VOCATIONAL AGRICULTURAL TEACHERS PERCEPTIONS OF AGRICULTURAL MECHANICS AND AGRICULTURAL MANAGEMENT COMPETENCIES OF STUDENTS IN THE VOCATIONAL AGRICULTURAL SCIENCE PROGRAM IN TEXAS

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CHAPTER I

INTRODUCTION

The Vocational Agriculture program in Texas has experienced more change in the curriculum and program criteria in the past two years than in the previous 20 years. For many years, the Texas Vocational Agricultural curriculum was determined by gathering knowledgeable persons together and determining what skills were needed for entry into the various systems of employment in the agricultural industry. The system traditionally has resulted in a reasonably well accepted selection of skills, according to Jay Eudy (Eudy, personal interview) State Director for Agricultural Education in Texas. It was a condoned fallacy that this group of experts often listed more competencies than could be accomplished in the given amount of time in a vocational agriculture program. The actual selection of competencies to be taught in the classroom was left up to the teacher of vocational agriculture. Very little evaluation of programs was made concerning the actual number of competencies taught.

Passage of House Bill 72, Massey, (1984) drastically changed the traditional approach to curriculum development and evaluation in Texas. In the course of one year, a

requirement became effective that essential elements or competencies be identified for each unit of instruction. The teaching of these competencies was to be verified by a check-off list called a "competency profile". These competencies became essential elements for test items in secondary examinations.

The legislature mandated an increased scrutiny of teaching topics. This made the careful selection of competencies taught a critical issue to the vocational agriculture program. Since there is a limited number of instructional hours available to teach a prescribed list of competencies, a careful selection must be made of these competencies and a degree of uniformity achieved for the state-wide program of vocational agriculture.

The two areas selected to study were agricultural mechanics and agricultural management. It was after much discussion with Mr. Eudy that these two areas were selected for this study. The rationale behind selecting agricultural mechanics was the belief that the majority of vocational agriculture teacher enjoy teaching agricultural mechanics and therefore do an adequate job of teaching the competencies in this area. In college preparation courses agriculture education majors take a minimum of 9 hours of agricultural mechanics courses, Texas A&M University, (1987), which helps prepare teachers to teach many of the competencies included in the agricultural mechanics area of the curriculum.

The rationale behind selecting agricultural management was the belief that many teachers feel uncomfortable with teaching this area of the curriculum. In college preparation courses, agriculture education majors take a minimum of 6 hours of agricultural management or agriculture economics courses, therefore many teachers feel uncomfortable or inadequate teaching many of the competencies in this area of the curriculum. Both of these were important to look at due to the current legislative pressures being put on vocational agricultural programs.

Statement of the Problem

The need for a uniform list of agriculture competencies has been expressed by members of the Texas Education Agency; too, this has been a long time plea of secondary teachers. The Texas Education Agency expressed a need for the existing list of competencies in agricultural mechanics and agricultural management to be examined as regards to their importance in the existing curriculum.

Purpose of the Study

The purpose of this study was to determine the perceptions of teachers of vocational agriculture concerning the degree of importance of selected competencies within the curriculum areas of agricultural mechanics and agricultural management.

Objectives of the Study

The following objectives served as guidelines for the study:

1. To determine the degree of importance assigned by vocational agriculture instructors to the competencies currently included in vocational agriculture programs in the area of agricultural mechanics and agricultural management.

2. To compare the perceptions of less experienced teachers to those of more experienced teachers concerning the degree of importance assigned to agricultural mechanics and agricultural management competencies areas.

3. To compare the perceptions of teachers in single-teacher departments with those in multi-teacher departments concerning the importance assigned to agricultural mechanics and agricultural management competencies areas.

Definition of Terms

The following definitions may serve as clarification points to better understand the intent of this study:

1. Vocational Agriculture/Vocational Agricultural Sciences - the two terms are used synonymously in this study, the term refers to a program of study in the public schools of Texas as funded and directed by the Texas Education Agency.

2. Competency Profiles - The profiles referred to include a list of skills to be included in a unit of

instruction based on topic/skills listed in the Basic Curriculum Guide for Agriculture Science in Texas.

3. Essential Elements - Those items judged to be important enough to be included as topics in all vocational agriculture programs aimed at production goals.

4. Level of Importance - Five levels of importance were employed. Teachers were asked to choose a level for each topic studied.

5. Agricultural Mechanics Competencies - This topic area includes skills, mechanical knowledge, and equipment use necessary for success in this area of production agriculture.

6. Agricultural Management Competencies - This field involves the area of instruction dealing with economic skills, marketing skills, and agriculture planning necessary for success in this area of agriculture science.

7. Competency Divisions - In the two curriculum areas studied, agricultural mechanics and agricultural management, major headings called competency divisions have been developed. An example of a competency division is "Hot Metal Work". There are varying numbers of items under each competency division.

Assumptions

The following assumptions were made in conducting this research:

1. The primary assumption of this study was that teachers of vocational agriculture were capable of making judgments concerning the importance of topics to be taught. This assumption was based on the fact that all teachers surveyed had completed a minimum of fifty-four college hours of technical agriculture and a one semester intensified course in agricultural education and student teaching.

