was provided in the facility. Sixteen respondents (53.33%) indicated two doors and two respondents (6.67%) indicated three overhead doors were provided in the facility. It should be noted that no respondents indicated more than three overhead doors were provided in the selected facilities. The doors ranged in size from 64 to 224.5 square feet with the mean sizes being 155.3 square feet for the largest and 151.5 square feet for the smallest.

In Table XXXII, the distribution of the facilities having an overhead storage area is presented. Eleven respondents (36.67%) indicated such storage area was provided and nineteen respondents (63.33%) indicated this type storage area was not provided.

Of the eleven respondents indicating an overhead storage area was provided, a range from 64 to 1,500 square feet was reported. The mean size of 526.5 square feet was indicated for the eleven facilities.

Table XXXIII portrays the distribution of departments that provide a paint room. The largest number of respondents, twenty-six (86.67%), indicated a paint room was not provided and four respondents (13.33%) indicated a paint room was provided in the facility.

Of the four respondents that indicated a paint room was provided, the size ranged from 288 to 400 square feet, with the mean size being 352.5 square feet.

TABLE XXX

SUMMARY OF MEAN SIZE AND RANGES OF TOTAL FACILITIES, SHOP, CLASSROOM, TEACHER'S OFFICE AND TOOL ROOM AREAS

Areas	Distribution		Size	
	N	(%)	Mean/ Square Feet	Range/ Square Feet
Total Facilities	30	100.00	5,907.76	2,394 to 12,000
Shop Area	30	100.00	3,738.03	1,250 to 7,200
Classroom Area	30	100.00	780.56	400 to 1,300
Teacher's Office Area	29*	100.00	285.55	72 to 502
Tool Storage Area	29**	100.00	141.80	48 to 300

Note: *One respondent indicated a teacher's office facility was not provided.
**One respondent indicated a tool storage area was not provided.

TABLE XXXI

DISTRIBUTION OF RESPONDENTS BY THE NUMBER OF OVERHEAD DOORS

Number of Doors	Distribution N*	(%)
1	12	40.00
2	16	53.33
3	2	6.67
Total	30	100.00

* Mean sizes = 155.3 ft.^{2} for the largest and 151.5 ft.^{2} for the smallest.

TABLE XXXII

DISTRIBUTION OF FACILITIES BY AVAILABILITY OF OVERHEAD STORAGE AREA

Provided Storage Area	Distribution N*	(%)
Yes	11	36.67
No	19	63.33
Total Responses	30	100.00

*Mean size = 526 ft.^{2}

TABLE XXXIII

DISTRIBUTION OF FACILITIES BY AVAILABILITY OF A PAINT ROOM

Paint Room Facilities Provided	Distribution N*	(%)
Yes	4	13.33
No	26	86.67
Total Responses	30	100.00

* Mean size = 352.5 ft.^{2}

Findings regarding the facilities which provide a paved outside work area are presented in Table XXXIV. Eighteen departments (60.00%) were found to have a paved work area, while twelve respondents (40.00%) indicated a paved outside work area was not provided.

Of the eighteen respondents indicating a paved outside work area was provided, the range in size was from 140 to 2,400 square feet, with the mean size of the outside work areas of 701.8 square feet.

Presented in Table XXXV are responses to the question: "Does the shop facility have a floor drain?" Eighteen respondents (60.00%) indicated a floor drain was provided while twelve respondents (40.00%) indicated such was not provided.

Table XXXVI contains a summary of data pertaining to whether or not an air ventilation system is provided. Twenty-eight respondents (93.33%) indicated that some type of air ventilation system was provided and two respondents (6.67%) indicated a system of this type was not provided.

TABLE XXXIV

DISTRIBUTION OF FACILITIES BY AVAILABILITY
OF A PAVED OUTSIDE WORK AREA

Paved Outside Work Area Provided	Distribution N	(%)
Yes	18	60.00
No	12	40.00
Total Responses	30	100.00

TABLE XXXV

DISTRIBUTION OF FACILITIES BY AVAILABILITY
OF A FLOOR DRAIN

Drain Provided	Distribution N	(%)
Yes	18	60.00
No	12	40.00
Total Responses	30	100.00

TABLE XXXVI

DISTRIBUTION OF FACILITIES BY AVAILABILITY OF AIR VENTILATION SYSTEMS

Ventilation System Provided	Distribution N	(%)
Yes	28	93.33
No	2	6.67
Total Responses	30	100.00

Table XXXVII depicts the distribution of facilities that provide restrooms for students. Twenty-nine respondents (96.67%) indicated restroom facilities were provided and one respondent (3.33%) indicated that no restroom facility was provided. Of the twenty-nine respondents who indicated restroom facilities were provided, twenty respondents (66.67%) indicated that facilities for both sexes were provided. Ten respondents (33.33%) indicated that only one restroom for use by both girls and boys was provided.

Of the twenty respondents who indicated both facilities were available, the sizes ranged from 25 to 220 square feet for girls and from 28 to 220 square feet for the boys. Mean sizes for the girls facility of 67 square feet and 83.2 square feet for the boys restroom facility were calculated.

All respondents, thirty (100.00%) indicated a sink or wash vat was provided within the facility. These findings are highlighted in Table XXXVIII.

TABLE XXXVII

DISTRIBUTION OF FACILITIES BY AVAILABILITY OF RESTROOMS

Restroom Facilities Provided	Distribution N	(%)
Yes	29	96.67
No	1	3.33
Total Responses	30	100.00

The distribution of facilities that provide personal lockers for students' use is presented in Table XXXIX.

Twenty-five respondents (83.33%) indicated that personal lockers were provided while five respondents (16.67%) reported lockers were not provided.

TABLE XXXVIII

DISTRIBUTION OF FACILITIES BY AVAILABILITY OF WASH VATS OR SINKS

Wash Vats or Sinks Provided	Distribution N	(%)
Yes	30	100.00
No	0	0.00
Total Responses	30	100.00

TABLE XXXIX

DISTRIBUTION OF FACILITIES BY AVAILABILITY OF STUDENT LOCKERS

Lockers Provided	Distribution N	(%)
Yes	25	83.33
No	5	16.67
Total Responses	30	100.00

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The intent of this section is to present summaries of the following topics: purpose of the study, objectives of the study, design of the study, and the major findings of the research. A thorough inspection and analysis of the above topics was made and appropriate conclusions and recommendations were presented based on the analysis of the data.

