TEACHER PERCEPTIONS OF CURRICULUM IMPORTANCE, TRAINING, AND COMPETENCE IN THE GENERAL AGRICULTURAL MECHANICS PROGRAM OF TEXAS

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CHAPTER I

PURPOSE AND DESIGN OF THE STUDY

Introduction

Trends in the Agricultural Industry in the last 20 years have been toward fewer agricultural workers and fewer acres of production. However, our nation is producing higher amounts of food and fiber today than then. The 10 million member farm force of 1950 has dwindled below five million. Fifty million acres have been lost to roads, subdivisions, and other uses in the last 20 years. Twenty years ago one farm worker supplied 16 people with food. Today he produces enough for 60 people.

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.

The Pre-Employment Laboratory Training in General Agricultural Mechanics Program was initiated in Texas to prepare young people for occupations in the operation, maintenance, repair, and construction of equipment used in the mechanized systems for producing food and fiber.

This program was established to supplement and provide more in depth training in the mechanical skill levels previously attained in the mechanics phase of Production Agriculture. General Agricultural Mechanics is for eleventh and twelfth grade level students, 16 years of age, who have a desire and need to receive additional knowledge and skills necessary to become competent employees in the Agricultural Mechanics occupations.

Course Objectives and Requirements

Students enrolled in the program receive two hours of instruction each day which is centered around the performance of useful or productive jobs and activities. The course must be taught by a vocational agriculture teacher certified by the Texas Education Agency in General Agricultural Mechanics.

Objectives of the program as stated by the Texas Education Agency are:

1. To provide a curriculum with emphasis on the technologies and subjects related to the agricultural mechanics phase of the Agricultural Industry.

2. To select, arrange, and sequence related experiences that will enable the student to enter the beginning level of the agricultural mechanics phase.

3. To develop appreciation, attitudes, and work habits that will contribute toward the development of good citizens by developing their physical, social, civic, cultural, and economic competencies (6).

The purpose of the program is stated as:

> To provide a training program for students in Agricultural Mechanics in a combination of subject matter and activities

> designed to develop abilities necessary for assisting with and/or performing the common and important operations or processes concerned with the selection, operation, and maintenance, and use of agricultural power, agricultural machinery and equipment, structures and utilities, soil and water management, and agricultural mechanics shop, including kindred sales and services (6, n.p.).

Problem Statement

Because of the extensive curriculum and a limited amount of time, teachers must identify and determine the amount of importance to place on each area that will best fit the needs of their students. It is felt that teacher skill competency levels may, in some instances, dictate the importance teachers place on the curriculum areas. This study will investigate the relationship between teacher competency levels and the importance placed on curriculum areas by the teacher.

Purpose of the Study

The purpose of this study was to determine from the teachers of the Pre-Employment General Agricultural Mechanics Program in Texas their perceptions of importance of areas of curriculum, shop and class hours spent in those areas, training received, competency levels in those areas, and the implications of these perceptions for additional in-service training.

Objectives of the Study

The objectives of the study are as follows:

1. To determine the number of classroom and shop hours spent in each area of the curriculum.

2. To determine the amount of importance placed on each area of the curriculum by the Pre-Lab General Agricultural Mechanics teachers.

3. To determine the amount of teacher training in each of the instructional areas.

4. To determine the teachers' perceptions as to when, where, and how additional training should be provided.

5. To determine the self-perceived level of competency of the teachers in the curriculum areas of instruction.

6. To determine the relationships of selected variables responded to by the teachers.

Assumptions

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

1. The Pre-Lab General Agricultural Mechanics teachers could and would indicate the level of importance they place in each area of the curriculum.

2. The Pre-Lab General Agricultural Mechanics teachers could and would indicate their self-perceived level of competence in each area.

3. The Pre-Lab General Agricultural Mechanics teachers would indicate their choice as the best method for receiving additional in-service training.

Scope and Limitations

The population of this study consisted of the teachers of the program. As of the beginning of the school year 1979-80, there were 244 vocational agriculture teachers instructing the specialized program of General Agricultural Mechanics in 244 departments in the state of Texas. In this study, the teachers had the opportunity to express their opinions

on the instructional areas concerning the importance they placed on those areas, the amount of time spent in instruction, their competence level to teach those areas, and the amount of training they had received in those areas. In addition, the teachers were asked to give their priority for methods in which additional training should be given. It is believed that teachers could adequately evaluate their instructional priorities and skills.

It was not the intent of this study to compare individual qualities; therefore, group comparisons were used. It is hoped that through this study the instructional program of Pre-Employment General Agricultural Mechanics might be strengthened.

Definitions

Certain terms have special meaning as applied to this study. The following terms seemed pertinent and relative:

1. Pre-Employment Laboratory Training in General Agricultural Mechanics--refers to the descriptive title of the course taught in many Texas public schools.

2. General Agricultural Mechanics--refers to the Pre-Employment Laboratory Training in General Agricultural Mechanics throughout this study.

3. Agricutural Mechanics--refers to the instructional areas which develop the mechanical skills and abilities of students needed in on-farm and off-farm agricutural occupations.

4. Formal Training--refers to the preparation an instructor received at the college level.

5. Informal Training--refers to preparation other than that received at the college level.

6. In-Service Training--refers to the preparation received by the teachers in workshops sponsored by the Texas Education Agency and by industry to improve the quality of instruction.

7. Curriculum--refers to the General Agricultural Mechanics Basic Curriculum for Vocational Agriculture Pre-Employment Laboratory Training (2).

8. Competency--refers to the skill ability and the degree of specialization the teacher has for performing the major responsibilities associated with his job.

9. Areas of Instruction--refers to either Farm Power and Machinery Maintenance and Operation, Agricultural Mechanics Skills, Farm Structures, Farm and Ranch Electrification, or Soil and Water Management.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to present background information for this investigation. Involved were research studies, books, professional magazines, and periodicals pertinent to this study. The review of literature has been organized into four different sections. These are as follows:

1. The implication for agricultural mechanics in the vocational agriculture program.
2. The need for competent teachers of agricutural mechanics.
3. The need for in-service training.
4. Specialized instruction in agricutural mechanics.

The Implication for Agricultural Mechanics in the Vocational Agriculture Program

Agricultural mechanics has been an integral part of the vocational agriculture program since passage of the Smith-Hughes Act of 1917. It is fortunate that the early pioneers of vocational agriculture saw the need to include training in mechanical skills for persons engaged in producing the food and fiber of our nation. But even with their foresight, they could not have been aware of the tremendous impact that mechanized technology would have upon the agriculture industry in the years to come. Modern farms have huge investments in machinery,

structures, and other automated devices. Along with new innovations has come an ever increasing demand for persons possessing basic mechanical skills in the areas of agricultural power and machinery, agricultural structures, electrical power and processing, soil and water management, and agriculture construction and maintenance.

Mechanical ability is important. As Shinn and Weston (16, p. 25) pointed out, "Because agricultural industry is so mechanized, nearly every worker has to have some mechanical ability and skills, and many workers need considerable mechanical skills for their job." Shinn and Weston maintain that mechanical competency must be built upon a solid foundation of basic skills. These include reading, writing, simple arithmetic, and an understanding of metrics. Agricultural mechanics must have the ability to read technical manuals, make precision measurements, and be able to write instructions for others to follow.

Amberson (1) suggests that skills and knowledge are needed in internal combustion engines, power transmission, maintenance mechanics, welding, concrete construction, uses of electricity, materials handling, systems development, and other applications of mechanics in agriculture.

Energy conservation has influenced the increased awareness for the proper adjustment and maintenance of farm machinery. Skills involving such items as ignition timing, carburetor adjustment, spark plug adjustment, diesel injector adjustment, air cleaner maintenance, and governor adjustment can be taken care of with simple tools and equipment if persons have proper training in basic agricultural mechanics.

Many studies have been conducted in which farmers were surveyed to determine what their identified needs are concerning mechanical skills. Webb and Knotts (19) found that the most important area is farm power and

machinery. They further point out that for a vast majority of the farmers, it is far more important to be able to service machinery and equipment according to the operator's service manual than to be able to overhaul an engine. Farmers suggested that maintenance of electric motors was more important than electric motor repair.

A survey by Skadburg (17) indicated that farmers feel that skills and abilities in the tractor and machinery area are of the greatest value. Second was welding and metals, followed by electricity and electric motors, concrete, gasoline engines, and carpentry.

Mechanical skills learned in the vocational agriculture shop are needed by persons entering non-farm occupations as well. Hutson (8) found that skills acquired in the areas of machinery maintenance, woodwork, electricity, carpentry, and tool fitting were being used frequently by former vocational agriculture students in non-farming occupations. The study indicated a need for additional knowledge and skills in machinery maintenance, interpreting blueprints, gasoline engines, and welding. In addition, the study emphasized the need for skill training that could be adapted for both farm and non-farm related occupations.

The Need for Competent Teachers of Agricultural Mechanics

The vocational agriculture mechanics teacher must have a wide variety of mechanical competencies to meet the needs of today's students. In discussing today's mechanics instruction, Knox (11, p. 14) stated, "There has been much change since 1937, when students were taught the farm shop skills necessary for the construction and repair done on the farm by the farmer with tools to be found in the average farm shop."

Knox continued by saying that with the rise of students coming from non-farm backgrounds, it is necessary to create programs that will continue skill instruction throughout the high school days. In many communities, small engines may replace the unit on tractors.

Wolff (23) stated that during the 1950's and 1960's, when there was a skyrocketing of mechanized agriculture, many vocational agriculture teachers were still in the "nailbox" and "shoeshine box" era. During this time, many innovations involving power and machinery and electricity were being introduced to the farm. Too many teachers were not keeping up with the advancing technology.

The Vocational Education Acts of 1963 and 1968 have helped minimize this lag in instruction by changing the focus of vocational agriculture to include much more than educating persons for on-farm occupations. New legislation has allowed many specialized programs to be introduced and with this came greater emphasis on teacher training. But with the continuing advancement in technology, there still remains the lack of teacher competency in mechanical skills.

As reported in a study by Johnson and Wacholz (9), those surveyed placed a greater importance on competencies pertaining to service and minor repair and less importance in major repair competencies. The study indicated a higher degree of competence needed than the degree of competence teachers reported they possessed. Johnson and Wacholz pointed out the need for a higher degree of competence in agricultural mechanics by teachers because of farm mechanization. Weston (22, p. 171) stated, "The practice of teachers avoiding the teaching of such subjects as power and machinery, building, and electrification is a direct result of their training."

Bothwell (3) states that too many times agricultural mechanics is taught by allowing the students to "go to the shop" with little regard for the teaching of new skills. Many times teachers have failed to prepare themselves, found an area too difficult to teach, were satisfied with their knowledge, and/or refused to learn more about it.

Webb and Knotts (19) recommend teacher education programs be designed to enable present and prospective teachers to develop the skills they will be required to teach.

The Need for In-Service Training

The changes that have developed in agriculture mechanics have not changed the basic fundamentals needed by a person to become a successful teacher. The number of mechanical competencies needed by the teacher, though, have and will continue to increase. Teacher education programs, alone, cannot keep up with this continuous change in technology.

Cooper (5, p. 27), of the Maryland State Department, stated, "In-service programs must 'grease the squeaky wheels' to quickly close the gap between a teacher's preparational deficiencies and the local program needs after a teacher is hired." Cooper implies that some teacher education institutions have dwelled on the theory and academic approaches to education until skill development essentially has been excluded.

West and Lawrence (21) reported in their study that nearly one-half of the teachers surveyed expressed a desire to receive in-service training to upgrade their skills in agricultural mechanics.

Just as mechanical devices have become out of date and obsolete, teachers will find themselves in the same category unless they take advantage of continuing education. High attendance by vocational

agriculture teachers in the past at in-service workshops suggest many teachers realize the importance of professional development.

Todd (18) stated it is impossible for teachers of vocational agriculture to receive all of the training they need during a baccalaureate program. This condition is made more complex with rapidly changing occupations in agriculture and federal legislation to implement programs to keep abreast with changes and trends. In-service education programs for vocational agriculture teachers have become accepted as a means for trying to keep teachers up-to-date in changes that have occurred in the subject matter areas.

Fog and Bear (7) stated that in-service workshops can help teachers of vocational agriculture keep pace with the agricultural mechanics needs of their communities.