2. The existing list of competencies were fairly complete according to the Texas Education Agency, in the respective fields of agricultural mechanics and agricultural management.

3. Agricultural industry plays an important role in prescribing to the competency list currently in the curriculum areas of agricultural mechanics and agricultural management.

Limitations

1. The large number of competencies in the instructional areas of agricultural mechanics and agricultural management made it necessary to sub-divide the total population. This was done in order to get each teacher at the annual summer conference to react to each topic. The competency lists were divided into workable size units. The number of teachers made this step more acceptable because adequate sample sizes were still available after dividing the topic areas.

2. Only teachers at the state conference were surveyed.

3. Teachers were not allowed to expand upon the list of competencies, they were restricted to just the current list of Competecy Profiles, (1984).

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 journals, and periodicals pertinent to this study. The review of literature has been organized into five different sections. These are as follows:

1. Background
2. Competency-Based instruction
3. Documentation of student competencies
4. Legislation emphasizing competency-based instruction
5. Summary

Background

There has been much research, expert personal opinion, and legislation that has been written in the area of competency-based instruction. The first part of this review dealt with Rawl's, Tyler's, Craik's, and Knott's findings and thoughts on the background of competency based instruction; some of their earlier thoughts and perceptions,

as well as their future perceptions in this area of instruction. Rawls (1980, p. 5) said:

> We are now entering a decade in the agricultural education experience that, to say the least, will be very interesting and challenging. The years ahead will be interesting in that we will experience the surfacing of new priorities, new methods, new philosophies, new publics, and new opportunities. These same years will be a time in which the very purpose of our profession will be challenged by a society that is different from that in which we have grown up. Just as society has changed in the past, some dramatic changes will become prominent enough within the coming decade to cause us to restructure many facets of our profession in order to maintain a delivery system that is meaningful and relevant.

There have already been many changes take place in agricultural education, since it's establishment. One of these areas is in curriculum, specifically competency-based instruction. The term competency-based instruction is a relatively new term, but the idea is not. Instructional objectives is the term often used simultaneously with competency-based instruction. In developing these objectives Tyler (1969) suggested there are three sources of information which should be consulted when developing significant educational objectives. These sources are:

A. The Learner

B. Contemporary Life Outside School

C. Subject Matter Specialists

There are some basic elements which should be considered before writing objectives for curriculum units in agricultural education. Craik (1971, p.68) described four basic steps or elements:

> (1) Objectives should be clear and concise. The teacher should not be concerned with writing something beautiful and flowery. He should be interested in writing his objectives so that anyone who is knowledgeable in the subject can read and know precisely what is meant. There should be no room for misinterpretation.
>
> (2) The objectives should be realistic and fit the grade level for which they are written. If the reader thinks this is unworthy of comment, all he needs to do is examine critically almost any published list of objectives for a unit or course. He will find that most sound good but there are too many and they are too difficult for the given grade level and the amount of learning time.
>
> (3) Objectives should be attainable by instruction and capable of being measured. Many teachers say they are teaching things such as honesty, leadership, and creativity, to name a few. In reality, they have done little to foster these ideas, let alone actually provide instruction to develop and measure them.
>
> (4) And least of the general consideration, there should be as many objectives as are necessary or appropriate for the course or unit.

There has been much written in Texas about curriculum development, and how needs or elements should be determined. Two procedures that have been used to determine these needs and/or skills are individual analysis and composite opinion surveys (Knotts, 1970). It was with these methods that George Hurt, State Director of Agricultural Education in Texas, named a State Advisory Committee on Curriculum Development in Vocational Agriculture in the fall of 1967. The committee was composed of 25 members and included teachers of vocational agriculture, curriculum specialists, teacher educators, and Texas Education Agency representatives. They were charged with the task of developing a core or basic production agriculture curriculum

for the entire state, while reserving time for the appropriate treatment of subject matter important at the local level (Texas Education Agency, 1968).

Competency-Based Instruction

McCormick (1980, p. 8) put a good handle on "Competency-based instruction" as it relates to vocational agriculture teachers.

> The term "competency-based instruction" is in vogue and rightly so. However, this concept is nothing new to vocational agriculture teachers. Since the enactment of the Smith-Hughes Act in 1917, teachers have used problem solving in their day-in, day-out teaching. Application of agricultural technology and science, through supervised occupational experience programs, has been the accepted approach. Teachers of vocational agriculture have always championed the integration of theory and practice. "Learning to do" means developing competencies.

Christiansen (1980) reported that teachers are being encouraged to develop and use a 'competency-based core curriculum.' Over the years there have been different patterns used in developing curriculum. Among them have been the horizontal or traditional, vertical or spiral, fused, cross-sectional, modified cross-sectional, and modular approaches. Now the emphasis is being put on a 'competency-based core curriculum.'

Rawls, (1980) in his article, "Facing A Decade of Change", reflected on how important it is accurately to match required competencies, including personal development with the duties to be performed. This will have great implications for initial preparation for an occupation and

for keeping current in employment through programs designed for this purpose. There is a need to link the curriculum directly to the occupation, since such linkage could mean a higher percentage of employment of the completers of the program.

Weber, Cooper, and Houston (1973, p. 5) said:

> ...the student is held accountable for the demonstration of precisely specified competencies. The emphasis is on demonstrated output and not on participation. Thus it is that competency-based programs may be described as achievement-based while traditional programs are experience-based or activity-based.