Purpose of the Study

The purpose of this study was to assess the financial resources, expenditures, and facility features associated with selected Oklahoma Agricultural Mechanics programs. A secondary purpose was to determine certain variables associated with the time spent teaching in the areas of Agricultural Mechanics.

Objectives of the Study

The objectives of the study were:

1. To characterize selected vocational agricultural mechanics teachers utilizing demographic data obtained.
2. To determine whether agricultural mechanics courses are offered to adults and the amount of time devoted to such instruction per year.

3. To obtain data relative to sources of funding, annual costs of consumable supplies and/or modernization costs and/or repair costs and/or total amounts of monies expended annually for agricultural mechanics programs.
4. To identify and describe procedures and/or techniques utilized by vocational agriculture teachers to reduce the annual program costs for project construction.
5. To identify the amount of time spent annually teaching each area of agricultural mechanics and the limitations associated with teaching all areas.
6. To inventory and describe the physical plant utilized to house the instructional program of agricultural mechanics.

Design of the Study

Following a review of literature, procedures were established to satisfy the purpose and objectives of the study.

The population for this study was derived from a selected list of outstanding vocational agricultural mechanics programs. The programs were selected by the State Department of Vocational-Technical Education, Vocational Agricultural Division district supervisors.

Each district supervisor was asked to identify five single teacher and five multiple teacher departments. Since there are five supervisory districts, the total population included fifty selected outstanding agricultural mechanics programs.

The total sample size (30) was stratified proportionally by the supervisory district, single and multiple teacher departments. The resulting numbers and percentages of schools drawn from the population

were as follows: Northeast District, six (20.00%), Southeast District, six (20.00%), Central District, six (20.00%), Southwest District, six (20.00%), and Northwest District, six (20.00%). The selected schools that constituted the sample for each district were randomly selected from the total population of selected schools in each individual district.

The data collected for this study was collected using a personal interview survey instrument. The personal interview survey instrument that was developed contained a total of forty-one questions, of which many were multi-part questions. The personal interview survey instrument was separated into four sections as follows: six questions were designed to obtain personal information (demographic data) about the vocational agricultural mechanics teachers, six questions were designed to obtain information regarding budgets and sources of funds, four questions were designed to obtain information regarding procedures and/or techniques in regard to minimizing program costs, and twenty-five questions were designed to obtain information pertaining to facilities and program characteristics.

The interviews were conducted during the months of August and October 1984. Of the thirty respondents (100.00%) selected, all cooperated and provided responses.

The data obtained from the personal interview survey instrument were keypunched on IBM cards and the SAS program was used in calculating mean scores and distributions (numbers and percentages) of the data.

Major Findings of the Study

The major findings of this study were divided into five sections.

They were as follows:

1. Responses to questions that pertain to demographic data that characterize the selected vocational agricultural mechanics teachers.
2. Responses pertaining to budgets and sources of available funds.
3. Responses pertaining to techniques and/or procedures used for minimizing program costs.
4. Findings pertaining to facility program characteristics.
5. Findings pertaining to facility sizes.

Demographic Data That Characterize the Selected Vocational Agricultural Mechanics Teachers

The general characteristics of vocational agricultural mechanics teachers are summarized in Table XL.

A comparison of the total years of teaching vocational agriculture of the respondents revealed that twenty-two (73.33%) of the teachers of outstanding agricultural mechanics programs had been teaching nine years or more.

More than one-half of the respondents, (53.33%), indicated they had been teaching from eight years or less at the selected school.

The respondents were asked to identify the number of college hours of agricultural mechanics instruction. The largest percentage of respondents, fifteen (50.00%), indicated from 11 to 15 hours of instruction. The smallest number of respondents, five (16.67%), reported from 6 to 10 hours of instruction.

TABLE XL

SUMMARY OF RESPONSES TO QUESTIONS THAT PERTAIN TO THE DEMOGRAPHIC DATA THAT CHARACTERIZE THE SELECTED VOCATIONAL AGRICULTURAL MECHANICS TEACHERS

Characteristics of Respondents	Distribution of Responses N (%)			Totals N	(%)
Years of Teaching Vocational Agriculture	0 to 8 yrs 8 (26.67%)	9 to 18 yrs 14 (46.66%)	More than 19 yrs 8 (26.67%)	30	100.00
Years Teaching at the Selected School	0 to 8 yrs 16 (53.33%)	9 to 18 yrs 11 (36.67%)	More than 19 yrs 3 (10.00%)	30	100.00
Number of College Hours of Agricultural Mechanics	6 to 10 hrs 5 (16.67%)	11 to 15 hrs 15 (50.00%)	16 to 20 hrs 10 (33.33%)	30	100.00
Teach or Offer Courses for Adults/Young Farmers	Yes 13 (43.33%)	No 17 (56.67%)		30	100.00
Hours of Adult/Young Farmer Instruction	6 to 15 hrs 3 (28.08%)	16 to 25 hrs 3 (23.08%)	More than 25 hrs 7 (53.84%)	13	100.00
Charge a Lab Fee	Yes 4 (13.33%)	No 28 (86.67%)		30	100.00
Students Required to Pay for Supplies Used for Personal Projects	Yes 20 (66.67%)	No 10 (33.33%)		30	100.00

A large majority of respondents (56.67%) indicated they did not teach or offer agricultural mechanics courses for adults/Young Farmers. The largest percentage (53.84%) of those indicating they teach agricultural mechanics reported more than twenty-five hours of instruction was offered or taught.

The respondents were asked to indicate if a lab fee was charged to the students. The largest number of respondents, twenty-six (86.67%), indicated that a lab fee was not charged.

When asked if the students were required to pay for the supplies used in personal project construction the largest number of respondents, twenty (66.67%) indicated the students were required to pay for the supplies.