Specialized Instruction in Agricultural Mechanics

Today's highly mechanized agriculture has presented a need for specialized programs in agricultural mechanics. Lambert (12) reported on a specialized program that was begun in the state of Wisconsin. The Oklahoma State Department of Vocational Education approved a specialized course in agricultural mechanics beginning with the 1965-66 school year.

Cepica (4) described the Texas Pre-Employment Laboratory Training Program in Farm Power and Machinery which began in 1966. In 1973, Pre-Lab General Agricultural Mechanics was begun. Many states have instituted similar specialized courses of instruction to their curriculum.

These specialized courses have increased the need for teachers highly competent in many mechanical skills. Webb and Kruse (20) found

a majority of the teachers felt they did not have adequate training in farm machinery mechanics to properly teach the pre-employment laboratory classes. Their findings also showed little instruction in areas where teachers had received limited training.

A study by Jones (10) found a majority of the teachers of the Pre-Employment Laboratory Program were not properly trained to teach Farm Power and Machinery. Jones' study revealed that 93 percent of the 13 teachers surveyed had received 10 hours or less of formal undergraduate training in farm machinery service and repair. Only one teacher had received 10 hours or more formal graduate training in this area. It was noted that the latter teacher had received a Master's degree in Agricultural Engineering. The study recommended teachers of Pre-Lab programs be afforded more extensive formal preparation at both the undergraduate and graduate levels.

In a study by Pruitt (15), concerning the Pre-Employment Farm Power and Machinery Program in Texas, it was recommended that:

1. In-service programs be greatly increased through close cooperation with industry, universities, and the Texas Education Agency.

2. More practical experience be provided the teachers and instructors through on-the-job work experience in close cooperation with industry, universities, and the Texas Education Agency.

3. Texas Education Agency workshops using university personnel as instructors be continued.

4. Teachers of these programs should have the combined formal preparation at both the undergraduate and graduate levels.

Summary

Agricultural mechanics has remained an integral part of the vocational agriculture program. Mechanized technology and energy conservation has and will continue to demand highly skilled persons with basic agricultural mechanics training. Many of the skills learned in the vocational agriculture shop are needed by those entering non-farm occupations.

Teachers' competency levels in mechanical skills have been the topic of articles and studies by Knox (11), Wolff (23), Johnson and Wacholz (9), Jones (10), Pruitt (15), Weston (22), and Bothwell (3). These studies have pointed out that teachers must be competent in many areas in order to provide students the training necessary for occupations of today and in the future.

The review of literature indicated that the majority of agricultural mechanics teachers are aware of their need for additional training and have a desire for such training.

Many states have initiated specialized courses in agricultural mechanics. With this has come a greater need for teachers possessing many mechanical skills and a willingness on their part for continued professional development.

CHAPTER III

DESIGN AND CONDUCT OF THE STUDY

The purpose of this chapter is to describe the methods and procedures used in conducting this study. They were identified by the purpose of the study, which was to determine from the teachers of the Pre-Employment General Agricultural Mechanics Program in Texas their perceptions of importance of areas of curriculum, shop and class hours spent in those areas, training received, competency levels in those areas, and the implications of these perceptions for additional in-service training.

Specific objectives relating to the design of the study had to be identified. In order to collect the information necessary to accomplish the purpose of the study, the following tasks had to be completed:

1. Determine the number of schools and instructors teaching General Agricultural Mechanics in Texas.
2. Develop the instrument for data collection.
3. Develop a procedure for the data collection.
4. Use the proper methods of analyzing the data.

The Study Population

In January of 1980, the researcher corresponded by telephone with Mr. Raymond Holt, Consultant with the Agricultural Education Division, Texas Education Agency, Austin, Texas, to obtain information relating to locations and teachers of the General Agricultural Mechanics Program.

The population of this study consisted of 244 vocational agriculture teachers, teaching the General Agricultural Mechanics Program in Texas during the 1979-80 school year.

Development of the Instrument

The information needed for the study was obtained through the use of a questionnaire. The questionnaire was developed with the aid of the author's committee and the questionnaire used by Pruitt (15) in a similar study. Instructional areas were identified by the Texas Education Agency curriculum guide for General Agricultural Mechanics. The areas were:

1. Farm Power and Machinery Maintenance and Operation.
2. Agricultural Mechanical Skills.
3. Farm Structures.
4. Farm and Ranch Electrification.
5. Soil and Water Management.

The first part of the questionnaire dealt with specific questions concerning the professional background of the respondents and a question concerning the number of years the course was offered at their school. Those questions were:

1. Years experience teaching vocational agriculture?
2. Years experience teaching Pre-Lab General Agricultural Mechanics?
3. Pre-Lab General Ag Mechanics is offered as a _____ (one) _____ (two) year program at your school?
4. Number of semester hours you have completed related to Agricultural Mechanics?
5. Your formal course work for certification in General Agricultural Mechanics was completed at what institution and when?

6. Please list the types and amount, or length, of informal training pertaining to General Agricultural Mechanics you have had (military, on farm, work experience, etc.).

Non-credit in-service workshops are sponsored by the Texas Education Agency in cooperating universities for vocational agriculture teachers throughout Texas. In addition, several industries sponsor workshops for vocational agriculture teachers. The teachers of the General Agricultural Mechanics Program were to respond by checking on the questionnaire those non-credit workshops they had attended. Space was provided for the teachers to list other workshops not listed.

The second part of the questionnaire listed the five curriculum areas and their related topics as suggested by the Basic Curriculum for Vocational Agriculture Pre-Employment Laboratory Training in General Agricultural Mechanics (2). First, the instrument included two divisions, which permitted the teachers to check the number of hours spent in classroom and shop instruction on the listed topics. Next, the teachers were asked to indicate on a five-point scale the amount of importance they felt should be placed on each topic and the amount of training they had received. The scale included the categories of "none," "little," "some," "much," and "very much." Real limits were set at:

1. 3.50 to 4.00 for "very much,"
2. 2.50 to 3.49 for "much,"
3. 1.50 to 2.49 for "some,"
4. 0.50 to 1.49 for "little,"
5. 0.00 to 0.49 for "none."

The General Agricultural Mechanics teachers had the opportunity to rank their priority for types of additional training in the specialized

areas. They were to rank the following options: one through four with one equaling their first choice. The four options included:

1. College credit courses,
2. Industry in-service workshops,
3. Texas Education Agency sponsored workshops,
4. On-the-job training with pay.

In the last section, the teachers were to assess their level of teaching competence on the topics by checking their perceived level of ability on a five-point scale. The scale included the categories of "none," "low," "average," "high," and "very high." Real limits for the competencies were set at:

1. 3.50 to 4.00 for "very high,"
2. 2.50 to 3.49 for "high,"
3. 1.50 to 2.49 for "average,"
4. 0.50 to 1.49 for "low,"
5. 0.00 to 0.49 for "none."

Collection of Data

The questionnaires were mailed to the 244 General Agricultural Mechanics Pre-Employment Laboratory training teachers on April 7, 1980. A self-addressed, stamped envelope was enclosed to encourage a prompt response and return. A cover letter from Mr. Raymond Holt, Consultant for the Texas Education Agency, was enclosed explaining the importance and value of the study and its relationship to the continued success of the program.

The first mailing resulted in 86 returns from the teachers. On May 1, 1980, a follow-up letter was mailed to the non-respondents

stressing the importance of their participation in the study.

The follow-up letter netted an additional 65 responses for a total of 151 instruments. A third letter was sent on May 23, 1980, which provided 23 responses. Total response was 174 or a 71.31 percent return.

Analysis of Data

The respondents of this study included 174 of the 244 Pre-Employment Laboratory General Agricultural Mechanics teachers in Texas. The information received from the instrument was key-punched on International Business Machine (IBM) cards and a Statistical Package for the Social Sciences (SPSS) program (13) was utilized for statistical analysis.

After consulting with the author's major adviser, it was decided that descriptive statistics would be the most appropriate treatment to use. The descriptive statistics selected were frequency distributions, percentages, and means. In addition, the Pearson Product-Moment Correlation procedure, as described by SPSS, was utilized to calculate the relationships between selected variables.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The primary purpose of this study was to obtain from the General Agricultural Mechanics Pre-Employment Laboratory Training teachers their perceptions of importance of areas of curriculum, shop and class hours spent in those areas, training received, competency levels in those areas, and the implications of these perceptions for additional in-service training.

In order to accomplish the purpose of the study, the following specific objectives were set forth:

1. To determine the number of classroom and shop hours spent in each area of the curriculum.

2. To determine the amount of importance placed on each area of the curriculum by the Pre-Lab General Agricultural Mechanics teachers.

3. To determine the amount of teacher training in each of the instructional areas.

4. To determine the teachers' perceptions as to when, where, and how additional training should be provided.

5. To determine the self-perceived level of competency of teachers in the curriculum areas of instruction.

6. To determine the relationship of selected variables responded to by the teachers.

Population

The population for this study consisted of the 244 vocational agriculture teachers, teaching General Agricultural Mechanics in the Texas high schools during the 1979-80 school year. The instruments used in this study were received from 174 respondents which represented a 71.13 percent return. A copy of the instruments used to secure the data for this study are included in Appendix A.

Selected Characteristics of the General Agricultural Mechanics Pre-Employment Training Teachers

Table I shows the number of years experience teaching vocational agriculture, the number of teachers by years experience, and the percentage of the teachers in each year group that were teaching General Agricultural Mechanics Pre-Employment Laboratory Training in Texas during the school year 1979-80. Ninety-nine or 56 percent of those responding had taught eight years or less. Years experience teaching vocational agriculture ranged from 1 to 38 years with a mean of 10.97 years.

General Agricultural Mechanics Pre-Employment Laboratory Training has been a part of the vocational agriculture program in Texas since school year 1973-74 when 45 programs were initiated. Table II shows the distribution of teachers' responses for years of experience teaching Pre-Lab General Agricultural Mechanics. The average years of experience teaching General Agricultural Mechanics was 3.20 years. One hundred and four or 60 percent had taught less than 3.20 years.

Ninety-eight or 56.3 percent of the respondents indicated General Agricultural Mechanics was offered as a one-year program. Seventy-six

TABLE I

THE DISTRIBUTION OF TEACHERS BY YEARS EXPERIENCE IN TEACHING VOCATIONAL AGRICULTURE

Years Experience Teaching Vocational Agriculture	Number of Teachers in Each Year	Percent of the Teachers in Each Group
1	13	7.5
2	9	5.2
3	15	8.6
4	17	9.8
5	13	7.5
6	7	4.0
7	11	6.3
8	14	8.0
9	6	3.4
10	5	2.9
11	6	3.4
12	5	2.9
13	2	1.1
14	3	1.7
15	6	3.4
16	3	1.7
17	4	2.3
19	3	1.7
20	1	0.6
21	5	2.9
23	2	1.1
24	3	1.7
25	2	1.1
26	1	0.6
28	1	0.6
29	2	1.1
30	4	2.3
31	3	1.7
32	3	1.7
33	1	0.6
34	1	0.6
36	2	1.1
38	1	0.6
TOTAL	174	100.0

or 43.7 percent indicated General Agricultural Mechanics was offered as a two-year program at their school.

TABLE II

THE DISTRIBUTION OF TEACHERS BY YEARS EXPERIENCE IN TEACHING GENERAL AGRICULTURAL MECHANICS PRE-EMPLOYMENT LABORATORY TRAINING

Years Experience Teaching Pre-Lab General Agricultural Mechanics	Number of Teachers	Percent of the Respondents
1	54	31.0
2	25	14.4
3	25	14.4
4	21	12.1
5	22	12.5
6	14	8.0
7	13	7.4
TOTAL	174	100.0

The teachers were asked to indicate the number of college semester hours they had completed in agricultural mechanics. Table III reveals that 10 or 5.7 percent of the teachers responded as having had from two to eight semester hours related to agricultural mechanics. Ninety-seven or 55.7 percent had completed from 9 to 17 semester hours and 60 or 34.5 percent had completed from 18 to 30 semester hours. Seven or 4.6 percent

indicated they had completed 31 or more semester hours in agricultural mechanics related courses. The 174 respondents had a semester hour mean of 16.52.