Amberson (1980) reported on how some states have gone about developing core curriculums, and the areas of emphasis most commonly included were: leadership and personal growth, occupational experience programs, an orientation to career opportunities, and general knowledge/skills, attitudes and experiences in plant science, animal science, and agricultural mechanization. These competencies were selected because of their importance in the common job titles born out of occupational analysis.

In defining competency-based instruction as it relates to agricultural education, McCormick (1980, p. 8) defined it as:

> Competency-based instruction is designing and delivering educational strategies which will teach students those knowledges, skills and attitudes (competencies) needed for successful entry into employment and advancement in agricultural occupations. It is nothing more than identifying those competencies which students should possess if they are to make a successful entry into agricultural/agribusiness occupations.

There needs to be some consistency in the competencies that are planned to be taught, and those actually taught. McCormick (1980, p. 10) said:

> ...if effective planning took place, there will be a high degree of consistency between what was planned and what was taught. These composite lists of competencies become the evidence relative to the kind of product produced by your vocational agriculture program. They should be placed in the individual permanent files of students.
>
> Copies of actual competencies taught should be shared with school administrators, state departments of education, advisory committee members, parents, and employers. In addition, each program completer should have a list of those competencies they possess. Be sure that they "know" they have mastered these competencies.

The Massachusetts State Advisory Council on Vocational-Technical Education (MACVTE) in 1985 set about to develop a comprehensive vocational program. The council made several recommendations to improve the quality of the secondary vocational curriculum. One of the recommendations as reported by Borden (1985, p. 35) was:

> We wanted competency-based curriculum, but we wanted to identify clearly within those curricula the academic and related course work needed to undergird occupational competencies.

School administrators are becoming increasingly aware of the need for competency-based instruction. Amberson (1980, p. 5) said:

> Competency-based vocational programs provide a new mechanism through which schools can work to assure that American agricultural production/agribusiness will be provided an adequately trained work force.

Documentation of Student Competencies

Educators in vocational agriculture for years have said that their students are learning knowledgeable skills that will help them gain employment in their occupational choices. Legislators and the general public are now asking that programs be documented and held accountable for their success or failure. Rawls (1980, p. 5) said:

> The pressure to document the need for programs will increase. We will need to justify the existence of programs before funding will be available. In the past, we were able to say, without much fear of contradiction, that our completers were obtaining employment.

Amberson (1980, p. 4) said:

> The general public has become alarmed about schools and courses taught within the schools. Forces both within and outside the school system are making demands that schools be held accountable - responsible for students learning what school report to be teaching. The concept of accountability is perhaps the major reason why educators are now emphasizing total programs of competency-based instruction rather than "a one or two year course."
>
> ...enrolling in an animal science course does not ensure that a student will be adequately prepared to manage livestock.

It is important to use an effective method for documenting these agricultural competencies. McCormick (1980, p. 10) said:

> The mere "checking off" of competencies taught or learned by students is not enough. A method which will provide an indication of the relative degree of mastery of each specific competency learned by students must be developed. As competencies are completed, provisions should be made for students to record actual data of accomplishment. The teacher should then indicate the degree of mastery of the competency on the evaluation scale.

> ...provisions must be make for recording those actual agricultural competencies taught to students enrolled in vocational agriculture programs.

Legislation Emphasizing Competency Based Instruction

There has been much concern for curriculum and curriculum development, combined with the rapidly changing agricultural industry and technology. The enlarged scope of vocational education due to the 1963 Vocational Education Act (U. S. Congress, 1963) and the 1968 Amendments (U. S. Congress, 1968) led many states to develop curriculum guides for vocational agriculture programs.

In the summer of 1984 the Governor of Texas, Mark White, called a special session of the Legislature. The main purpose of this special session was educational revision. In part H of HB 72, Massey (1984), Vocational Education it states:

> All new, additional, and continuing vocational programs shall offer competency-based instruction. Instruction must be based on the essential elements approved by the State Board of Education. A competency profile must be maintained for each student enrolled.

Summary

There is no doubt there has been a demand for a change in curriculum, and competency-based instruction seems to be some experts answer to this demand. Christiansen (1980, p. 7) said:

> A curriculum that emphasizes holding the student accountable for demonstrating competence in previously specified competencies needed or employment has a place in vocational education in agriculture. Such a curriculum needs to be given serious consideration.

McCormick (1980, P. 8) went on to emphasize this concept by saying:

> The obvious benefit of competency-based instruction is that it helps assure that we are providing vocational education as it should be - specialized instruction for specific occupations. From a curriculum planning standpoint, it helps teachers make decisions relative to what to teach when to teach it and how long to spend on it.
>
> Vocational agriculture must become, and be recognized as, a viable delivery system for prepared manpower for agriculture. Competency-based instruction is one vehicle to help accomplish this goal.

LaPort (1986, P. 25) explained who he believed was responsible for curriculum change.

> You, the teacher, hold the power when it comes to curriculum change. Without your support,effort, and cooperation, even the most carefully conceived curriculum is doomed to failure.

Further in his article LaPorte (1986, p. 25) expounded on the necessity to act now on curriculum revision.