Responses Pertaining to Budgets and Sources of Available Funds

A summary of the responses pertaining to budgets and available sources of funds is presented in Table XLI.

The respondents were asked to identify the sources and amounts of funds that were budgeted for purchasing power tools, equipment, and hand tools. The responses indicated from $1 to $500 would be budgeted from local sources. The largest number of respondents, sixteen (53.33%), reported from $1 to $1000 was budgeted from state sources of funds. Although the largest number of responses, twenty-four (80.00%) indicated that no monies would be budgeted from FFA accounts, five respondents (16.67%) reported the FFA had budgeted from $1 to $1000.

The monies (spent last year) for purchasing power tools, equipment, and hand tools and the sources of funds were identified. Fifteen respondents (50.00%) spent $1 to $1000 from local funds. Three respondents

(10.00%) spent $1 to $1000 from state funds for power tools, equipment, and hand tools. FFA funds spent $1 to $1000 as identified by five respondents (16.67%). However, the two respondents that indicated "other" funds were used accounted for $1 to $1000 (3.33%) and $2001 or more (3.33%).

The respondents were also asked to identify the sources of funds and amounts budgeted for purchasing consumable supplies. The largest number of respondents, twelve (40.00%), indicated $1000 to $2000 was budgeted from local sources. Six respondents (20.00%) indicated $1 to $1000, one respondent (3.33%) indicated $1001 to $2000, and two respondents (6.67%) indicated $2001 or more was budgeted from FFA funds.

Nine respondents (30.00%) indicated $1 to $1000, nine respondents (30.00%) indicated $1001 to $2000, and eight respondents (26.67%) indicated $2001 or more was spent last year for purchasing consumable supplies from the local source of funds.

Of the monies spent for repair costs to power tools, equipment, and hand tools, the largest number of respondents, twenty-five (83.33%), indicated $1 to $1000 was spent from local funds. Two respondents (6.66%) reported $1 to $1000 was spent from FFA funds.

Responses Pertaining to Techniques and/or Procedures Used for Minimizing Program Costs

A summary of the responses pertaining to the minimization of program costs is presented in Table XLII.

The respondents were asked to respond to the question pertaining to the identification of tools and equipment. The largest number of respondents, twenty-six (86.67%), indicated the tools and equipment were identified.

TABLE XLI

SUMMARY OF RESPONSES PERTAINING TO BUDGETS
AND AVAILABLE SOURCES OF FUNDS

Budget allocations, expenditures and funding related questions by source	Level	Distribution of Respondents' Level of Funding by Source									
		0		$1 to $1000		$1001 to $2000		$2000 or more		Total	
		N	%	N	%	N	%	N	%	N	%
Monies budgeted for purchasing power tools, equipment, and hand tools by level of funding	Local	-	-	16	53.33	6	20.00	8	26.67	30	100.00
	State	1	3.33	25	83.34	4	13.33	-	-	30	100.00
	FFA	24	80.00	5	16.67	1	3.33	-	-	30	100.00
	Other*	-	-	-	-	-	-	-	-	-	-
Monies spent last year for purchasing power tools, equipment and hand tools by level of expenditure	Local	5	16.67	15	50.00	4	13.33	6	20.00	30	100.00
	State	27	90.00	3	10.00	-	-	-	-	30	100.00
	FFA	25	83.34	5	16.66	-	-	-	-	30	100.00
	Other	28	93.33	1	3.33	-	-	1	3.33	30	100.00
Monies budgeted this year for purchasing consumable supplies by level of funding	Local	4	13.33	6	20.00	12	40.00	8	26.67	30	100.00
	State*	-	-	-	-	-	-	-	-	-	-
	FFA	21	70.00	6	20.00	1	3.33	2	6.67	30	100.00
	Other	28	93.33	1	3.33	-	-	1	3.33	30	100.00
Monies spent last year for purchasing consumable supplies by level of funding	Local	4	13.33	9	30.00	9	30.00	8	26.67	30	100.00
	State*	-	-	-	-	-	-	-	-	-	-
	FFA	20	66.66	6	20.00	2	6.67	2	6.67	30	100.00
	Other	27	90.00	3	10.00	-	-	-	-	30	100.00
Monies spent for repair costs to power tools, equipment and hand tools by level of funding	Local	4	13.34	25	83.33	1	3.33	-	-	30	100.00
	State*	-	-	-	-	-	-	-	-	-	-
	FFA	28	93.33	2	6.66	-	-	-	-	30	100.00
	Other*	-	-	-	-	-	-	-	-	-	-

Note: *No respondents indicated sources of funds were obtained on these levels.

TABLE XLII

SUMMARY OF RESPONSES PERTAINING TO PROCEDURES AND/OR TECHNIQUES FOR MINIMIZING PROGRAM COSTS

Questions Related to Minimization of Program Costs	Distribution of Responses N (%)				Totals N	(%)
Tools and Equipment Identified	Yes 26(86.67%)	No 4(13.33%)			30	100.00
Identification Procedures Used	Specially Engraved Number 2(7.70%)	Special Paint 8(30.76%)	Tag with Number 3(11.54%)	Other 13(50.00%)	26	100.00
Shared Department	Yes 2(6.67%)	No 28(93.33%)			30	100.00
Inventory Required	Yes 30(100.00%)				30	100.00
Tools Controlled by Check-out System	Yes 9(30.00%)	No 21(70.00%)			30	100.00
Marked or Designated Place	Yes 20(66.67%)	No 10(33.33%)			30	100.00

When asked to identify "how" the tools and equipment were identified, one-half of the respondents reported "other" methods were used other than the ones listed.

Twenty-eight respondents (93.33%) indicated the facility was not a shared department.

Thirty respondents (100.00%) indicated that an inventory was required.

The largest number of respondents, twenty-one (70.00%), indicated the tools were not controlled by a tool check-out system.

The respondents were asked to identify if the tools had a marked or designated place in the tool room. The largest number of respondents, twenty (66.67%), indicated the tool room did have a marked or designated place for the tools.

Findings Pertaining to Facility Program Characteristics

A summary of the findings pertaining to facility program characteristics is presented in Table XLIII.