TABLE III

SUMMARY OF SEMESTER HOURS COMPLETED RELATED TO AGRICULTURAL MECHANICS

Number of Completed Agricultural Mechanics Semester Hours	Number of Teachers	Percent of the Respondents
2-8	10	5.7
9-17	97	55.7
18-31	60	34.5
31+	7	4.0
TOTAL	174	100.0

The respondents were asked to indicate from what institution they had certified to teach General Agricultural Mechanics as an undergraduate. Four universities were listed by 14 respondents. A total of seven or 50.0 percent had certified at Tarleton State University. East Texas State University certified three or 21.4 percent, three or 21.4 percent listed Texas Tech, and one or 7.1 percent was certified by Texas A&M University. The remaining teachers indicated they had been

certified by the preparatory workshop sponsored by the Texas Education Agency or would complete certification during the summer of 1980.

The respondents were asked to list the types and amount of informal training they had received pertaining to general agricultural mechanics. Thirty-two of the respondents listed military training, with 21 giving length of service averaging 2.9 years. One hundred and thirty-one respondents indicated they had received on-farm experience. Of these, 40 indicated an amount of training averaging 15.65 years. Ninety-one did not respond to amount of training. There were 155 responses to work experience. Appendix B presents 24 different work experience statements listed by the respondents.

A certification workshop sponsored by the Texas Education Agency is held each summer to prepare vocational agriculture teachers to teach Pre-Lab General Agricultural Mechanics. One hundred and thirty-nine respondents indicated that they had attended this workshop. Thirty-five did not respond. Seventy of the respondents attended other types of non-credit workshops sponsored by universities and the Texas Education Agency. One hundred and fifty-one attended workshops at the Texas Vocational Agriculture Conference and 73 of the respondents attended workshops that were sponsored by industry.

Data Concerning the Five Instructional Areas Included in the General Agricultural Mechanics Curriculum

The following section of this chapter gives the number and percentage of the responses for the topics listed on the instrument for the five instructional areas. Also included in this section are summaries

of the Pearson Product-Moment procedure that was utilized to examine the relationship between selected variables.

Classroom Hours Spent on the Farm Power and Machinery Maintenance and Operation Topics

Table IV contains a summary of classroom hours spent in the area of farm power and machinery maintenance and operation. The highest percentage of respondents spending 11 or more hours of classroom instruction was on the topics of "tractors and engines" and "small gas engines." Only 3.4 percent of the respondents did not spend classroom time on "small gas engines" while 52.9 percent of the respondents spent no classroom time on "servicing air conditioning systems." The largest single response was 111 teachers spending one to two hours on "servicing the cooling system."

Classroom Hours Spent on the Agricultural Mechanical Skills Topics

Table V indicates the hours spent in the classroom on the agricultural mechanical skills topics. The greatest percentage of respondents, 56.9, spent one to two hours on "soldering." The highest percentage of the teachers spent 6 to 10 hours in "electric welding" and three to five hours in "oxyacetylene." The category of one to two hours was observed as containing the largest percentage of responses for all topics other than "electric welding" and "oxyacetylene."

TABLE IV

SUMMARY OF TEACHERS' ESTIMATES OF CLASSROOM HOURS SPENT ON THE FARM POWER AND MACHINERY MAINTENANCE AND OPERATION TOPICS

Farm Power and Machinery Maintenance and Operation	Distribution by Hours Spent in the Classroom											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Tractors and Engines	14	8.0	31	17.8	58	33.3	36	20.7	28	16.1	7	4.0
Diagnosing Engine Conditions	16	9.2	57	32.8	64	36.8	17	9.8	9	5.2	11	6.3
Servicing the Electrical System	24	13.8	82	47.1	41	25.6	14	8.0	2	1.1	11	6.3
Servicing the Cooling System	21	12.1	111	68.8	26	14.9	3	1.7	1	0.5	12	6.9
Servicing the Fuel and Air System	20	11.5	96	55.2	36	20.7	10	5.7	0	0.0	12	6.9
Lubricating Power Units	21	12.1	102	58.6	31	17.8	7	4.0	0	0.0	13	7.5
Servicing Air Conditioning Systems	92	52.9	54	31.0	8	4.6	2	1.1	0	0.0	18	10.3
General Servicing	18	10.3	66	37.9	48	27.6	18	10.3	11	6.3	13	7.5
Painting Power Units and Farm Machinery	23	13.2	72	41.4	42	24.1	10	5.7	10	5.7	17	9.8
Servicing and Repairing Small Gas Engines	6	3.4	26	14.9	52	29.9	49	28.2	31	17.8	10	5.7
Setting Up and Maintaining Farm Machinery and Equipment	32	18.4	68	39.1	37	21.3	21	12.1	3	1.7	13	7.5

N = 174.

TABLE V

SUMMARY OF TEACHERS' ESTIMATES OF CLASSROOM HOURS SPENT ON THE AGRICULTURAL MECHANICAL SKILLS TOPICS

Agricultural Mechanical Skills	Distribution by Hours Spent in the Classroom											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Operating Electric Welding Equipment	0	0.0	15	8.6	51	29.3	56	32.2	50	28.7	2	1.1
Operating Oxyacetylene Equipment	1	0.6	24	13.3	61	35.1	46	26.4	40	23.0	2	1.1
Cold Metal Work	16	9.2	67	38.5	58	33.3	19	10.9	6	3.4	8	4.6
Soldering	25	14.4	99	56.9	24	13.8	11	6.3	1	0.6	14	8.0
Planning an Agricultural Safety Program	8	4.6	73	42.0	57	32.8	21	12.1	7	4.0	8	4.5
Planning and Organizing the Farm Shop	19	10.9	79	45.4	48	27.6	14	8.0	5	2.9	9	5.2

N = 174.

Classroom Hours Spent on the Farm Structure Topics

Data found in Table VI show the hours spent in the classroom on farm structure instruction. From 2.9 percent to 19.0 percent of the teachers indicated they spent no classroom time on topics within the area. The greatest percentage of response per topic was three to five hours for "planning and constructing," one to two hours for "fences," three to five hours for "concrete in structures," and one to two hours for "concrete masonry." Twenty-seven or 15.5 percent of the respondents spent 11 or more hours in "planning and constructing," highest of all topics within the area.

Classroom Hours spent on Farm and Ranch Electrification

Table VII contains data concerning classroom hours spent on farm and ranch electrification topics. The largest category on "farm wiring" was three to five hours with 41.4 percent of the teachers responding. The category of one to two hours was greatest for "electric motors" representing 37.4 percent of the respondents. Sixteen or 9.2 percent spent 11 or more hours on "farm wiring."

Classroom Hours Spent on Soil and Water Management

Table VIII indicates the hours spent in the classroom on topics within the soil and water management area. Thirty-four or 19.5 percent of the teachers indicated they spent no classroom time on "planning farm water systems." The largest response for "planning the farm water

TABLE VI

SUMMARY OF TEACHERS' ESTIMATES OF CLASSROOM HOURS SPENT ON FARM STRUCTURES TOPICS

Farm Structures	Distribution by Hours Spent in the Classroom											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Planning and Constructing Buildings and Equipment	5	2.9	30	17.2	66	37.9	39	22.4	27	15.5	7	4.0
Planning and Building Fences	24	13.8	76	43.7	51	29.3	11	6.3	3	1.7	9	5.2
Using Concrete in Structures	8	4.6	62	35.6	70	40.2	21	12.1	6	3.4	7	4.0
Using Concrete Masonry, Bricks, Tile, and Stone in Structures	33	19.0	67	38.5	49	28.2	7	4.0	4	2.3	14	8.0

N = 174.

TABLE VII

SUMMARY OF TEACHERS' ESTIMATES OF CLASSROOM HOURS SPENT ON THE FARM AND RANCH ELECTRIFICATION TOPICS

Farm and Ranch Electrification	Distribution by Hours Spent in the Classroom											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Farm Wiring	3	1.7	34	19.5	72	41.4	45	25.9	16	9.2	4	2.3
Selecting and Maintaining Electric Motors	10	5.7	65	37.4	59	33.9	24	13.8	9	5.2	7	4.0

N = 174.

TABLE VIII

SUMMARY OF TEACHERS' ESTIMATES OF CLASSROOM HOURS SPENT ON THE SOIL AND WATER MANAGEMENT TOPICS

Soil and Water Management	Distribution by Hours Spent in the Classroom											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Planning Farm Water Systems	34	19.5	69	39.7	37	21.3	19	10.9	6	3.4	9	5.2
Farm and Ranch Surveying	15	8.6	49	28.2	60	34.5	29	16.7	13	7.5	8	4.6

N = 174.

system" was one to two hours. The largest category for "farm surveying" was three to five hours with 34.5 percent response. Thirteen or 7.5 percent spent 11 or more hours in "farm surveying."

Shop Hours Spent on Teaching Farm Power and Machinery Maintenance and Operation

In Table IX, 89 or 51.1 percent of the teachers indicated they spent no time teaching the topic of "air conditioning." Only two or 1.1 percent of the respondents spent as much as six shop hours on the topic. A high percentage of the respondents spent 11 or more hours on the topics of "tractors and engines" and "small gas engines" when compared with other categories within each topic. Seventy percent of the respondents spent six or more hours on "small gas engines."

Shop Hours Spent on Agricultural Mechanical Skills

It can be observed in Table X that there was no response in the category of zero hours for "operating electric" or "oxyacetylene equipment." There was no response to less than three hours on the electric welding topic. One hundred and forty-one or 81.0 percent of the respondents indicated they spent 11 or more shop hours on the topic of "operating electric welding equipment." One hundred and eighteen or 67.8 percent spent 11 or more hours on "oxyacetylene" instruction.

Shop Hours Spent on Farm Structures

Table XI indicates 19.0 percent of the respondents spent no shop time on the topic of "concrete masonry." Seventy-nine or 45.4 percent

TABLE IX

SUMMARY OF TEACHERS' ESTIMATES OF SHOP HOURS SPENT ON THE FARM POWER AND MACHINERY MAINTENANCE AND OPERATION TOPICS

Farm Power and Machinery Maintenance and Operation	Distribution by Time Spent in the Shop											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Tractors and Engines	15	8.6	16	9.2	35	20.1	27	15.5	68	39.1	13	7.5
Diagnosing Engine Conditions	15	8.6	40	23.0	59	33.9	33	19.0	17	9.8	10	5.7
Servicing the Electrical System	20	11.5	69	39.7	57	32.8	8	4.6	9	5.2	11	6.3
Servicing the Cooling System	19	10.9	92	52.9	46	26.4	3	1.7	2	1.1	12	6.9
Servicing Fuel and Air Systems	16	9.2	88	50.6	46	26.4	12	6.9	1	0.6	11	6.3
Lubricating Power Units	19	10.9	79	45.4	53	30.5	7	4.0	2	1.1	14	8.0
Servicing the Air Conditiong System	89	51.1	42	24.1	18	10.3	2	1.1	0	0.0	23	13.2
General Servicing	15	9.2	44	25.3	54	31.0	21	12.1	23	13.2	16	9.2
Painting Power Units and Farm Machinery	21	12.1	22	12.6	56	32.2	29	16.7	24	13.8	22	12.6
Servicing and Repairing Small Gas Engines	5	2.9	8	4.6	24	13.8	41	23.6	81	46.6	15	8.6
Setting Up and Maintaining Farm Machinery and Equipment	33	19.0	38	21.8	40	23.0	31	17.8	17	9.8	15	8.6

N = 174.

TABLE X

SUMMARY OF TEACHERS' ESTIMATES OF SHOP HOURS SPENT ON THE AGRICULTURAL MECHANICAL SKILLS TOPICS

Agricultural Mechanical Skills	Distribution by Time Spent in the Shop											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Operating Electric Welding Equipment	0	0.0	0	0.0	9	5.2	16	9.2	141	81.0	8	4.6
Operating Oxyacetylene Equipment	0	0.0	1	0.5	18	10.3	29	16.7	118	67.8	8	4.6
Cold Metal Work	7	4.0	30	17.2	63	36.2	42	24.1	18	10.3	14	8.0
Soldering	10	5.7	79	45.4	53	30.5	10	5.7	5	2.9	17	9.8
Planning an Agricultural Safety Program	19	10.9	60	34.5	44	25.3	18	10.3	16	9.2	17	9.8
Planning and Organizing the Farm Shop	29	16.7	54	31.0	43	24.7	17	9.8	12	6.9	19	10.9

N = 174.