> At no other time in the history of vocational education has the need for continual curriculum revision been greater. The exponential rate of technological change demands a parallel rate of change in all vocational areas since all involve the teaching of technology in one way or another. In addition, the public is demanding change in the form of increased accountability and program justification.

CHAPTER III

DESIGN AND METHODOLOGY

In order to accomplish the purpose of this study, the following objectives were used as guidelines for procedure development:

1. To determine the degree of importance assigned by vocational agriculture instructors to the competencies currently included in vocational agriculture program in the area of agricultural mechanics and agricultural management.

2. To compare the perceptions of less experienced teachers to those of more experienced teachers concerning the degree of importance assigned to agricultural mechanics and agricultural management competencies areas.

3. To compare the perceptions of teachers in single-teacher departments with those in multi-teacher departments concerning the importance assigned to agricultural mechanics and agricultural management competencies areas.

The Study Population

The population addressed in the study consisted of the vocational agriculture teachers of Texas. A list of the 1495 instructors was obtained from the Vocational Agricultural Teachers Association of Texas. It was decided

to administer the questionnaires at the annual summer meeting of teachers in Dallas. Approximately thirteen hundred teachers attended the conference. It was impossible to get an exact count of the number of teachers who attended the conference, because only the members of the Texas Vocational Agriculture Teachers Association registered for the conference. There were 1400 total questionnaires printed, 200 each of the set of seven different questionnaires. The questionnaires were randomly handed out on a systematic basis at the first general session of the teachers' conference. The questionnaires were placed in all chairs in the room systematically. The questionnaires were placed A, B, C, D, AA, BB, CC, and repeated in the same order systematically throughout the meeting room. This was done in order to avoid teachers receiving the same questionnaire because they were seated by geographical area. There was a possibility of 200 teachers responding to each of the seven questionnaires. This resulted in a sample size in each case that exceed ten percent of the population. The sample size was adequate to use a confidence level of .05.

A follow-up procedure of non-respondents was planned, but inadvertently the follow-up was unable to be conducted. The space for names and addresses was left off the questionnaires, this was not discovered until all questionnaires had been printed and picked up the day they were to be administered.

Development of the Instrument

The questionnaires were developed in cooperation with members of the Texas state staff. The items included were those listed and were limited to the current Texas Teacher Competency Profiles in the areas of agricultural mechanics and agricultural management. Because of the length of these competencies in those two areas there were seven different questionnaires developed. The agricultural mechanics competencies were arranged into four different questionnaires. They were: Questionnaire A, agricultural mechanics competencies designed to be taught in Vocational Agriculture I classes. Questionnaire B, agricultural mechanics competencies designed to be taught in Vocational Agriculture II classes. Questionnaire C, agricultural mechanics competencies designed to be taught in Vocational Agriculture III classes. Questionnaire D, agricultural mechanics competencies designed to be taught in Vocational Agriculture IV classes. The other area was agricultural management, these competencies were arranged into three different questionnaires, they were: Questionnaire AA, agricultural management competencies designed to be taught in Vocational Agriculture III classes. Questionnaire BB, agricultural management competencies designed to be taught in both Vocational Agriculture III and IV classes, agriculture insurance, and agriculture programs and services taught in Vo Ag III. Agriculture planning is the other division which is designed to be taught in both Vo Ag III and IV.

Questionnaire CC, agricultural management competencies designed to be taught in both Vocational Agriculture III and IV classes. Marketing division which is taught in Vo Ag III and IV, and legal relationships taught in Vo Ag IV classes. It should be noted that agricultural management competencies are only included in the Vocational Agriculture III and IV curriculum.

Teachers were asked to respond to the items listed on their questionnaire in regard to the level of importance which should be placed on teaching that particular competency. The following importance rating scale and real limits were utilized in each questionnaire:

1 = No Importance = 1.00 to 1.49

2 = Low Importance = 1.50 to 2.49

3 = Medium Importance = 2.50 to 3.49

4 = High Importance = 3.50 to 4.49

5 = Extreme Importance = 4.50 to 5.00

The following letters were used to denote the categories of importance for the competencies and total group means:

N = No Importance

L = Low Importance

M = Medium Importance

H = High Importance

E = Extreme Importance

This was used to accomplish objective number one. To determine the degree of importance assigned to vocational

agriculture instructors and to the competencies included in the current vocational agriculture program in the area of agricultural mechanics and agricultural management.

The first page of all the questionnaires dealt with specific questions concerning the professional background of the respondents and questions concerning their present teaching positions and assignments. These questions were considered the demographics of the teaching population, and were used to more clearly define the population being studied. The questions in the demographics which dealt with number of teachers in the vocational agriculture departments, and the total number of years of teaching experience were the two questions used to help reach objective number two and three. To compare the perceptions of less experienced teachers to more experienced teachers concerning the degree of importance assigned to agricultural mechanics and agricultural management competencies areas. To compare the perceptions of teachers in single-teacher departments with those in multi-teacher departments concerning the importance assigned to agricultural mechanics and agricultural management competencies areas.

Other demographics were obtained for use by the Texas Education Agency, at a later date, but were not utilized as a part of this particular research and are not reported in that manner.