Thirty respondents (100.00%) indicated overhead doors were provided. Of the thirty respondents, sixteen (53.33%) indicated two overhead doors were provided in the facility.

The majority of the respondents, twenty-eight (93.33%), indicated the vocational agricultural mechanics facility was a separate facility from the main school building.

Nineteen respondents (63.33%) indicated their facilities did not provide an overhead storage area of some type.

The largest number of respondents, twenty-six (86.67%) indicated the facility did not provide a paint room.

Over one-half of the respondents (60.00%) reported their facilities

included a paved outside area to work on projects.

The respondents were asked if the facility provided a floor drain. A large majority (60.00%) indicated their facilities did include a floor drain in the shop area.

A very large majority of the respondents, twenty-eight (93.33%), indicated the facilities did provide an air ventilation of some type in the facilities.

Twenty-nine respondents (96.67%) reported that restrooms were provided in the facilities. Twenty respondents (66.67%) reported two restrooms were provided.

All of the respondents, thirty (100.00%), indicated a wash vat or sink was provided for student use in their facilities.

Twenty-five respondents (83.33%) indicated their facilities provided lockers for students usage in the facility.

Findings Pertaining to Facility Sizes

A summary of the findings pertaining to facility sizes is presented in Table XLIV.

Of the thirty facilities surveyed, the mean size of 5,907.7 square feet was found to be the average size. The facilities ranged in size from the smallest with 2,394 square feet and the largest with 12,000 square feet.

The mean size of the shop areas in the thirty surveyed facilities was 3,738 square feet. The facilities ranged from 1,250 to 7,200 square feet in size.

The mean size of the classroom areas in the thirty facilities was found to be 780.5 square feet. The classroom areas ranged in size from 400 square feet for the smallest to 1,300 square feet for the largest.

TABLE XLIII

SUMMARY OF FINDINGS PERTAINING TO FACILITY PROGRAM CHARACTERISTICS

Program Characteristics	Distribution of Responses N (%)			Totals N	(%)
Overhead doors provided	Yes 30(100.00%)			30	100.00
Number of overhead doors	1 Door 12(40.00%)	2 Doors 16(53.33%)	3 Doors 2(6.67%)	30	100.00
Separate facility from main building	Yes 28(93.33%)	No 2(6.67%)		30	100.00
Provides overhead storage area	Yes 11(36.67%)	No 19(63.33%)		30	100.00
Provides a paint room	Yes 4(13.33%)	No 26(86.67%)		30	100.00
Provide a paved outside work area	Yes 18(60.00%)	No 12(40.00%)		30	100.00
Provides a floor drain	Yes 18(60.00%)	No 12(40.00%)		30	100.00
Provides a ventilation system	Yes 28(93.33%)	No 2(6.67%)		30	100.00
Provides restroom facilities	Yes 29(96.67%)	No 1(3.33%)		30	100.00
Number of restroom facilities	1 10(33.33%)	2 20(66.67%)		30	100.00
Provide wash vats or sinks	Yes 30(100.00%)			30	100.00
Provide lockers	Yes 25(83.33%)	No 5(16.67%)		30	100.00

TABLE XLIV

SUMMARY OF FINDINGS PERTAINING
TO FACILITY SIZES

Facility Size by Areas	Mean Size and Range in Square Feet of Facilities by Area Mean/ Square Feet	Range/ Square Feet	Total N=30
Facility Areas			
Total facility	5907.76	2,394 to 12,000	30
Shop area	3738.03	1,250 tO 7,200	30
Classroom area	780.56	400 to 1,300	30
Teachers office area	285.55	72 to 502	29*
Tool storage area	141.80	48 to 300	29
Largest overhead door	155.33	64 to 224	30
Smallest overhead door	151.46	64 to 224	30
Overhead storage area	526.54	64 to 1,500	11*
Paint room	352.54	288 to 400	4*
Paved outside work area	701.77	14 to 2,400	18*
Girls restroom facilities	67.00	25 to 220	20*
Boys restroom facilities	83.23	28 to 220	20*

* Not all respondents indicated these areas were located in or around the facility.

Teachers' office facilities were found to have an average size of 285.5 square feet. The teachers' office facilities ranged from 72 to 502 square feet. It should be noted, one facility did not provide a teachers' office facility.

Twenty-nine respondents indicated tool storage areas were provided in the facility. One facility did not provide a tool storage area for tools and equipment. The tool storage areas ranged in size from 48 to 300 square feet and the average size was found to be 141.8 square feet.

All of the facilities provided overhead doors, the overhead doors ranged in size from 64 to 224 square feet. The average size of the largest overhead door was found to be 155.3 square feet. The smallest overhead door was found to have a mean size of 151.4 square feet.

Eleven respondents indicated an overhead storage area was provided, these eleven overhead storage areas ranged in size from 64 to 1,500 square feet and the average size was 526.5 square feet.

Four respondents indicated a paint room was provided. The paint rooms ranged from 288 to 400 square feet and the average size was 352.5 square feet.

The respondents indicated a paved outside work area in eighteen facilities. A range from 1,400 to 2,400 square feet was found, and a mean size of 701.7 square feet was indicated.

Twenty respondents indicated both boys' and girls' restroom areas were located in the facilities. The girls' restroom areas ranged from 25 to 220 square feet. The average size was found to be 67 square feet. The boys' restroom areas ranged in size from 28 to 220 square feet and the average was found to be 83.2 square feet.

Conclusions

The analysis of data was the basis for the following conclusions:

1. The majority of the teachers in outstanding agricultural mechanics programs have relatively extensive teaching experience and in terms of agricultural mechanics instruction at the collegiate level are adequately trained and prepared to teach such programs.
2. The majority of the teachers of outstanding agricultural mechanics programs apparently do not view adult/Young Farmers education to be important as indicated by their not teaching or offering courses in agricultural mechanics for adult/Young Farmers.
3. The local school districts in which outstanding agricultural mechanics programs are located assume the major responsibility for providing money for purchasing hand tools, equipment, and power tools and the same is true for the repair costs of the tools and equipment.
4. A wide variety of methods of management and/or techniques for minimizing program costs were used in the outstanding agricultural mechanics programs studied.
5. Teachers of outstanding agricultural mechanics programs spend the greatest amount of time teaching in the farm shop skills area. The major reason for the lower emphasis in the areas of electricity, soil and water management, farm power and machinery, and agricultural structures was because the teachers felt less competent to teach in those areas.