TABLE XI

SUMMARY OF TEACHERS' ESTIMATES OF SHOP HOURS SPENT ON THE FARM STRUCTURES TOPICS

Farm Structures	Distribution by Time Spent in the Shop											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Planning and Constructing Buildings and Equipment	5	2.9	11	6.3	32	18.4	38	21.8	79	45.4	9	5.2
Planning and Building Fences	19	10.9	45	25.9	59	33.9	27	15.5	13	7.5	11	6.3
Using Concrete in Structures	11	6.3	29	16.7	54	31.0	47	27.0	26	14.9	7	4.0
Using Concrete Masonry, Bricks, Tile, and Stone in Structures	33	19.0	52	29.9	39	22.4	22	12.6	12	6.9	16	9.2

N = 174.

of the teachers spent 11 or more hours on "planning and constructing buildings and equipment."

Shop Hours Spent on Farm and Ranch Electrification

As can be observed in Table XII, 39 or 22.4 percent of the teachers spent 11 or more hours on "farm wiring" while 57 or 32.8 percent spent one to two hours on "electric motors." These represent the largest categories of the two topics.

Shop Hours Spent on Soil and Water Management

Table XIII contains data concerning the soil and water management area. The largest response was in the "planning farm water systems" category of one to two hours.

Importance Placed on Farm Power and Machinery Maintenance and Operation

Table XIV reveals the importance placed on the farm power and machinery maintenance and operation topics. Average importance ranged from 1.442 for "servicing the air conditioning system" to 2.969 for "servicing and repairing small gas engines." The largest percentage of teachers responded to the "some" category on the scale. "Small gas engines," "tractors and engines," "general servicing," and "diagnosing engine conditions" were rated as "much" importance. "Servicing air conditioning systems" received the category of "little" importance. The overall mean importance for all topics was 2.379 or "some."

TABLE XII

SUMMARY OF TEACHERS' ESTIMATES OF SHOP HOURS SPENT ON THE FARM AND RANCH ELECTRIFICATION TOPICS

Farm and Ranch Electrification	Distribution of Time Spent in the Shop											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Farm Wiring	2	1.1	22	12.6	48	27.6	55	31.6	39	22.9	8	4.6
Selecting and Maintaining Electric Motors	7	4.0	57	32.8	54	31.0	35	20.1	10	5.7	11	6.5

N = 174.

TABLE XIII

SUMMARY OF TEACHERS' ESTIMATES OF SHOP HOURS SPENT ON THE SOIL AND WATER MANAGEMENT TOPICS

Soil and Water Management	Distribution by Time Spent in the Shop											
	0 Hours		1-2 Hours		3-5 Hours		6-10 Hours		11+ Hours		Non-Response	
	N	%	N	%	N	%	N	%	N	%	N	%
Planning Farm Water Systems	34	19.5	52	29.9	44	25.3	16	9.2	15	8.6	13	7.5
Farm and Ranch Surveying	14	8.0	23	13.2	49	28.2	45	25.9	32	18.4	11	6.3

N = 174.

TABLE XIV

SUMMARY OF TEACHERS' PERCEPTIONS OF THE IMPORTANCE OF TOPICS WITHIN THE AREA OF FARM POWER AND MACHINERY MAINTENANCE AND OPERATION

Farm Power and Machinery Maintenance and Operation	Distribution by Level of Importance												Average Importance
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Tractors and Engines	3	1.7	9	5.2	59	33.9	59	33.9	37	21.3	7	4.0	2.707
Diagnosing Engine Conditions	4	2.3	11	6.3	63	36.2	59	33.9	30	17.2	7	4.0	2.599
Servicing the Electrical System	5	2.9	18	10.3	86	49.4	40	23.0	17	9.8	8	4.6	2.277
Servicing the Cooling System	6	3.4	19	10.9	78	44.8	47	27.0	14	8.0	10	5.7	2.268
Servicing the Fuel and Air Systems	5	2.9	11	6.3	73	42.0	60	34.5	16	9.2	9	5.2	2.430
Lubricating Power Units	5	2.9	18	10.3	66	37.9	55	31.6	19	10.9	11	6.3	2.399
Servicing the Air Conditioning System	24	13.8	59	33.9	55	31.6	11	6.3	5	2.9	20	11.5	1.442
General Servicing	6	3.4	7	4.0	56	32.2	66	37.9	29	16.7	10	5.7	2.640
Painting Power Units and Farm Machinery	10	5.7	22	12.6	80	46.0	32	18.4	15	8.6	15	8.6	2.126
Servicing and Repairing Small Gas Engines	3	1.7	2	1.1	37	21.3	74	42.5	45	25.9	13	7.5	2.969
Setting Up and Maintaining Farm Machinery and Equipment	6	3.4	21	12.1	67	38.5	50	28.7	17	9.3	13	7.5	2.317

N = 174.

Overall mean importance = 2.379.

Importance Placed on Agricultural Mechanical Skills

The data presented in Table XV shows all topics within the agricultural mechanical skills having received "some" or "much" importance except "operating electric welding equipment" which received a response of "very much." Average importance ranged from 2.056 for "soldering" to 3.559 for "operating electric welding equipment." The overall mean for the topics was 2.782 or "much."

Importance Placed on Farm Structures

Table XVI reveals that teacher response placed "fences" and "concrete masonry" into the "some" importance category and "using concrete in structures" and "planning and constructing buildings and equipment" into the "much" category. The range of importance was from 2.125 for "concrete masonry" to 2.957 for "planning and constructing buildings and equipment." The "some" and "much" categories accounted for 68.68 percent of the response. The overall mean was 2.518 or "much."

Importance Placed on Farm and Ranch Electrification

Data contained in Table XVII show that the topics of "farm wiring" and "electric motors" received "much" importance. The average importance was 2.714 or "much."

Importance Placed on Soil and Water Management

Table XVIII indicates an overall mean importance of 2.323 or "some"

TABLE XV

SUMMARY OF TEACHERS' PERCEPTIONS OF THE IMPORTANCE OF TOPICS WITHIN THE AREA OF AGRICULTURAL MECHANICAL SKILLS

Agricultural Mechanical Skills	Distribution by Level of Importance												Average Importance
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Operating Electric Welding Equipment	0	0.0	1	0.6	8	4.6	56	32.2	105	60.3	4	2.3	3.559
Operating Oxyacetylene Equipment	0	0.0	1	0.6	13	7.5	61	35.1	94	54.0	5	2.9	3.467
Cold Metal Work	1	0.6	17	9.8	81	46.5	47	27.0	18	10.3	10	5.7	2.390
Soldering	0	0.0	35	20.1	94	54.0	22	12.6	11	6.3	12	6.9	2.056
Planning an Agricultural Safety Program	2	1.1	15	8.6	47	27.0	38	21.8	61	35.1	11	6.3	2.865
Planning and Organizing the Farm Shop	6	3.4	23	13.2	62	35.6	50	28.7	21	12.1	12	6.9	2.352

N = 174.

Overall mean importance = 2.782.

TABLE XVI

SUMMARY OF TEACHERS' PERCEPTIONS OF THE IMPORTANCE OF TOPICS WITHIN THE AREA OF FARM STRUCTURES

Farm Structures	Distribution by Level of Importance												Average Importance
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Planning and Constructing Buildings and Equipment	1	0.6	9	5.2	33	19.0	74	42.5	47	27.0	10	5.7	2.957
Planning and Building Fences	4	2.3	20	11.5	67	38.5	51	29.3	23	13.2	9	5.2	2.418
Using Concrete in Structures	1	0.6	13	7.5	60	34.5	71	40.8	19	10.9	10	5.7	2.573
Using Concrete Masonry, Bricks, Tile and Stone in Structures	6	3.4	25	14.4	79	45.4	43	24.7	7	4.0	14	8.0	2.125

N = 174.

Overall mean importance = 2.518.

TABLE XVII

SUMMARY OF TEACHERS' PERCEPTIONS OF THE IMPORTANCE OF TOPICS WITHIN THE AREA OF FARM AND RANCH ELECTRIFICATION

Farm and Ranch Electrification	Distribution by Level of Importance												Average Importance
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Farm Wiring	0	0.0	9	5.2	42	24.1	73	42.0	43	24.7	7	4.0	2.898
Selecting and Maintaining Electric Motors	0	0.0	16	9.2	71	40.8	51	29.3	26	14.9	10	5.7	2.530

N = 174.

Overall mean importance = 2.714.

TABLE XVIII

SUMMARY OF TEACHERS' PERCEPTIONS OF THE IMPORTANCE OF TOPICS WITHIN THE AREA OF SOIL AND WATER MANAGEMENT

Soil and Water Management	Distribution by Level of Importance												Average Importance
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Planning Farm Water Systems	5	2.9	26	14.9	84	48.3	28	16.1	20	11.5	11	6.3	2.196
Farm and Ranch Surveying	4	2.3	13	7.5	77	44.3	42	24.1	26	14.9	12	6.9	2.451

N = 174.

Overall mean importance = 2.323.

for the soil and water management area. Respondents felt that "farm surveying" was of more importance than "planning farm water systems" as indicated by average importance of 2.451 and 2.196, respectively.

Level of Teaching Competence for Farm Power and Machinery Maintenance and Operation

Table XIX shows the distribution of teachers' responses about level of competence for each topic within the area of farm power and machinery. The table reflects the number and percentage of the responses under the five competence levels. The competencies were ranked with the highest rank for "small gas engines" and the lowest for "servicing the air conditioning system." Farm power and machinery received an overall mean of 2.039 which fell within the limits set forth for "average."

Level of Teaching Competence for Agricultural Mechanical Skills

The data in Table XX are the distribution of teachers' responses expressed as their teaching level of competence for agricultural mechanical skills. It can be observed in the table that no competency level was rated below the "low" category. The highest competency was "operating electric welding equipment" and lowest was "soldering" with a mean average for the area of 2.614 or "high."

Level of Teaching Competence for Farm Structures

Data contained in Table XXI gives the number and percentage of the responses under the five competence levels in each topic of farm

TABLE XIX

SUMMARY OF TEACHERS' PERCEIVED COMPETENCE LEVELS FOR THE FARM POWER AND MACHINERY MAINTENANCE AND OPERATION TOPICS

Farm Power and Mechanical Maintenance and Operation	Distribution by Level of Competence												Average Rating	Rank
	None		Low		Average		High		Very High		Non-Response			
	N	%	N	%	N	%	N	%	N	%	N	%		
Tractors and Engines	5	2.9	27	15.5	98	56.3	33	19.0	5	2.9	6	3.4	2.036	7
Diagnosing Engine Condition	9	5.2	32	18.4	91	52.3	30	17.2	5	2.9	7	4.0	1.940	9
Servicing the Electrical System	7	4.0	43	24.7	87	50.0	25	14.4	2	1.1	10	5.7	1.829	10
Servicing the Cooling System	7	4.0	25	14.9	96	55.2	32	18.4	2	1.1	11	6.3	1.975	8
Servicing the Fuel and Air Systems	4	2.3	27	15.5	94	54.0	33	19.0	5	2.9	11	6.3	2.049	6
Lubricating Power Units	6	3.4	28	16.1	88	50.6	32	18.4	9	5.2	11	6.3	2.061	5
Servicing the Air Conditioning System	51	29.3	40	23.0	55	31.6	13	7.5	0	0.0	15	8.5	1.189	11
General Servicing	4	2.3	17	9.8	87	50.0	44	25.3	11	6.3	11	6.3	2.252	2
Painting Power Units and Farm Machinery	8	4.6	19	10.9	76	43.7	41	23.6	15	8.6	15	8.6	2.226	3
Servicing and Repairing Small Gas Engines	2	1.1	11	6.3	51	29.3	61	35.1	37	21.3	12	6.9	2.741	1
Setting Up and Maintaining Farm Machinery and Equipment	6	3.4	17	9.8	97	55.7	30	17.2	10	5.7	14	8.0	2.131	4

N = 174.

Overall mean competence = 2.039.