Pilot Study

A pilot study was conducted prior to the administering of the questionnaires at the annual summer meeting of Texas Vocational Agriculture Teachers. The pilot study was conducted using seventy current teachers of vocational agriculture in Texas. The subjects for this pilot study were selected on a voluntary bases at the annual summer FFA Texas state convention. Seven groups of teachers composed of ten teachers per group agreed to fill out one of the seven different questionnaires. After careful evaluation of the pilot study, changes were made in the demographics of each questionnaire. Refinements were also made so that all items were consistent in their meaning to each respondent. The teachers used in the pilot study were excluded from the actual study conducted at a later date.

Analysis of Data

Because of the large number of respondents and the statistical data which was required in the analysis, the information received from the questionnaire was entered into the Statistical Analysis System (SAS) program.

The questionnaires dealt with nominal data, therefore percentages, ranks, mean scores and frequency of selection were utilized. A five point likert-type scale was utilized to determine the mean responses from data collected. Real limits were established and numerical values were assigned to the categories of importance with regard to agricultural

mechanics and agricultural management competencies being taught in the high school Vo Ag classrooms.

A T-test was used to analyze differences in responses on competency divisions, teachers in single-teacher departments were compared to those in multiple teacher departments.

A one-way analysis of variance was employed in order to compare mean responses between seven age groups. If differences were found, a follow-up Duncan's Multiple Range Test, was employed to locate where the differences occurred between these groups. The groups analyzed were divided into seven groups according to years of experience. They were: 0 - 5 years; 6 - 10 years; 11 - 15 years; 16 - 20 years; 21 - 25 years; 26 - 30 years, and 31 plus years.

Rationale for Analysis

There were several different analyses which could have been made in this study. The two that were selected were; the comparison between single and multiple teacher department responses, and years of teaching experience. The researcher choose to look at the differences between the single and multiple teacher responses. The rationale behind this was the belief that teachers in a multiple teacher department would possibly have shared responsibilities, and fewer total students, leaving more actual time to teach those competencies in all curriculum areas. The other area selected to analyze was the years of experience. It was

believed that more experienced teachers taught specific competency areas more consistently rather than the total curriculum. It was believed that the less experienced teachers were more dependent on their college experiences, and were teaching more current information related to the curriculum areas. Due to the fact that the current curriculum is a state wide curriculum, analyses were not made by the geographical areas in Texas.

CHAPTER IV

PRESENTATION OF DATA

Description of Respondents

In order to more adequately describe the respondents, descriptive research techniques were employed to develop a profile of the teachers in the study. The profile deals with the variables of geographic location, current teaching assignment, single or multiple teacher designation, length of employment contract, career ladder status, and years of teaching experience.

A total of 1236 respondents were included in the study. Not all respondents answered every item. TABLE I contains data related to geographic location of respondents. Texas is divided into ten geographical areas. There is a total of 1491 vocational agriculture teachers in Texas. Approximately 83 percent of the total teachers responded to the questionnaires, 255, 17 percent did not. The total number of teachers in these ten geographic areas range from a total of 110, 7.4 percent in area II to 218, 14.6 percent in area III. The percentages of the total number of teachers in each area closely correlate with the percentages of those who participated in the study. In areas VI and IX the percentages were exactly the same, in area VI 9.8

percent, area IX 10.2 percent. No fewer than 102 teachers were used from any one area. Percentages ranged from a low of 8.5 in Area VII to a high of 13.1 in Area III. It should be noted that these two areas represent one of the smaller, Area VII, and one of the larger, Area III, population areas in Texas. As shown in TABLE I, the distribution of the sample conformed fairly well with area population sizes.

TABLE II is used to illustrate the areas of teaching which are currently taught by the respondents. The teaching assignments vary considerably, but the vast majority were involved in production agriculture (Agricultural Science), course offerings. One thousand and eight teachers, 81.6 percent taught vo-ag I courses. It is of interest to note that vo-ag II, vo-ag III and vo-ag IV had 77.3, 67.4, and 47.7 percent of teachers respectively teaching in the subject areas. Another important aspect of the data are the wide array of non-agriculture type courses assigned to teachers. The data also revealed that a large number of the teachers (288, 23 percent) were involved in the relatively new pre-vocational course. Currently 5.3 percent of teachers teaching vo-ag courses are teaching other subject areas such as: biology, Computer Program, Math, English, Gen. Science, Consumer Math, Wood Working, Health, Mental Trades, History, Business, Drafting, and Physical Education.

TABLE I

DISTRIBUTION OF THE POPULATION BY GEOGRAPHICAL AREA OF THE STATE

Geographical Area	Number of Total Teachers of Vocational Agriculture By Area		Number of Total Teachers Who Participated in the Study from Each Area	
	N	%	N	%
Area I	122	8.4	120	9.7
Area II	110	7.4	108	8.7
Area III	218	14.6	162	13.1
Area IV	131	8.8	123	10.0
Area V	173	11.6	135	10.9
Area VI	146	9.8	121	9.8
Area VII	149	9.9	102	8.3
Area VIII	153	10.3	113	9.1
Area IX	152	10.2	126	10.2
Area X	137	9.2	119	9.6
* Non-Respondents			7	0.6
Total	1491	100.0	1236	100.0

* There were seven respondents who did not respond to this demographic question.