6. Distinct differences were observed among certain features contained in agricultural mechanics facilities; therefore, the typical Oklahoma vocational agricultural mechanics facilities in which outstanding programs are conducted cannot be described. However, of the facilities observed, most contained: (1) two overhead doors, (2) outside work areas, (3) shop floor drains, (4) ventilation systems, (5) male and female restrooms, (6) wash vats or sinks, and (7) student lockers.
7. Outstanding agricultural mechanics instruction is occurring in very diverse facilities with respect to variety and sizes. Generally speaking, the greater the square footage of the individual facilities, the more diverse the facilities. These include such areas as teacher offices, tool storage, paint rooms, overhead storage, and outside work areas.

Recommendations

The following recommendations were made by the researcher based on the analysis and interpretation of the data.

1. Future teachers of vocational agriculture should have additional college course work in the areas of electricity, soil and water management, farm structures, and farm power and machinery.
2. Teachers of agricultural mechanics programs should teach adult/Young Farmers classes in the five agricultural mechanics areas.
3. Local school districts should be encouraged to seek other sources of revenue to supplement local funds presently used for financing existing agricultural mechanics programs.

4. The State Department of Vocational-Technical Education, Vocational Agriculture Division, and outstanding agricultural mechanics program teachers should cooperate in developing a uniform method of management and/or techniques for the proper utilization of cost effective instruction.
5. Current teachers, as well as new and returning teachers in agricultural mechanics programs should be required to update technical skill areas through graduate course work and/or inservice training programs in all five areas of agricultural mechanics.

Recommendations for Additional Research

The following recommendations are made in regard to additional research. The recommendations are judgements based on having conducted the study and on examining the findings of the study. The recommendations are in two parts: (1) methodology and (2) additional research.

Methodology

1. Future research in agricultural mechanics, when appropriate, should utilize the personal interview technique for data collection.
2. Future studies should utilize a random selection technique from the total population of agricultural mechanics programs in the State of Oklahoma.

Additional Research

1. A similar study should be conducted to evaluate methods and/or techniques for effective instruction in agricultural mechanics programs.
2. Additional research should be conducted to determine management techniques and cost analysis procedures regarding overall shop efficiency.
3. Additional research should be conducted to determine a uniform standard in the designing and building of agricultural mechanics facilities.
4. Research should be conducted to determine adequate tools and equipment with regard to effectively equipping an agricultural mechanics program.
5. Additional research should be undertaken to identify skill areas as perceived by agricultural mechanics teachers for inservice programs and/or course work.

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APPENDIX A

GEOGRAPHICAL LOCATION OF PROGRAMS

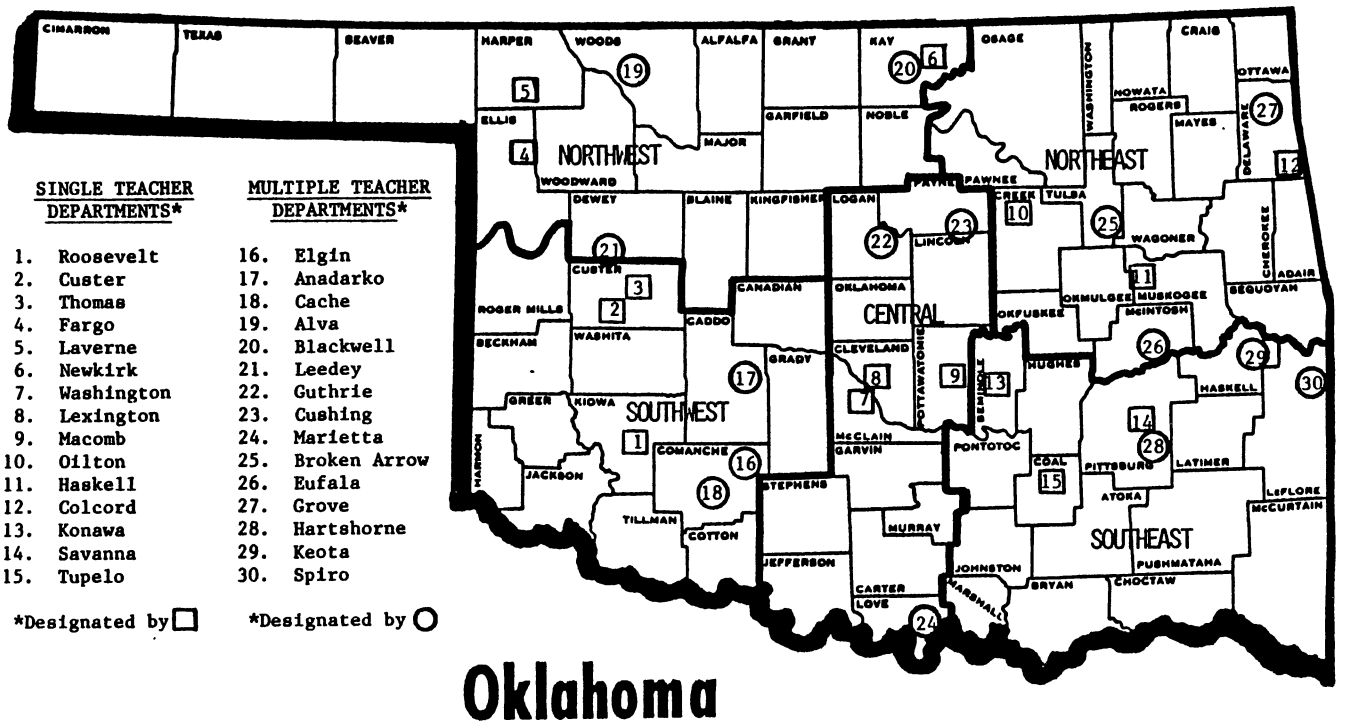

Figure 1. Geographical Location of the Selected Oklahoma Agricultural Mechanics Programs by Supervisory District and Single or Multiple Teacher Departments.