TABLE XX

SUMMARY OF TEACHERS' PERCEIVED COMPETENCE LEVELS FOR THE AGRICULTURAL MECHANICAL SKILLS TOPICS

Agricultural Mechanical Skills	Distribution by Level of Competence												Average Rating	Rank
	None		Low		Average		High		Very High		Non-Response			
	N	%	N	%	N	%	N	%	N	%	N	%		
Operating Electric Welding Equipment	0	0.0	0	0.0	37	21.3	80	46.0	52	29.9	5	2.9	3.071	1
Operating Oxyacetylene Equipment	0	0.0	0	0.0	46	26.4	75	43.1	49	28.2	4	2.3	3.018	2
Cold Metal Work	0	0.0	8	4.6	92	52.9	55	31.6	9	5.2	10	5.7	2.396	5
Soldering	0	0.0	13	7.5	95	54.6	43	24.7	10	5.7	13	7.5	2.296	6
Planning an Agricultural Safety Program	0	0.0	13	7.5	78	44.8	51	29.3	24	13.8	8	4.6	2.503	3
Planning and Organizing the Farm Shop	0	0.0	12	6.9	87	50.0	48	27.6	16	9.2	11	6.3	2.402	4

N = 174.

Overall mean competence = 2.614.

TABLE XXI

SUMMARY OF TEACHERS' PERCEIVED COMPETENCE LEVELS FOR THE FARM STRUCTURES TOPICS

Farm Structures	Distribution by Level of Competence												Average Rating	Rank
	None		Low		Average		High		Very High		Non-Response			
	N	%	N	%	N	%	N	%	N	%	N	%		
Planning and Constructing Buildings and Equipment	0	0.0	11	6.3	74	42.5	51	29.3	31	17.8	7	4.0	2.611	1
Planning and Building Fences	0	0.0	14	8.0	74	42.5	55	31.6	25	14.4	6	3.4	2.542	2
Using Concrete in Structures	1	0.6	23	13.2	80	46.0	43	24.7	19	10.9	8	4.6	2.337	3
Using Concrete Masonry, Bricks, Tile, and Stone in Structures	11	6.3	44	25.3	77	44.3	24	13.8	8	4.6	10	5.7	1.841	4

N = 174.

Overall mean competence = 2.333.

structures. Their competencies were ranked and the teachers indicated more ability to teach "planning and constructing buildings and equipment." Least competence was in the topic of "concrete masonry." The overall mean for farm structures was 2.333 which fell between real limits of 1.50 and 2.49 or "average."

Level of Teaching Competence for Farm and Ranch Electrification

The data in Table XXII are the distribution of responses for competency levels within the farm and ranch electrification area. As can be seen, teachers were more competent in teaching "farm wiring" than "electric motors." The mean average for the the area was 2.225 or "average."

Level of Teaching Competence for Soil and Water Management

The data in Table XXIII reflect the distribution of responses for level of competency in the soil and water management area. Farm and ranch "surveying" was ranked slightly higher than "planning water systems" in ability to teach by the teachers. The overall mean for soil and water management was 2.042 or "average."

Teachers' Perceptions of Training Received in Farm Power and Machinery Maintenance and Operation

Table XXIV indicates the distribution of the teachers' perceptions of training they had received in the farm power and machinery area. An

TABLE XXII

SUMMARY OF TEACHERS' PERCEIVED COMPETENCE LEVELS FOR THE FARM AND RANCH ELECTRIFICATION TOPICS

Farm and Ranch Electrification	Distribution by Level of Competence												Average Rating	Rank
	None		Low		Average		High		Very High		Non-Response			
	N	%	N	%	N	%	N	%	N	%	N	%		
Farm Wiring	1	0.6	21	12.1	75	43.1	44	25.3	28	16.1	5	2.9	2.456	1
Selecting and Maintaining Electrical Motors	3	1.7	43	24.7	84	48.3	30	17.2	9	5.2	5	2.9	1.994	2

N = 174.

Overall mean competence = 2.225.

TABLE XXIII

SUMMARY OF TEACHERS' PERCEIVED COMPTENCE LEVELS FOR THE SOIL AND WATER MANAGEMENT TOPICS

	Distribution by Level of Competence													
	None		Low		Average		High		Very High		Non-Response		Average	
Soil and Water Management	N	%	N	%	N	%	N	%	N	%	N	%	Rating	Rank
Planning Farm Water Systems	6	3.4	38	21.8	88	50.6	28	16.1	7	4.0	7	4.0	1.952	2
Farm and Ranch Surveying	5	2.9	29	16.7	85	48.9	37	21.3	12	6.9	6	3.4	2.131	1

N = 174.

Overall mean competence = 2.042.

TABLE XXIV

SUMMARY OF TEACHERS' PERCEPTIONS OF TRAINING RECEIVED IN THE FARM POWER AND MACHINERY MAINTENANCE AND OPERATION AREA

Farm Power and Machinery Maintenance and Operation	Distribution by Level of Training												Average Training
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Tractors and Engines	5	2.9	37	21.3	74	42.5	35	20.1	16	9.2	7	4.0	2.120
Diagnosing Engine Conditions	7	4.0	40	23.0	84	48.3	22	12.5	11	6.3	10	5.7	1.939
Servicing the Electrical System	11	6.3	48	27.6	72	41.4	26	14.9	6	3.4	11	6.3	1.804
Servicing the Cooling System	8	4.6	38	21.8	75	43.1	32	18.4	8	4.6	13	7.5	1.963
Servicing the Fuel and Air Systems	8	4.6	34	19.5	80	46.0	28	16.1	11	6.3	13	7.5	2.000
Lubricating Power Units	11	6.3	27	15.5	77	44.3	36	20.7	9	5.2	14	8.0	2.031
Servicing Air Conditioning Systems	57	32.8	46	26.4	35	20.1	9	5.2	4	2.3	23	13.2	1.053
General Servicing	7	4.0	28	16.1	62	35.6	45	25.9	18	10.3	14	8.0	2.244
Painting Power Units and Farm Machinery	16	9.2	27	15.5	64	36.8	29	16.7	18	10.3	20	11.5	2.039
Servicing and Repairing Small Gas Engines	4	2.3	12	6.9	54	31.0	50	28.7	40	23.0	14	8.0	2.688
Setting Up and Maintaining Farm Machinery and Equipment	9	5.2	27	15.5	76	43.7	30	17.2	16	9.2	16	9.2	2.108

N = 174.

Overall mean training = 1.999.

average of 13 or 7.47 percent indicated they had no training in the area. It should be pointed out that the large teacher response (32.8 percent) to the "none" category of "servicing air conditioning system" contributed greatly to the relatively low overall mean for the category. All topics were in the "some" training range with the exception of "small gas engines" ("much") and "air conditioning systems" ("little"). The overall mean for the area was 1.999 or "some."

Teachers' Perceptions of Training Received in Agricultural Mechanical Skills

Table XXV shows the overall mean response for training in agricultural mechanical skills is 2.614 or "much." There was no response in the "none" category in the topics of "electric welding" and "oxyacetylene." The majority of response was in the "much" and "very much" range for the two topics. There was little variation in the remaining topics except for "soldering" which was 2.090 but still in the "some" category of training.

Teachers' Perceptions of Training Received in Farm Structures

Data contained in Table XXVI indicate "planning and constructing buildings and equipment" and "planning and building fences" averaged "much" training. "Concrete" and "concrete masonry" received an average response of "some." Overall mean training for farm structures was 2.320 or "some."

TABLE XXV

SUMMARY OF TEACHERS' PERCEPTIONS OF TRAINING RECEIVED IN THE AGRICULTURAL MECHANICAL SKILLS AREA

Agricultural Mechanical Skills	Distribution by Level of Training												Average Training
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Operating Electric Welding Equipment	0	0.0	2	1.1	22	12.6	72	41.4	66	37.9	12	6.9	3.247
Operating Oxyacetylene Equipment	0	0.0	2	1.1	32	18.4	69	39.7	60	34.5	11	6.3	3.147
Cold Metal Work	2	1.1	13	7.5	79	45.4	43	24.7	18	10.3	19	10.9	2.400
Soldering	2	1.1	30	17.2	82	47.1	36	20.7	6	3.4	18	10.3	2.090
Planning an Agricultural Safety Program	3	1.7	20	11.5	58	33.3	47	27.0	32	18.4	14	8.0	2.531
Planning and Organizing the Farm Shop	8	4.6	20	11.5	67	38.5	42	24.1	18	10.3	19	10.9	2.271

N = 174.

Overall mean training = 2.614.

TABLE XXVI

SUMMARY OF TEACHERS' PERCEPTIONS OF TRAINING RECEIVED IN THE FARM STRUCTURES AREA

Farm Structures	Distribution by Level of Training												Average Training
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Planning and Constructing Buildings and Equipment	2	1.1	14	8.0	64	36.8	39	22.4	39	22.4	16	9.2	2.627
Planning and Building Fences	7	4.0	17	9.8	51	29.3	50	28.7	35	20.1	14	8.0	2.556
Using Concrete in Structures	6	3.4	21	12.1	77	44.3	29	16.7	22	12.6	19	10.9	2.258
Using Concrete Masonry, Bricks, Tile and Stone in Structures	17	9.8	40	23.0	63	36.2	21	12.1	14	8.0	19	10.9	1.839

N = 174.

Overall mean training = 2.320.

Teachers' Perceptions of Training Received in Farm and Ranch Electrification

Table XXVII presents an average response of 2.249 or "some" for training in the farm and ranch electrification area. The largest percentage was in the "some" category with a mean of 43.95 percent.

Teachers' Perceptions of Training Received in Soil and Water Management

The data in Table XXVIII indicate training averaged 2.011 or "some" in soil and water management. Training received in this area ranked second lowest of all areas.

Respondents' Priorities for Additional Training in Farm Power and Machinery

The data in Table XXIX indicate the teachers' priorities for additional training in the farm power and machinery area. From the averages at the bottom of the table, one can see that TEA workshops (27.43 percent) ranked first overall followed by on-the-job training (26.17 percent), industry workshops (19.70 percent), and college credit courses (16.87 percent).

Respondents' Priorities for Additional Training in Agricultural Mechanical Skills

Table XXX shows the response for additional training in agricultural mechanical skills. Overall mean percentages ranked the methods of training from highest to lowest as: TEA workshops (27.28 percent), college

TABLE XXVII

SUMMARY OF TEACHERS' PERCEPTIONS OF TRAINING RECEIVED IN THE FARM AND RANCH ELECTRIFICATION AREA

Farm and Ranch Electrification	Distribution by Level of Training												Average Training
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Farm Wiring	1	0.6	21	12.1	70	40.2	41	23.6	26	14.9	15	8.5	2.440
Selecting and Maintaining Electric Motors	5	2.9	33	19.0	83	47.7	22	12.6	15	8.6	16	9.2	2.057

N = 174.

Overall mean training = 2.249.

TABLE XXVIII

SUMMARY OF TEACHERS' PERCEPTIONS OF TRAINING RECEIVED IN THE SOIL AND WATER MANAGEMENT AREA

Soil and Water Management	Distribution by Level of Training												Average Training
	None		Little		Some		Much		Very Much		Non-Response		
	N	%	N	%	N	%	N	%	N	%	N	%	
Planning Farm Water Systems	13	7.5	44	25.3	72	41.4	18	10.3	11	6.3	16	9.2	1.810
Farm and Ranch Surveying	6	3.4	29	16.7	63	36.2	42	24.1	16	9.2	18	10.3	2.212

N = 174.

Overall mean training = 2.011.