TABLE II

CURRENT TEACHING ASSIGNMENTS OF THE PARTICIPANTS

Assignments	Distribution N	%
Vo Ag I	1008	81.6
Vo Ag II	955	77.3
Vo Ag III	833	67.4
Vo Ag IV	589	47.7
COOP	288	23.0
PRE-VOC	288	23.0
PRE-LABS	407	33.0
GEN AG MECH	297	* 73.0
MEATS	18	* 4.4
HORTICULTURE	40	* 9.8
FARM POWER	23	* 5.7
FARM & RANCH	12	* 2.9
FEEDLOT	4	* 1.0
FORESTRY	3	* 0.7
TRACTOR	3	* 0.7
AG RESOURCES	7	* 1.7
** Non-Agriculture Courses	66	5.3

* This percentage relates to the total number of pre-labs taught.

** Non-agriculture courses taught were: Biology, Computer Programming, Math, English, General Science, Consumer Math, Wood Working, Health, Metal Trades, History, Business, Drafting, and Physical Education.

TABLE III provides the distribution of teachers according to single or multiple teacher department. Of the 1236 respondents to the questionnaire 1228 responded to this question, eight failed to respond. Of those 1228; 65.1 percent were in departments with more than one teacher and 35.1 per cent were in single teacher departments.

TABLE III

DISTRIBUTION OF SINGLE AND MULTI TEACHER PROGRAMS OF VO-AG

Number of Teachers	Number	Percentage
Single Teacher Departments	423	34.2
Multi-Teacher Departments	805	65.1
* Non-Respondents	8	.7
	1236	100.0

* There were eight respondents who did not respond to this demographic question.

Another variable for which data was gathered concerned the length of vo-ag teachers' contracts. TABLE IV contains the distribution of teachers based on ten, eleven, or twelve month contracts. Out of 1236 teachers, 62, 5.0 percent were on ten month contracts. Three hundred and fourteen teachers or 25.4 percent were on eleven month contracts and 860 teachers, or 69.6 percent were on twelve month contract.

TABLE IV

LENGTH OF VO AG TEACHERS CONTRACTS

	Distribution	
Number of Months	Number	Percent
10 Months	62	5.0
11 Months	314	25.4
12 Months	860	69.6
	1236	100.0

TABLE V shows how many teachers of vocational agriculture had received the career ladder stipend. It was found that 663, 53.6 percent, of the teachers had received the raise.

TABLE V

NUMBER OF VO AG TEACHERS WHO HAVE RECEIVED A CAREER LADDER RAISE

Career Ladder Raise	Distribution	
	Number	Percent
Received Raise	663	53.6
Did Not Receive Raise	569	46.0
* Non-Respondents	4	0.4
	1236	100.0

* There were four respondents who did not respond to this question.

TABLE VI is used to display the years of teaching experience by the respondents. The teaching experience catagories were broken into five year intervals. Three hundred and seven of the teachers, or 24.8 percent have less than five years of teaching experience. Six hundred and forty three, or 52 percent of the teachers had ten or less years of teaching experience. The largest group was comprised of teachers having between six and ten years of

teaching experience. The mean years of experience of the 1236 respondents was 12.0 years.

TABLE VI

DISTRIBUTION OF RESPONDENTS BY TEACHING EXPERIENCE

Years Experience	Total Experience N	%
1-5	307	24.8
6-10	338	27.3
11-15	224	18.1
16-20	172	13.9
21-25	90	7.3
26-30	60	5.0
31 or more	45	3.6
Total	1236	100.0
Mean = 12.0 Years		

The above data have been offered in an attempt to define the characteristics of the respondents involved in the study.

As discussed in the section on procedures, the large number of individual competencies studied made it necessary

to divide the collection of data into seven different questionnaires.

Findings Concerning Selected Competencies In First Year Agricultural Mechanics

Questionnaire A deals with competencies in: shop orientation, farm carpentry, cold metal work, selection and application of paint, and conditioning hand tools. There was 185 teacher respondents who responded to all divisions within questionnaire A. The competencies within this and all other divisions were placed in mean rank order according to how they were perceived by the teachers.

Shop Orientation

TABLE VII contains data form 185 teacher respondents concerning the levels of importance assigned to items in the division of Shop Orientation. The five items making up the division were: importance of agricultural mechanics, following rules, demonstrating safety, identifying safety practices, and maintaining a safe shop. All items were perceived to be of some importance by all teachers except for the first item, explain the importance of agricultural mechanics, where 1.1 percent of the teachers indicated "no importance" for this skill. The overall mean for the entire section was 4.64 with a standard deviation of 0.41. The item ranked as most important was demonstrate shop safety practices. All items studied fell within the real limits for

TABLE VII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN SHOP ORIENTATION

Competency	Percentage of Response by Category of Importance					Mean	Category
N = 185	No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	$\bar{X}$	
Demonstrate shop safety practices	-	1.1	1.1	10.9	87.0	4.84	E
Maintain safe shop	-	1.1	0.5	15.8	82.6	4.80	E
Identify shop safety practices	-	0.5	1.1	17.9	80.4	4.78	E
Follow rules and regulations	-	1.1	1.6	18.5	78.8	4.75	E
Explain the importance of agricultural mechanics	1.1	3.3	21.9	39.9	34.4	4.03	H
Total Group Mean						4.64*	E

* Standard deviation = 0.41

an "extreme importance" rating except for the item, the importance of agricultural mechanics, which was ranked of "high importance".