APPENDIX B

PERSONAL INTERVIEW INSTRUMENT

PERSONAL INTERVIEW INSTRUMENT

I.D. No. (1-2)

VOCATIONAL AGRICULTURE SUPERVISORY DISTRICT

(3)
(1)__Northwest
(2)__Southwest
(3)__Central
(4)__Northeast
(5)__Southeast

1. FROM WHICH INSTITUTION DID YOU RECEIVE YOUR B.S. DEGREE?

(4)
(1)__Oklahoma State University
(2)__Cameron University
(3)__Panhandle State University
(4)__Other (specify)_____

2. WHAT DEGREES DO YOU PRESENTLY HOLD?

(5)
(1)__B.S.
(2)__M.S.
(3)__Ed.S.
(4)__Ed.D

3. TOTAL NUMBER OF YEARS THAT YOU HAVE TAUGHT VOCATIONAL AGRICULTURE?

(6 - 7)

(01)__0	(07)__11 - 12
(02)__1 - 2	(08)__13 - 14
(03)__3 - 4	(09)__15 - 16
(04)__5 - 6	(10)__17 - 18
(05)__7 - 8	(11)__19 - 20
(06)__9 - 10	(12)__More than 20

4. HOW MANY YEARS HAVE YOU BEEN TEACHING AT THIS SCHOOL?

(8 - 9)

(01)__0	(07)__11 - 12
(02)__1 - 2	(08)__13 - 14
(03)__3 - 4	(09)__15 - 16
(04)__5 - 6	(10)__17 - 18
(05)__7 - 8	(11)__19 - 20
(06)__9 - 10	(12)__More than 20

5. HOW MANY TOTAL COLLEGE HOURS OF "AGRICULTURAL MECHANICS" INSTRUCTION HAVE YOU COMPLETED?

(10)
(1)__0
(2)__1 - 5
(3)__6 - 10
(4)__11 - 15
(5)__16 - 20

6. DO YOU TEACH OR OFFER AGRICULTURAL MECHANICS COURSES FOR ADULTS/YOUNG FARMERS?

(11)
(1)__Yes
(2)__No

IF YES, ESTIMATE THE NUMBER OF HOURS PER YEAR.

(12)
(1)__0
(2)__1 - 5
(3)__6 - 10
(4)__11 - 15
(5)__16 - 20
(6)__21 - 25
(7)__More than 25

7. HOW MUCH IS BUDGETED THIS YEAR FOR PURCHASING POWER TOOLS, EQUIPMENT, AND HAND TOOLS AND FROM WHAT SOURCE ARE THE FUNDS AVAILABLE? (YOU MAY CHECK MORE THAN ONE.)

(13) __Local
(14) __State
(15) __FFA
(16) __Other specify _____

(1)__0
(2)__1-500$
(3)__501-1,000$
(4)__1,001-1,500$
(5)__1,501-2,000$
(6)__2,001-2,500$
(7)__2,501 or more

8. HOW MUCH WAS SPENT LAST YEAR FOR PURCHASING POWER TOOLS, EQUIPMENT, AND HAND TOOLS, AND FROM WHAT SOURCE WERE THE FUNDS MADE AVAILABLE?

(17) __Local
(18) __State
(19) __FFA
(20) __Other specify _____

(1)__0
(2)__1-500$
(3)__501-1,000$
(4)__1,001-2,000$
(5)__2,001-2,500$
(6)__2,501 or more

9. HOW MUCH IS BUDGETED THIS YEAR FOR PURCHASING CONSUMABLE SUPPLIES AND FROM WHAT SOURCE ARE THE FUNDS AVAILABLE?

(21) __Local
(22) __State
(23) __FFA
(24) __Other specify _____

(1)__0
(2)__1-500$
(3)__501-1,000$
(4)__1,001-2,000$
(5)__2,001-2,500$
(6)__2,501 or more

10. HOW MUCH WAS SPENT LAST YEAR FOR PURCHASING CONSUMABLE SUPPLIES AND FROM WHAT SOURCE WERE THE FUNDS MADE AVAILABLE?

(25) __Local
(1) __0
(2) __1-500$
(3) __501-1,000$
(4) __1,001-2,000$
(5) __2,001-2,500$
(6) __2,501 or more

(26) __State
(1) __0
(2) __1-500$
(3) __501-1,000$
(4) __1,001-2,000$
(5) __2,001-2,500$
(6) __2,501 or more

(27) __FFA
(1) __0
(2) __1-500$
(3) __501-1,000$
(4) __1,001-2,000$
(5) __2,001-2,500$
(6) __2,501 or more

(28) __Other specify _____
(1) __0
(2) __1-500$
(3) __501-1,000$
(4) __1,001-2,000$
(5) __2,001-2,500$
(6) __2,501 or more

11. HOW MUCH WAS SPENT LAST YEAR FOR REPAIR COSTS TO POWER TOOLS, EQUIPMENT, AND HAND TOOLS?

(29) __Local
(1) __0
(2) __1-500$
(3) __501-1,000$
(4) __1,001-2,000$
(5) __2,001-2,500$
(6) __2,501 or more

(30) __State
(1) __0
(2) __1-500$
(3) __501-1,000$
(4) __1,001-2,000$
(5) __2,001-2,500$
(6) __2,501 or more

(31) __FFA
(1) __0
(2) __1-500$
(3) __501-1,000$
(4) __1,001-2,000$
(5) __2,001-2,500$
(6) __2,501 or more

(32) __Other specify _____
(1) __0
(2) __1-500$
(3) __501-1,000$
(4) __1,001-2,000$
(5) __2,001-2,500$
(6) __2,501 or more

12. HOW MUCH WAS SPENT LAST YEAR TO UPDATE ONLY THE EQUIPMENT ASSOCIATED WITH AGRICULTURAL MECHANICS INSTRUCTION?

(33)
(1) __0
(2) __1-250$
(3) __251-500$
(4) __501-750$
(5) __751-1,000$
(6) __1,001-1,250$
(7) __1,251-1,500$
(8) __More than 1,501$

RANK THE PAST YEARS AVAILABLE FINANCIAL RESOURCES FOR EQUIPMENT ASSOCIATED WITH AGRICULTURAL MECHANICS INSTRUCTION ACCORDING TO THE PREVIOUS YEARS.