TABLE XXIX

SUMMARY OF TEACHERS' PRIORITIES FOR ADDITIONAL TRAINING IN THE FARM POWER AND MACHINERY MAINTENANCE AND OPERATION AREA

Farm Power and Machinery Maintenance and Operation	Distribution of Responses by Possible Source of Training															
	College Credit Courses			Industry Workshops			TEA Workshops			On-the-Job Training			Non-Response		Total	
	N	%	Rank	N	%	Rank	N	%	Rank	N	%	Rank	N	%	N	%
Tractors and Engines	29	16.7	4	37	21.3	3	52	29.9	1	50	28.7	2	6	3.4	174	100
Diagnosing Engine Conditions	26	14.9	4	41	23.6	3	46	26.4	2	51	29.3	1	10	5.8	174	100
Servicing the Electrical System	28	16.1	4	36	20.7	3	49	28.2	1	45	25.9	2	16	9.1	174	100
Servicing the Cooling System	27	15.5	4	31	17.8	3	53	30.5	1	44	25.3	2	19	10.9	174	100
Servicing the Fuel and Air Systems	28	16.1	4	30	17.2	3	54	31.0	1	45	25.9	2	17	9.8	174	100
Lubricating Power Units	30	17.2	4	32	18.4	3	49	28.2	1	47	27.0	2	16	9.1	174	100
Servicing the Air Conditioning System	23	13.2	4	36	20.7	3	38	21.8	2	46	26.4	1	31	17.9	174	100
General Servicing	27	15.5	4	33	19.0	3	51	29.3	1	50	28.7	2	13	7.5	174	100
Painting Power Units and Farm Machinery	31	17.8	3	26	14.9	4	43	24.7	2	45	25.9	1	29	16.7	174	100
Servicing and Repairing Small Gas Engines	45	25.9	2	34	19.5	3	55	31.6	1	26	14.9	4	14	8.1	174	100
Setting Up and Maintaining Farm Machinery and Equipment	29	16.7	4	41	23.6	2	35	20.1	3	52	29.9	1	17	9.8	174	100
AVERAGES	29.36	16.87		34.27	19.70		47.73	27.43		45.55	26.17		17.09	9.83	174	100

TABLE XXX

SUMMARY OF TEACHERS' PRIORITIES FOR ADDITIONAL TRAINING IN THE AGRICULTURAL MECHANICAL SKILLS AREA

Agricultural Mechanical Skills	Distribution of Responses by Possible Source of Training															
	College Credit Courses			Industry Workshops			TEA Workshops			On-the-Job Training			Non-Response		Total	
	N	%	Rank	N	%	Rank	N	%	Rank	N	%	Rank	N	%	N	%
Operating Electrical Welding Equipment	47	27.0	2	34	19.5	4	50	28.7	1	37	21.4	3	6	3.4	174	100
Operating Oxyacetylene Equipment	45	25.9	1	39	22.4	4	42	24.1	2	40	23.0	3	8	4.6	174	100
Cold Metal Work	42	24.1	2	28	16.1	4	47	27.0	1	35	20.1	3	22	12.7	174	100
Soldering	42	24.1	2	26	14.9	4	47	27.0	1	40	23.1	3	19	10.9	174	100
Planning an Agricultural Safety Program	48	27.6	2	35	20.1	3	49	28.2	1	33	19.0	4	9	5.1	174	100
Planning and Organizing the Farm Shop	43	24.7	2	24	13.8	4	50	28.7	1	28	16.1	3	29	16.7	174	100
AVERAGES	44.50	25.57		31.00	17.80		47.50	27.28		35.50	20.45		15.50	8.90	174	100

credit courses (25.57 percent), on-the-job training (20.45 percent), and industry workshops (17.80 percent).

Respondents' Priorities for Additional Training in Farm Structures

The data contained in Table XXXI indicate all respondents chose on-the-job training as the best method for receiving additional training in the farm structures area. TEA workshops ranked second. Teachers ranked college credit courses and industry workshops, respectively, as the least desirable method of training.

Respondents' Priorities for Additional Training in Farm and Ranch Electrification

The data in Table XXXII show the teachers' rankings for additional training in farm and ranch electrification. Of the four methods listed on the instrument, they were ranked from best to least as: TEA workshops (31.30 percent), college credit courses (25.50 percent), on-the-job training (19.55 percent), and industry workshops (15.85 percent).

Respondents' Priorities for Additional Training in Soil and Water Management

Table XXXIII indicates the teachers' priorities for additional training in soil and water management. College credit courses (29.30 percent) were chosen as the best method, followed by TEA workshops (27.85 percent), on-the-job training (20.10 percent), and industry workshops (13.80 percent).

TABLE XXXI

SUMMARY OF TEACHERS' PRIORITIES FOR ADDITIONAL TRAINING IN THE FARM STRUCTURES AREA

Farm Structures	Distribution of Responses by Possible Source of Training															
	College Credit Courses			Industry Workshops			TEA Workshops			On-the-Job Training			Non-Response		Total	
	N	%	Rank	N	%	Rank	N	%	Rank	N	%	Rank	N	%	N	%
Planning and Constructing Buildings and Equipment	26	14.9	4	29	16.7	3	48	27.6	2	55	31.6	1	16	9.2	174	100
Planning and Building Fences	27	15.5	4	28	16.1	3	46	26.4	2	55	31.6	1	18	10.4	174	100
Using Concrete in Structures	27	15.5	4	29	16.7	3	46	26.4	2	57	32.8	1	15	8.6	174	100
Using Concrete Masonry, Bricks, Tile, and Stone in Structures	31	17.8	3	28	16.1	4	44	25.3	2	53	30.4	1	18	10.4	174	100
AVERAGES	28.00	15.93		28.25	16.39		46.00	26.43		55.00	31.60		16.75	9.65	174	100

TABLE XXXII

SUMMARY OF TEACHERS' PRIORITIES FOR ADDITIONAL TRAINING IN THE FARM AND RANCH ELECTRIFICATION AREA

Farm and Ranch Electrification	Distribution of Responses by Possible Source of Training															
	College Credit Courses			Industry Workshops			TEA Workshops			On-the-Job Training			Non-Response		Total	
	N	%	Rank	N	%	Rank	N	%	Rank	N	%	Rank	N	%	N	%
Farm Wiring	46	26.4	2	23	13.2	4	55	31.6	1	32	18.4	3	18	10.4	174	100
Selecting and Maintaining Electric Motors	43	24.7	2	32	18.5	4	54	31.0	1	36	20.7	3	9	5.1	174	100
AVERAGES	44.50	25.55		27.50	15.85		54.50	31.30		34.00	19.55		13.50	7.75	174	100

TABLE XXXIII

SUMMARY OF TEACHERS' PRIORITIES FOR ADDITIONAL TRAINING IN THE SOIL AND WATER MANAGEMENT AREA

	Distribution of Responses by Possible Source of Training															
	College Credit Courses			Industry Workshops			TEA Workshops			On-the-Job Training			Non-Response		Total	
Soil and Water Management	N	%	Rank	N	%	Rank	N	%	Rank	N	%	Rank	N	%	N	%
Planning Farm Water Systems	47	27.0	2	25	14.4	4	50	28.7	1	32	18.4	3	20	11.5	174	100
Farm Surveying	55	31.6	1	23	13.2	4	47	27.0	2	38	21.8	3	11	6.4	174	100
AVERAGES	51.00	29.30		24.00	13.80		48.50	27.85		35.00	20.10		15.50	8.95	174	100

Pearson Product Moment Correlation Procedure

Since this study concerned a population, not a sample, statistical analysis using probabilities and levels of significance were not appropriate. Therefore, the researcher arbitrarily established two levels with which to measure the strength of relationship. The first level, Level I, contained variables with a computed r from .120 to .180. A stronger relationship, Level II, was represented by a computed r of .181 and above. Variables with a computed r value less than .120 were not viewed as presenting a substantial relationship.

Relationship Between Teachers' Experience and Perceived Competency Levels

The data in Table XXXIV indicate the relationship between the teachers' years of experience teaching vocational agriculture and their perceived teaching competency levels. The Pearson Product-Moment correlation procedure revealed a positive relationship between experience and the competency levels for "soldering," "planning and construction of buildings and equipment," and "concrete masonry." A stronger relationship existed in the topics of "servicing the electrical system," "servicing the air conditioning system," "farm wiring," "selecting and maintaining electric motors," and "planning farm water systems." When looking at the overall relationship it was little.

Relationship Between Teachers' Pre-Lab Teaching Experience and Perceived Competency Levels

Table XXXV shows the relationship of the teachers' experience teaching Pre-Lab General Agricultural Mechanics and their perceived

TABLE XXXIV

SUMMARY OF THE RELATIONSHIP BETWEEN TEACHER EXPERIENCE AND PERCEIVED COMPETENCY LEVELS

Topic	r
Tractors and Engines	0.0743
Diagnosing Engine Conditions	0.0787
Servicing the Electrical System	0.1818**
Servicing the Cooling System	0.1046
Servicing the Fuel and Air Systems	0.0579
Lubricating Power Units	0.0634
Servicing the Air Conditioning System	0.2283**
General Servicing	0.0788
Painting Power Units and Equipment	0.0783
Small Gas Engines	0.0008
Setting Up Farm Machinery	-0.0236
Operating Electric Welding Equipment	-0.0245
Operating Oxyacetylene Equipment	-0.0454
Cold Metal Work	0.0670
Soldering	0.2164
Planning an Ag Safety Program	0.0478
Organizing the Farm Shop	0.0304
Planning and Constructing Buildings and Equipment	0.1538*
Planning and Building Fences	0.0374
Using Concrete in Structures	0.0989
Concrete Masonry	0.1685*
Farm Wiring	0.1925**
Selecting and Maintaining Electric Motors	0.2426**
Planning Farm Water Systems	0.2211**
Farm Surveying	0.0774

*Level I.

**Level II.

TABLE XXXV

SUMMARY OF THE RELATIONSHIP BETWEEN PRE-LAB TEACHING EXPERIENCE AND PERCEIVED COMPETENCY LEVELS

Topic	r
Tractors and Engines	0.1320
Diagnosing Engine Conditions	0.1026
Servicing the Electrical System	1.1401*
Servicing the Cooling System	0.0916
Servicing the Fuel and Air Systems	0.1296
Lubricating Power Units	0.1423*
Servicing the Air Conditioning System	0.0531
General Servicing	0.1068
Painting Power Units and Equipment	0.1723*
Small Gas Engines	0.1740*
Setting Up Farm Machinery	0.0898
Operating Electric Welding Equipment	0.0561
Operating Oxyacetylene Equipment	0.1333*
Cold Metal Work	0.1587*
Soldering	0.1482*
Planning an Ag Safety Program	-0.0850
Organizing the Farm Shop	-0.0065
Planning and Constructing Buildings and Equipment	0.1050
Planning and Building Fences	-0.0123
Using Concrete in Structures	0.0206
Concrete Masonry	0.0615
Farm Wiring	0.1345*
Selecting and Maintaining Electric Motors	0.0646
Planning Farm Water Systems	0.0468
Farm Surveying	0.0537

*Level I.

teaching competency levels. A positive correlation was found at Level I in the topics of "servicing the electrical system," "lubricating power units," "painting power units and equipment," "small gas engines," "operating oxyacetylene equipment," "cold metal work," "soldering," and "farm wiring." A negative relationship was indicated for "planning an agricultural safety program," "organizing the farm shop," and "planning and building fences" but was not viewed as substantial at established levels. The overall relationship was little.

Relationship Between Semester Hours of Agricultural Mechanics and Perceived Competency Levels

The data in Table XXXVI indicate the relationship of semester hours training in agricultural mechanics and perceived competency levels as expressed by the teachers. A positive Level I relationship was indicated in the topics of "diagnosing engine conditions," "operating electric welding equipment," "operating oxyacetylene equipment," and "selecting and maintaining electric motors." "Painting power units and equipment" was significant at Level II. A negative correlation was indicated for "lubricating power units," "servicing air conditioning," "soldering," "using concrete in structures," "concrete masonry," and "planning farm water systems" but none were substantial. There was little overall relationship.

Relationship Between Classroom Hours and Competency Levels

The Pearson Product-Moment correlation procedure (Pearson r) was

TABLE XXXVI

SUMMARY OF THE RELATIONSHIP BETWEEN SEMESTER HOURS OF AGRICULTURAL MECHANICS AND PERCEIVED COMPETENCY LEVELS

Topic	r
Tractors and Engines	0.1269
Diagnosing Engine Conditions	0.1582*
Servicing the Electrical System	0.0009
Servicing the Cooling System	0.0422
Servicing the Fuel and Air Systems	0.0007
Lubricating Power Units	-0.0175
Servicing the Air Conditioning System	-0.0459
General Servicing	0.0130
Painting Power Units and Equipment	0.2074**
Small Gas Engines	0.1634*
Setting Up Farm Machinery	0.0954
Operating Electric Welding Equipment	0.1366*
Operating Oxyacetylene Equipment	0.1541*
Cold Metal Work	0.0856
Soldering	-0.0009
Planning an Ag Safety Program	0.0935
Organizing the Farm Shop	0.0987
Planning and Constructing Buildings and Equipment	0.0460
Planning and Building Fences	0.0579
Using Concrete in Structures	-0.0060
Concrete Masonry	-0.0248
Farm Wiring	0.0943
Selecting and Maintaining Electric Motors	0.1420*
Planning Farm Water Systems	-0.0441
Farm Surveying	0.0615

*Level I.

**Level II.

utilized to determine if a relationship existed between the respondents' indicated classroom hours and their perceived competency level for teaching each topic. The SPSS printout presented standard deviations and correlation coefficients for the topic variables of classroom hours (X variable) and competency levels (Y variable).