An analysis was made to determine if differences existed between the perceptions of teachers in single teacher departments and those in multiple teacher departments. The results of that analysis is shown in TABLE VIII.

TABLE VIII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN SHOP ORIENTATION

Single Teacher Dept. (n=56) mean S.D.	Multi Teacher Dept. (n=125) mean S.D.	T - value	probability
4.69 0.35	4.62 0.44	1.06	0.29

Note: There were four teachers who did not respond to whether they were in single teacher or multi teacher departments.

The mean response for the group of single teacher responses was 4.69 with a standard deviation of .35. The mean response for the group of teachers in multiple teacher programs was 4.62 with a standard deviation of .44. A

T-value of 1.06 was derived which indicates that no significant difference existed between the two studied groups at the .05 level.

When the shop orientation items were studied based on responses of teachers with varying years of experience, no significant differences were found. The means of each studied group which were broken into five year experience levels which is displayed in TABLE IX.

TABLE IX

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN SHOP ORIENTATION

Years of Experience							
1-5 (n=43)	6-10 (n=53)	11-15 (n=32)	16-20 (n=23)	21-25 (n=14)	26-30 (n=9)	31+ (n=11)	F
4.52	4.67	4.66	4.71	4.69	4.60	4.75	0.91

TABLE IX indicates that each age group gave similar importance ranking to the shop orientation items. In each age group, the total list of items as given a 4.52 average rating or higher. All groups ranked the items within the extreme importance level. An F-value of 0.91 was derived which is not significant at the .05 level.

Farm Carpentry

Farm carpentry skills was the next division studied. TABLE X is used to display importance ratings assigned as well as means for each item in the group.

None of the 29 items of farm carpentry studied received an average rating of 4.5 or higher. In other words, none of the competencies received an average rating high enough to be considered of extreme importance. Also, no item received a rating low enough to be considered of no or low importance. All items were considered to be of either medium or high importance. The item receiving the highest importance rating was "figuring bills of materials", with a 4.30 mean. The item receiving the lowest ranking was "identifying parts of hand planes" with a mean of 2.89. The remainder of the items were grouped fairly close to the medium and high importance level. the mean average for the division was 3.59,with a standard deviation of 0.59.

A comparison of responses from single teacher departments and multiple teacher departments was conducted. The results of that test is depicted in TABLE XI.

TABLE X

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN FARM CARPENTRY

Competency N = 185	Percentage of Response by Category of Importance					Mean	Category
	No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	$\bar{X}$	
Figure bill of materials	-	2.2	10.8	42.2	44.9	4.30	H
Use measuring and marking devices	-	0.5	16.8	38.0	44.6	4.27	H
Select lumber for a job	-	1.6	16.8	54.1	27.6	4.08	H
Select measuring and marking devices	0.5	-	25.9	41.1	32.4	4.05	H
Use nail hammer	-	1.1	26.6	40.2	32.1	4.03	H
Use hand saw	0.5	4.9	22.2	42.2	30.3	3.97	H
Use screwdriver	0.5	3.8	22.7	43.8	29.2	3.97	H
Identify classes and grades of lumber	-	4.9	23.0	45.4	26.8	3.94	H

TABLE X (Continued)

Competency N = 185	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Identify types of measuring and marking devices	0.5	1.6	31.4	39.5	27.0	3.91	H
Select and use appropriate fasteners	-	5.9	28.1	38.4	27.6	3.88	H
Identify types of fasteners	-	5.4	28.1	40.5	25.9	3.87	H
Select screwdriver	-	5.5	30.6	42.1	21.9	3.80	H
Select hand saw	-	6.5	34.1	40.0	19.5	3.72	H
Use hand drill	2.7	10.8	28.1	34.1	24.3	3.66	H
Select nail hammers	0.5	2.7	46.2	34.8	15.8	3.63	H
Use brace and bit	4.9	10.3	30.8	34.1	20.0	3.54	H
Select hand drill	1.6	13.0	38.4	34.1	13.0	3.44	M

TABLE X (Continued)

Competency N = 185	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Select wood chisels	-	13.2	48.4	26.4	12.1	3.37	M
Use hand plane	2.2	15.8	40.2	27.7	14.1	3.36	M
Select brace and bit	1.6	15.8	42.4	26.6	13.6	3.35	M
Use wood chisel	1.8	17.6	42.4	24.7	13.5	3.31	M
Identify parts and types of screwdrivers	1.6	19.6	39.7	25.5	13.6	3.30	M
Identify parts and types of hand saws	2.2	14.6	49.2	25.9	8.1	3.23	M
Identify parts and types of nail hammers	1.6	15.2	51.1	25.0	7.1	3.21	M
Select hand planes	2.7	21.3	45.9	21.3	8.7	3.12	M
Identify parts and types of hand drills	3.2	21.1	49.7	19.5	6.5	3.05	M

TABLE X (Continued)

Competency N = 185	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Identify parts of brace and types of bits	7.6	17.8	51.9	16.2	6.5	2.96	M
Identify parts and types of wood chisels	4.3	25.0	51.6	10.3	8.7	2.94	M
Identify parts and types of hand planes	6.0	24.5	48.9	15.8	4.9	2.89	M
Total Group Mean						3.59*	H

* Standard deviation = 0.59

TABLE XI

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM CARPENTRY

Single Teacher Dept. (n=56) mean S.D.	Multi Teacher Dept. (n=125) mean S.D.	T - value	probability
3.56 0.55	3.62 0.61	-0.58	0.56

The mean response from single teacher departments was 3.56 with a standard deviation of .55. From multiple teacher units a mean rating of 3.56 was obtained with a standard deviation of .61. A T-value of -0.58 was derived which demonstrates that response from single and multiple teacher departments are not significantly different concerning importance ratings given to selected farm carpentry skills.