(34)
(5) __Well above average
(4) __Above average
(3) __Average
(2) __Below average
(1) __Well below average

13. DOES EACH STUDENT PAY A YEARLY OR SEMESTER LAB FEE?

(35)
(1) __Yes
(2) __No

IF YES, HOW MUCH ARE THE STUDENTS REQUIRED TO PAY PER YEAR?

(36)
(1) __$0
(2) __$1-5
(3) __$6-10
(4) __$11-15
(5) __$16-20
(6) __$21-25
(7) __$26-30
(8) __More than $30

14. DOES EACH STUDENT PAY FOR THE SUPPLIES HE/SHE USES FOR PERSONAL PROJECTS CONSTRUCTED IN THE VOCATIONAL AGRICULTURE SHOP?

(37)
(1) __Yes
(2) __No

15. WHAT PROCEDURES AND/OR TECHNIQUES ARE UTILIZED TO COVER COSTS OF CONSUMABLE SUPPLIES USED IN PROJECT CONSTRUCTION?

(38) __Buy in quantity
(39) __Purchase scrap metal
(40) __Sell used metal back to scrap dealer
(41) __Students bring own supplies
(42) __Students required to pay for metal used in his/her project construction only
(43) __Students required to pay for welding rods and cutting gasses used only
(44) __Build projects for sale
(45) __Pay a lab fee

16. HOW IS THE YEARLY BUDGET THAT IS USED BY THE VOCATIONAL AGRICULTURAL MECHANICS PROGRAM FORMULATED?

(46) __School Administration formulates the budget
(47) __Teacher formulates the budget
(48) __Teacher-School Administration jointly formulate the budget
(49) __Advisory Council
(50) __Teacher-Advisory Council jointly formulate the budget
(51) __Vocational Director
(52) __Teacher-Vocational Director jointly formulate the budget
(53) __Teacher-Vocational Director-Administration jointly formulate the budget
(54) __Other (specify)

17. HOW MANY STUDENTS USE THE VOCATIONAL AGRICULTURAL MECHANICS FACILITY PER ACADEMIC YEAR?

(55)
(1) __0-20
(2) __21-40
(3) __41-60
(4) __61-80
(5) __81-100
(6) __101-120
(7) __121-140
(8) __141-160
(9) __More than 160

18. ARE THE TOOLS AND EQUIPMENT IN YOUR FACILITY IDENTIFIED IN SOME MANNER?

(56)
(1) __Yes
(2) __No

IF YES, HOW ARE THEY IDENTIFIED?

(57)
(1) __Specially engraved number
(2) __Special paint
(3) __Tag with number
(4) __Other (specify) _____

19. IS THE FACILITY SHARED WITH ANOTHER DEPARTMENT IN THE SCHOOL?

(58)
(1) __Yes
(2) __No

IF YES, WHAT OTHER DEPARTMENT SHARES THE FACILITY?

_____

20. ARE YOU REQUIRED TO CONDUCT AND MAINTAIN AN INVENTORY OF TOOLS AND EQUIPMENT EACH YEAR?

(1)__Yes
(59) (2)__No

IF YES, BY WHOM IS THE INVENTORY REQUIRED? (CHECK THOSE RESPONSES WHICH APPLY TO YOUR PROGRAM.)

(60)__Yourself
(61)__Administration
(62)__Federal or state government
(63)__District Supervisor
(64)__Vocational Director
(65)__Other (specify) _____

21. ARE THE TOOLS WHICH ARE USED BY THE STUDENTS IN THE AGRICULTURAL MECHANICS CLASSES CONTROLLED BY MEANS OF A CHECK-OUT SYSTEM?

(1)__Yes
(66) (2)__No

22. DOES THE TOOL ROOM HAVE A MARKED OR DESIGNATED PLACE FOR EACH TOOL?

(1)__Yes
(67) (2)__No

23. RANK ORDER THE AREAS OF AGRICULTURAL MECHANICS INSTRUCTION IN TERMS OF THE AMOUNT OF TIME YOU SPEND TEACHING IN EACH AREA. (PLACE A FIVE (5) BESIDE THE AREA IN WHICH YOU SPEND THE MOST AMOUNT OF TIME. PLACE A ONE (1) BESIDE THE AREA YOU SPEND THE LEAST AMOUNT OF TIME.)

(68)__Farm shop skills
(69)__Electrical processing
(70)__Farm power and machinery
(71)__Soil and water management
(72)__Agricultural structures

24. WHAT IS THE MOST IMPORTANT REASON AS TO WHY YOU SPEND TIME IN THIS AREA?

(1)__More knowledge of the subject area
(2)__Appropriate facilities
(73) (3)__Appropriate tools and equipment
(4)__Important to geographic location
(5)__Other (specify) _____

25. WHICH OF THE FOLLOWING IS A LIMITATION IN THE TEACHING OF AGRICULTURAL MECHANICS? (MAY CHECK MORE THAN ONE.)

(74)__No limitations
(75)__Time
(76)__Facilities
(77)__Tools and equipment
(78)__Lack of knowledge of the subject
(79)__Other (specify) _____

26. WHO, BESIDES YOURSELF, HAS ACCESS TO THE TOOLS AND EQUIPMENT IN THE VOCATIONAL AGRICULTURAL FACILITY? (CHECK MORE THAN ONE.)