Analysis of the printout indicated a positive Level I relationship for each "X" and "Y" variable with the exception of "operating electric welding equipment" and "operating oxyacetylene equipment."

As explained by Popham and Sirotnik (14), after a relationship has been found, its validity should be examined. This can be accomplished by examining the variability of the standard deviations between the "X" and "Y" variables. In order to add validity and to present more meaningful data, the researcher established two ranges for variance between the "X" and "Y" standard deviations. They were variances of 0.0 to 0.0500 standard deviations and variance of 0.0501 to 0.1000 standard deviation.

The first range added validity to the relationship between classroom hours and "servicing the fuel and air systems," "planning and building fences," "concrete masonry," "using concrete in structures," and "farm wiring."

The second range added validity to the relationship between classroom hours and "servicing the electrical system," "painting power units and equipment," "small gas engines," and "planning an agricultural safety program."

The above mentioned procedure was also used to examine the relationships of shop hours, perceived importance, and teacher training to perceived competency levels presented below.

Relationship Between Shop Hours and Competency Levels

The Pearson r indicated a positive relationship between shop hours and perceived competency levels for all topics at Level I.

The first range of standard deviation values (0.0 to 0.0500) increased the validity of data concerning "servicing the cooling system," "servicing fuel and air systems," and "operating oxyacetylene equipment."

The second range of standard deviation values (0.0501 to 0.1000) increased the validity of data concerning "lubricating power units" and "small gas engines."

Relationship Between Training and Competency Levels

A positive relationship was indicated between training and competency for all topics at Level II. Range one topics included "operating electric welding equipment," "operating oxyacetylene equipment," and "farm wiring." Range two topics were "diagnosing engine conditions," "lubricating power units," "servicing air conditioning systems," and "electric motors."

Relationship Between Perceived Importance and Perceived Competency

The Pearson r indicated a positive relationship between perceived importance and perceived competency in all topics at Level I. Topics in range one were "painting power units and equipment," "servicing air conditioning systems," "constructing buildings and equipment," "using concrete in structures," and "electric motors." Those topics in range

two included "diagnosing engine condition," "lubricating power units," "small gas engines," "operating oxyacetylene equipment," "soldering," "concrete mastonry," and "farm wiring."

Relationship Between Perceived Importance and Hours Spent in Instruction

The study revealed a relationship between the teachers' perceived importance of a topic and the amount of time devoted to that particular topic. This can be observed at both ends of the scale when looking at the importance and time spent in the topics of "air conditioning" and "electric welding." However, as previously mentioned, there are other variables involved. The teachers' perceived importance is related to previous training received and competency to teach a topic.

Relationship Between Hours Spent in Instruction and Previous Training

As revealed in the study, overall, the teachers spent more time in instruction of topics in which they had received the most training. But again, this is interrelated to the teachers' perceived importance and competency level.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to present a summary of the study findings related to the purpose and objectives, to present conclusions derived from the findings, and to propose specific recommendations that the author believes are necessary as a result of this study.

Purpose

The purpose of this study was to determine from the teachers of the Pre-Employment General Agricultural Mechanics program in Texas their perceptions of importance of areas of curriculum, shop and class hours spent in those areas, training received, competency levels in those areas, and the implications of these perceptions for additional in-service training.

Need for the Study

It was hoped that information gained from this study would add direction to future in-service training programs for teachers of the Pre-Employment General Agricultural Mechanics program in Texas. Competent teachers in turn will be better equipped to serve the needs of the Pre-Lab student, for which the General Agricultural Mechanics program was initiated.

Specific Objectives

The objectives of this study were as follows:

1. To determine the number of classroom and shop hours spent in each area of the curriculum.

2. To determine the amount of importance placed on each area of the curriculum by the Pre-Lab General Agricultural Mechanics teacher.

3. To determine the amount of teacher training in each of the instructional areas.

4. To determine the teachers' perceptions as to when, where, and how additional training should be provided.

5. To determine the self-perceived level of competency of the teachers in the curriculum areas of instruction.

6. To determine the relationships of selected variables responded to by the teachers.

Procedures Used in the Study

After completing a review of literature and research pertaining to the study, the following tasks were involved in the collection and analysis of data:

1. Determine the number of schools and teachers teaching Pre-Lab General Agricultural Mechanics in Texas.

2. Secure names and mailing addresses of the teachers involved.

3. Develop an instrument for collection of data.

4. Develop a method for assimilating the collected data.

4. Use appropriate procedures for analyzing the data.

Design and Conduct of the Study

Mailed questionnaires were utilized to collect data for the study. Each teacher in Texas teaching Pre-Lab General Agricultural Mechanics during the school year 1979-80 was sent a questionnaire. The respondents of the study numbered 174 of the 244 General Agricultural Mechanics teachers.

Findings of the Study

Demographic Data Concerning the Teachers Participating in the Study

The 174 responding teachers had from 1 to 38 years of experience teaching vocational agriculture. The average experience was 10.97 years. There were 31.0 percent of the teachers in their first year of teaching General Agricultural Mechanics. Sixty percent had been teaching the course three years or less. Thirteen respondents had taught the course seven years. The average years teaching General Agricultural Mechanics was 3.20 years.

Ninety-eight or 56.3 percent of the teachers taught a one-year program in General Agricultural Mechanics. Seventy-six or 43.7 percent responded as having a two-year program.

Semester Hours Completed in Agricultural Mechanics. All of the 174 respondents indicated they had completed credit hours in courses relating to agricultural mechanics. Ninety-seven or 55.7 percent of the teachers had completed 9 to 17 hours. Sixty or 34.5 percent completed 18 to 30 hours and seven teachers indicated they had completed more than 30 credit

hours in agricultural mechanics. Average credit hours completed for all respondents was 16.52 hours.

Formal Certification. Fourteen teachers had certified to teach General Agricultural Mechanics as an undergraduate taking additional required courses. Seven received certification at Tarleton State University, three at East Texas State University and Texas Tech University, and one at Texas A&M University.

Informal Training. Thirty-two of the respondents had military training, 131 had on-farm experience, and 155 indicated various work experiences related to General Agricultural Mechanics.

Non-Credit Workshops. There were 132 teachers who indicated they had attended the preparatory workshop certification in General Agricultural Mechanics. Seventy had attended non-credit workshops sponsored by universities and the Texas Education Agency. There were 151 who had attended workshops at Vocational Agriculture Teachers Conferences and 73 indicated attending industry-sponsored workshops.

Classroom Hours Spent on the Five Instructional Areas

There was little variation in the number of classroom hours spent in the farm power area. One exception was "air conditioning" in which approximately 53 percent of the teachers indicated they spent no classroom time.

The highest hours spent in the classroom was in the agricultural mechanical skills topic of "operating electric welding equipment." The

combined total of one to two hour and three to five hour categories of farm structures accounted for 69 percent of the teacher response in that area.

Shop Hours Spent on the Five Instructional Areas

Eighty-nine percent of the teachers spent no shop time on "air conditioning." More time was being spent on "small gas engines" than any other farm power topic. Farm power had a wide variation in hours per topic. In addition, it had the greatest non-response of the five areas.

Agricultural mechanical skills had the highest hours spent of all areas in the curriculum. This is attributed to the high topic mean of "electric welding" and "oxyacetylene." Eighty-one percent of the teachers spent 11 or more hours in "electric welding."

Forty-five percent of the teachers indicated they spent 11 plus hours in the farm structures topic of "constructing buildings and equipment." Only 2.56 percent of the teachers spent no shop time in farm and ranch electrification, lowest of the five areas. Approximately 14 percent of the respondents spent no time in soil and water management.

Teachers' Perceived Importance in the Five Instructional Areas

All areas within the curriculum were preceived as "some" or "much" importance. The range per topic was "air conditioning" (little) to "operating electric welding equipment" (very much). Topics within

agricultural mechanical skills received the greatest overall average importance.

Teachers' Perceptions of Training in the Five Instructional Areas

The Pre-Lab teachers indicated they had "much" training in the area of agricultural mechanical skills. They had received "some" training in the remaining four areas. Their response of "some" indicates they realize additional training is needed.

Teachers' Priorities for Additional Training

There was much variation of teachers' priority for additional training. The variation is attributed to the wide variety of topics involved. Overall priority indicated by the teachers was Texas Education Agency workshops, followed by on-the-job training, college credit courses, and industry workshops.

Perceived Competency Levels in the Five Instructional Areas

The teachers perceived themselves as having "average" teaching competency in all areas except agricultural mechanical skills where they perceived themselves as possessing a "high" level of competency. The overall summary of importance, competency, and training is presented in Table XXXVII.

TABLE XXXVII

GENERAL SUMMARY OF TEACHERS' RESPONSE CONCERNING SELF-PERCEIVED IMPORTANCE, COMPETENCE, AND PREVIOUS TRAINING RECEIVED BY TOPICS

	Importance	Competence	Training
Farm Power and Machinery Maintenance and Operation	Some	Average	Some
Tractors and Engines	Much	Average	Some
Diagnosing Engine Condition	Much	Average	Some
Servicing the Electrical System	Some	Average	Some
Servicing the Cooling System	Some	Average	Some
Servicing the Fuel and Air Systems	Some	Average	Some
Lubricating Power Units	Some	Average	Some
Servicing the Air Conditioning System	Little	Low	Little
General Servicing	Much	Average	Some
Painting Power Units	Some	Average	Some
Small Gas Engines	Much	High	Much
Setting Up Farm Machinery	Some	Average	Some
Agricultural Mechanical Skills	Much	High	Much
Operating Electric Welding Equipment	Very Much	High	Much
Operating Oxyacetylene Equipment	Much	High	Much
Cold Metal Work	Some	Average	Some
Soldering	Some	Average	Some
Planning an Ag Safety Program	Much	High	Much
Organizing the Farm Shop	Some	Average	Some
Farm Structures	Much	Average	Some
Planning and Constructing Buildings and Equipment	Much	High	Much
Planning and Building Fences	Some	High	Much
Using Concrete in Structures	Much	Average	Some
Concrete Masonry	Some	Average	Some
Farm and Ranch Electrification	Much	Average	Some
Farm Wiring	Much	Average	Some
Selecting Electric Motors	Much	Average	Some
Soil and Water Management	Some	Average	Some
Planning Farm Water Systems	Some	Average	Some
Farm Surveying	Some	Average	Some

Relationship Between Teachers' Experience and Perceived Competency Levels

The Pearson r procedure indicated a positive Level I relationship between experience teaching vocational agriculture and the competency levels of "soldering," "construction of buildings and equipment," and "concrete masonry." A Level II relationship existed between experience and "servicing the electrical system," "air conditioning," "farm wiring," "electric motors," and "water systems."

Relationship Between Pre-Lab Teaching Experience and Perceived Competency Levels

A positive Level I relationship was observed between Pre-Lab teaching experience and "electrical systems," "lubricating power units," "painting power units," "small gas engines," "oxyacetylene," "cold metal work," "soldering," and "farm wiring."

Relationship of Semester Hours in Agricultural Mechanics and Perceived Competency Levels

A positive Level I correlation was indicated between semester hours in agricultural mechanics and the topics of "diagnosing engine conditions," "electric welding," "oxyacetylene," and "electric motors." A Level II relationship existed between "painting power units" and teacher competency.

Relationship Between Classroom Hours and Competency Levels

Logically, it was assumed by the researcher that as a teacher's competency level increased, his hours spent in the classroom would also increase. The Pearson r indicated this assumption to be the case in all topics except "electric welding" and "oxyacetylene." Further analysis of the data indicated the strongest relationships existed between classroom hours and the "electrical system," "painting power units," "small gas engines," and "planning an agricultural safety program."

Relationship Between Shop Hours and Perceived Competency Levels

A positive relationship was observed between shop hours and all topics within the curriculum. Analysis of data indicated the strongest relationship existed between shop hours and the topics of "servicing the cooling system," "servicing the fuel and air systems," and "oxyacetylene."

Relationship Between Training and Perceived Competency Levels

As expected logically, there was a positive relationship between training and competency levels for all topics. This was especially true for "electric welding," "oxyacetylene," and "farm wiring."

Relationship Between Perceived Importance and Competency Levels

The Pearson r indicated a positive relationship between teacher

competency levels and the amount of importance they placed on areas within the curriculum. A Level I relationship existed for all topics concerning teacher competency and teacher importance. Strongest relationships were shown in the topics of "painting power units and equipment," "air conditioning," "constructing buildings and equipment," "concrete," and "electric motors."