(1)__Students
(2)__Administrators
(3)__General Faculty
(4)__Teacher from the other department (if a shared shop)
(5)__Janitorial staff
(6)__Other (specify) _____

27. WHAT IS THE SQUARE FOOTAGE OF THE TOTAL VOCATIONAL AGRICULTURE FACILITY?

(7-11) _____

28. WHAT IS THE SQUARE FOOTAGE OF THE VOCATIONAL AGRICULTURAL MECHANICS SHOP FACILITY ONLY?

(12-16) _____

29. IS THE VOCATIONAL AGRICULTURE FACILITY A SEPERATE BUILDING FROM THE MAIN SCHOOL BUILDING?

(1)__Yes
(17) (2)__No

30. WHAT IS THE SQUARE FOOTAGE OF THE CLASSROOM AREA ONLY?

(18-22) _____

31. WHAT IS THE SQUARE FOOTAGE OF THE TEACHER'S OFFICE FACILITY?

(23-27) _____

32. WHAT IS THE SQUARE FOOTAGE OF THE TOOL STORAGE AREA LOCATED IN THE AGRICULTURAL MECHANICS FACILITY?

(28-32) _____

33. ARE OVERHEAD DOORS PROVIDED IN THE VOCATIONAL AGRICULTURAL MECHANICS SHOP FACILITY?

(1)__Yes
(33) (2)__No

IF YES, WHAT IS THE SQUARE FOOTAGE OF THE LARGEST OVERHEAD DOOR?

(34-36) _____

WHAT IS THE SQUARE FOOTAGE OF THE SMALLEST OVERHEAD DOOR?

(37-39) _____

HOW MANY OVERHEAD DOORS ARE PROVIDED?

(1)__0
(2)__1
(3)__2
(40) (4)__3
(5)__4
(6)__5
(7)__More than 5

34. IS AN OVERHEAD STORAGE AREA OF SOME TYPE PROVIDED?

(1)__Yes
(41) (2)__No

IF YES, WHAT IS THE SQUARE FOOTAGE OF THE OVERHEAD STORAGE AREA?

(42-45) _____

35. DOES THE FACILITY PROVIDE A PAINT ROOM?

(1)__Yes
(46) (2)__No

IF YES, WHAT IS THE SQUARE FOOTAGE?

(47-50) _____

36. DOES THE FACILITY PROVIDE A PAVED OUTSIDE WORK AREA?

(1)__Yes
(51) (2)__No

IF YES, WHAT IS THE SQUARE FOOTAGE?

(52-56) _____

37. DOES THE SHOP FACILITY HAVE A FLOOR DRAIN?

(1)__Yes
(57) (2)__No

38. IS AN AIR VENTILATION SYSTEM OF SOME TYPE PROVIDED?

(1)__Yes
(58) (2)__No

39. ARE RESTROOM FACILITIES PROVIDED FOR STUDENTS' USE IN THE VOCATIONAL AGRICULTURAL FACILITY?

(1)__Yes
(59) (2)__No

IF YES, WHAT IS THE SQUARE FOOTAGE OF THE GIRLS' FACILITY?

(60-62) _____

IF YES, WHAT IS THE SQUARE FOOTAGE OF THE BOYS' FACILITY?

(63-65) _____

IS ONLY ONE RESTROOM FACILITY PROVIDED?

(1)__Yes
(66) (2)__No

40. IS A WASH VAT OR SINK PROVIDED?

(1)__Yes
(67) (2)__No

41. ARE PERSONAL LOCKERS PROVIDED FOR STUDENT USE?

(1)__Yes
(68) (2)__No

APPENDIX C

CORRESPONDENCE

Oklahoma State University

DEPARTMENT OF AGRICULTURAL ENGINEERING

STILLWATER, OKLAHOMA 74078
109 AGRICULTURAL HALL
(405) 624-5431

July 14, 1984

Dear Vocational Agricultural Instructor:

Congratulations! Your district supervisor has recommended you to be included in the 1984 Oklahoma Agricultural Mechanics Study. You were selected because of the outstanding job you have done in this important area of instruction.

The purpose of the study is to determine selected costs and characteristics associated with agricultural mechanics programs. In order to accomplish this, I would like to schedule a mutually convenient time to personally visit your department to make observations and discuss your agricultural mechanics program.

I will be contacting you by phone to determine a convenient time to visit your program. I would like for our first personal visit to be during the Summer Vo-Ag Teaching Conference.

If you have any questions concerning the study, please feel free to call (405-624-5432 or 5129).

Again, I appreciate your assistance in this study and I am looking forward to visiting with you.

Sincerely,

Tony Gene Smith
Graduate Teaching Assistant
Agricultural Mechanics

Approved:

_____
District Supervisor, State Dept. of Vocational Technical Education

_____
Dr. H. Robert Terry, Head
Agricultural Education Dept.

CENTENNIAL DECADE
1980 • 1990

VITA 2

Tony Gene Smith

Candidate for the Degree of

Doctor of Education

Thesis: AN ASSESSMENT OF FINANCIAL RESOURCES, EXPENDITURES, AND FACILITY FEATURES ASSOCIATED WITH SELECTED OKLAHOMA AGRICULTURAL MECHANICS PROGRAMS

Major Field: Agricultural Education

Biographical:

Personal Data: Born in Durant, Oklahoma, March 12, 1955, the son of Odie and Fay Smith.

Education: Graduated from Sulphur Springs High School, Sulphur Springs, Texas, May 1973; received the Bachelor of Science degree from East Texas State University, Commerce, Texas, May, 1980 with a major in Agricultural Education; received the Master of Science degree from East Texas State University, December, 1982 with a major in Agriculture; completed requirements for the Doctor of Education degree at Oklahoma State University in May, 1985.

Professional Experience: Self-employed dairy farmer, Sulphur Springs, Texas, May, 1973 to April, 1978; certified welder, Cason, Texas, May, 1978 to December, 1980; self-employed welder, Sulphur Springs, Texas, May, 1980 to September, 1980; Vocational Agricultural instructor, Price, Texas, October, 1980 to January, 1982; assistant instructor, Commerce, Texas, January, 1982 to August, 1983; graduate teaching assistant at Oklahoma State University, September, 1983 to present.

Organizations: Member of Texas State Teachers Association, member of Texas Vocational Agricultural Teachers Association, member of National Vocational Agricultural Teachers Association, member of Young Farmers of Texas, member of Oklahoma Society of Professional Engineers, member of Farm Bureau Association of Texas, member of Kappa Delta Pi, member of Alpha Tau Alpha, member of Gamma Sigma Delta.