Summary of Study Overall Findings

The majority of teachers of Pre-Lab General Agricultural Mechanics have low experience in terms of years teaching vocational agriculture and/or years teaching Pre-Lab. Teachers are completing more hours in agricultural mechanics than the minimum specified by the teacher training institutions. Most teachers are gaining certification to teach the specialized course through participation in the three-week preparatory workshop. The majority of teachers have attended at least one non-credit workshop and many have taken advantage of those offered by TEA and universities, vocational agriculture teacher conference, and industry.

In analyzing the data about hours spent on different topics by observation it was estimated the teachers are spending about two classroom hours per topic in the areas of farm power, farm structures, and soil and water management. About three classroom hours per topic are being spent in the areas of agricultural mechanical skills and farm electrification. In shop hours per topic, it appears the teachers are spending two hours in farm power, three hours in soil and water management, and four shop hours per topic in the areas of agricultural mechanical skills, farm structures, and farm electrification.

Teachers perceived all areas in the curriculum as having "some" or "much" importance. The respondents felt they had received at least "some" training and perceived themselves as having at least "average" competency in all areas of the curriculum. Teachers felt they had received "much" training and had a "high" competency in only one area. That area was agricultural mechanical skills.

Teacher competency showed a relationship to experience, semester hours completed in agricultural mechanics, time spent in instruction, previous training received, and perceived importance placed on areas within the curriculum. The teachers' perceived importance of topics within the curriculum showed a relationship to time spent, training received, and competency to teach (Table XXXVII).

Conclusions

The following conclusions were reached after a review of the literature and a thorough analysis of the data collected:

1. Based upon the findings that 60 percent of the teachers have three years or less experience teaching Pre-Lab and over one-half have eight years or less experience teaching vocational agriculture, it would appear that there is a great turnover each year in Pre-Lab teachers and the majority of the programs are being taught by young, in-experienced teachers.

2. The average of 16 semester hours in agricultural mechanics courses indicates that teachers are preparing themselves at the baccalaureate level beyond the minimum certification requirement of 12 hours.

3. The large teacher response to attending non-credit workshops suggests that a majority of the teachers have training needs. Most teachers select the appropriate topics provided to them by TEA in cooperation with university personnel to meet those needs.

4. Based on high attendance at previous in-service workshops, the majority of the Pre-Lab teachers will seek self-improvement through in-service training if it is made available.

5. Based on teacher indications of number of hours spent in each area, slightly more hours are being spent in shop than the classroom as would logically be expected. Also, observation of teacher responses indicated there is a fair amount of variability among classroom and shop, and among individual teachers.

6. Increased teacher competence in all topics should provide the teacher better judgment in decisions involving topic importance and hours spent.

7. According to data received, teachers feel that all areas within the curriculum are important aspects of and should remain a part of the curriculum.

8. The majority of the teachers need additional training in many topics within the curriculum. This is reflected by their large response to having received only "some" training.

9. Since there are limited graduate in-service offerings from the universities, this might account for the low priority given it by the teachers as a mode for additional training.

10. Highest teacher competence was in the area of agricultural mechanical skills. This appears logical because of the more highly specialized nature of the other areas.

11. It would appear from the teachers' responses, as their competence increases in a topic area, their perceived importance of that topic also increases.

12. Teachers of Pre-Lab General Agricultural Mechanics must possess a wide variety of competencies in order to train students for non-farm as well as on-farm occupations. This was indicated from the teachers' responses of "some" or "much" importance for all areas of the curriculum.

13. The need for related in-service workshops is great as indicated by a large majority of the responding teachers.

Recommendations

The following recommendations are made by the researcher as a result of having conducted this study:

1. It is recommended that the Texas Education Agency, vocational agriculture state staff, and university personnel increase efforts to provide more in-service training for the teachers of Pre-Lab General Agricultural Mechanics, especially in the more specialized areas.

2. It is recommended that the five instructional areas remain a part of the curriculum based on the indicated importance placed on the areas by the responding teachers.

3. It is recommended that teacher training institutions provide more specialized training at the pre-service level since the majority of the teachers indicated a lack of this training.

4. It is recommended that universities offer graduate courses in agricultural mechanics at appropriate times for teacher participation since it appears that this mode is not currently available to teachers.

5. It is recommended that efforts be made at coordinated pre- and in-service levels to increase teacher competency in all areas to that of agricultural mechanical skills.

6. It is recommended that priority be given by universities to topics where teachers perceived themselves as possessing least competence.

7. It is recommended that pre- and in-service training be planned to prepare teachers to meet the needs of their students entering non-farm as well as on-farm occupations.

8. It is recommended that follow-up studies be conducted to maintain needed direction to the planning and conducting of Pre-Lab General Agricultural Mechanics.

9. Future studies should use equal intervals on estimates of hours so that better analysis between the variables importance and competence can be made.

It was the sincere desire of the researcher that this study would assist university personnel and the vocational agriculture state staff in planning teacher preparation programs.

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APPENDIXES

APPENDIX A

SAMPLE OF TEACHER SURVEY

Please answer the following statements that apply to your situation.

1. Years experience teaching vocational agriculture? _____

2. Years experience teaching Pre-Lab General Ag Mechanics? _____

3. Pre-Lab General Ag Mechanics is offered as a ____(one)____(two) year program at your school?

4. Number of college semester hours you have completed related to Agricultural Mechanics? ____

5. Your formal course work for certification in General Agricultural Mechanics was completed at what institution and when? _____

   _____ (If Applicable)

6. Please list the types and amount, or length, of informal training pertaining to Gen. Ag. Mech. you have had: (military, on farm, work experience, etc.)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

Please check (✓) the non-credit workshops related to General Agricultural Mechanics that you have attended:

____ 1. The preparatory workshop sponsored by the Texas Education Agency for a General Ag Mechanics teaching certificate

____ 2. Other workshops sponsored by universities and the Texas Education Agency (Please List) _____

_____

_____

____ 3. Workshops at the Vocational Agriculture Teachers' Conference (In-service Training)

____ 4. Workshops sponsored by industry (Example- Ford Motor Company, Paris, Texas or utility companies)

____ 5. Others (Please List) _____

_____

Please Check (√) In The Appropriate Block The:	Classroom Hours You Spend on Each Area					Shop Hours You Spend on Each Area					Importance You Feel Should Be Placed On Each Area					Training You Have Had in Each Area					Priority For Additional Training Please Rate (1=Best; 5=Least)					Level of Your Teaching Competence				
	0	1-2	3-5	6-10	11+	0	1-2	3-5	6-10	11+	None	Little	Some	Much	Very Much	None	Little	Some	Much	Very Much	College Credit Courses	Industry In-Service Workshops	FFA Sponsored Workshops	On Job Training With Pay		None	Low	Average	High	Very High
FARM POWER & MACHINERY MAINTENANC'E & OPERATION																													
Tractors and Engines																													
Diagnosing Engine Conditions																													
Servicing the Electrical System																													
Servicing the Cooling System																													
Servicing Fuel and Air Systems																													
Lubricating Power Units																													
Servicing the Air Conditioning System																													
General Servicing																													
Painting Power Units and Farm Machinery																													
Servicing and Repairing Small Gas Engines																													
Setting Up and Maintaining Farm Machinery & Equipment																													
AGRICULTURAL MECHANICAL SKILLS																													
Operating Electric Welding Equipment																													
Operating Oxyacetylene Equipment																													
Cold Metal Work																													
Soldering																													
Planning An Agricultural Safety Program																													
Planning and Organizing the Farm Shop																													
FARM STRUCTURES																													
Planning and Constructing Buildings and Equipment																													
Planning and Building Fences																													
Using Concrete in Structures																													
Using Concrete Masonry, Bricks, Tile and Stone in Structures																													
FARM AND RANCH ELECTRIFICATION																													
Farm Wiring																													
Selecting and Maintaining Electrical Motors																													
SOIL AND WATER MANAGEMENT																													
Planning Farm Water Systems																													
Farm and Ranch Surveying																													

APPENDIX B

OTHER WORK EXPERIENCES AS LISTED BY THE TEACHERS

1. General construction
2. Trailer building
3. Carpenter
4. Machinery Mechanic
5. Welding
6. Diesel Mechanic
7. Industry
8. Millwright
9. Concrete construction
10. Feed company
11. Service station
12. Taught vocational agriculture
13. Electrician
14. Plumbing
15. Agricultural extension
16. Logging
17. Teaching in university
18. Small engine mechanic
19. Teaching ag coop
20. Teaching farm power and machinery pre-lab
21. Oil field
22. Horseshoer
23. Shipbuilder
24. Soil conservation service

APPENDIX C

CORRESPONDENCE

Texas Education Agency

•STATE BOARD OF EDUCATION
•STATE COMMISSIONER OF EDUCATION
•STATE DEPARTMENT OF EDUCATION

201 East Eleventh Street
Austin, Texas
78701

April 7, 1980

Dear Sir:

Your involvement and expression of ideas are essential to the continued success of the General Agricultural Mechanics Pre-Employment Laboratory Program in Texas.

Mr. Les Farmer, who is doing graduate study at Oklahoma State University, is involved in a study to determine the amount of time and importance that teachers of General Agricultural Mechanics place upon instructional areas in the program. Prior to this, he taught vocational agriculture (Production Agriculture and General Agricultural Mechanics) at Valley Mills High School, Valley Mills, Texas.

Your response to each statement on the enclosed questionnaire would be greatly appreciated. For your convenience, please return the questionnaire in the self-addressed, stamped envelope.

We certainly appreciate your interest in this program and solicit your time and cooperation in responding to the questionnaire.

Sincerely,

Raymond L. Holt

Raymond L. Holt, Consultant
Agricultural Education

RLH:mf
Enc.

OKLAHOMA STATE UNIVERSITY · STILLWATER
Department of Agricultural Education
(405) 624 5129
74074

May 1, 1980

Dear Fellow Ag Teacher:

Recently you received a questionnaire from me concerning Pre-Lab General Agricultural Mechanics. If you have not completed the questionnaire, may I encourage you to take a few minutes from your busy schedule to complete the questionnaire and return it by May 23rd. Without your input, the study will be incomplete.

We feel that the summary of information from this survey of all the General Ag Mechanics teachers in Texas will greatly assist in future planning for the needs and desires of the Pre-Employment Laboratory Training Program in General Agricultural Mechanics.

Enclosed you will find another copy, if by chance, the first was misplaced.

I certainly appreciate your interest in this program and solicit your time and cooperation in responding to the questionnaire.

Sincerely,

Les Farmer

Les Farmer
Former Pre-Lab Instructor
Valley Mills, Texas

VITA

Leslie E. Farmer

Candidate for the Degree of

Doctor of Education

Thesis: TEACHER PERCEPTIONS OF CURRICULUM IMPORTANCE, TRAINING, AND COMPETENCE IN THE GENERAL AGRICULTURAL MECHANICS PROGRAM OF TEXAS

Major Field: Agricultural Education

Biographical:

Personal Data: Born in Corsicana, Texas, November 9, 1946.

Education: Attended Purdon and Dawson Public Schools in Navarro County, Texas; graduated from Dawson High School in May, 1965; received the Bachelor of Science degree from Stephen F. Austin State University, Nacodoches, Texas, with a major in Agricultural Education in May, 1969; received the Master of Science Teaching degree from Tarleton State University, Stephenville, Texas, in May, 1977, with a major in Agricultural Education; attended Oklahoma State University, Stillwater, Oklahoma, from August, 1979, to December, 1980; completed requirements for the Doctor of Education degree at Oklahoma State University in December, 1980.

Professional Experience: Beef cattle and row farming background; taught vocational agriculture at Axtell, Texas, July 1, 1969, to June 30, 1972; taught vocational agriculture at China Spring, Texas, July 1, 1972, to June 30, 1973; taught vocational agriculture at Robinson, Texas, July 1, 1973, to June 30, 1975; taught vocational agriculture at Valley Mills, Texas, July 1, 1975, to June 30, 1979; graduate teaching assistant in charge of audio-visual equipment, Agricultural Education Department, Oklahoma State University, from September, 1979, to August, 1980; instructor in agricultural mechanics, Southwest Texas State University, San Marcos, Texas, from September, 1980, to present.