Teacher experience was studied as a variable concerning responses in the farm carpentry section. TABLE XII displays total group mean ratings of the various age groups.

TABLE XII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM CARPENTRY

Years of Experience							
1-5 (n=43)	6-10 (n=53)	11-15 (n=32)	16-20 (n=23)	21-25 (n=14)	26-30 (n=9)	31+ (n=11)	F
3.65	3.62	3.48	3.68	3.57	3.62	3.44	0.47

TABLE XII presents the means of each age group. All age groups gave similar ratings to the farm carpentry items. They were all ranked within the medium or high category. An F-value of 0.47 was derived which indicates no significant differences exist among the seven age groups studied.

Cold Metal Work

The next division of competencies studied was the one dealing with Cold Metal Work. Ten different competencies were used in this division. TABLE XIII is used to display mean responses for each item as well as the overall total mean for the group.

TABLE XIII depicts the finding that the overall mean across this entire group of competencies was 3.78 with a standard deviation of .65. None of the competencies received a mean rating that would qualify for an "extreme importance" ranking. Also, no mean rating fell in the "no"

TABLE XIII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN COLD METAL WORK

Competency	Percentage of Response by Category of Importance					Mean	Category
N = 185	No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	$\bar{X}$	
Drill holes	-	-	26.6	42.4	31.0	4.04	H
Cut thread with tap and die	-	2.7	23.0	43.2	31.1	4.03	H
Install screws and bolts	0.5	2.7	21.7	54.9	20.1	3.91	H
Remove broken bolts or studs	-	3.8	33.7	33.7	28.8	3.88	H
Identify common metals and their properties	0.5	2.7	31.5	40.2	25.0	3.86	H
Bend and shape metal	-	3.8	29.9	43.5	22.8	3.85	H
Cut with hacksaw	-	4.9	39.1	37.5	18.5	3.70	H
Use files	0.5	4.3	38.0	41.8	15.2	3.67	H
Install rivets	3.8	12.5	36.4	32.6	14.7	3.42	M

TABLE XIII (Continued)

Competency N = 185	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Cut with cold chisel	1.6	9.8	46.7	31.0	10.9	3.40	M
Total Group Mean						3.78*	H

* Standard deviation = 0.65

or "low importance" categories. There were five skills which did not receive a single no importance rating. Eight items were placed in the "high importance" category except cutting with cold chisels and installing rivets.

TABLE XIV shows that the variable of department size had no influence of importance ratings given to cold metal skills. Single teacher departments had a total group mean of 3.75 and multiple teacher departments had a total group mean of 3.80. The T-value of -0.49 indicates that no significant difference exists in importance ratings assigned.

TABLE XIV

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN COLD METAL WORK

Single Teacher Dept. (n=56) mean S.D.	Multi Teacher Dept. (n=125) mean S.D.	T - value	probability
3.75 0.56	3.80 0.67	-0.49	0.63

The Cold Metal skill ratings were studied according to years of teaching experience. TABLE XV gives the total mean response of each of seven groups. An F-value of 0.31

indicated that years of experience had no significant effect on importance assigned to cold metal skills.

TABLE XV

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN COLD METAL WORK

Years of Experience							
1-5 (n=43)	6-10 (n=53)	11-15 (n=32)	16-20 (n=23)	21-25 (n=14)	26-30 (n=9)	31+ (n=11)	F
3.75	3.79	3.74	3.84	3.71	3.98	3.64	0.31

Selecting and Applying Paint

Selecting and applying paint was the next set of competencies analyzed. TABLE XVI gives the results for the four competencies studied. Importance ratings and overall total group means are displayed.

Each of the four items concerning selection and application of paint were assigned scores which resulted in a "high importance" rating. The overall group mean for the division was 3.86 with a standard deviation of 0.64. The competency receiving the highest mean rating of 4.02 was, select paint and preservatives. The lowest was, compute area for applying paint with a mean of 3.64.

TABLE XVII contains the results of comparing responses from teachers in single and multiple teacher departments.

TABLE XVI

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN SELECTING AND APPLYING PAINT

Competency N = 185	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Select paint and preservatives	-	1.6	23.9	45.1	29.3	4.02	H
Prepare metal surface for painting	-	1.6	27.7	47.3	23.4	3.92	H
Prepare wood surface for painting	-	2.2	26.2	55.7	15.8	3.85	H
Compute area for applying paint	2.2	7.7	29.5	45.4	15.3	3.64	H
Total Group Mean						3.86*	H

* Standard deviation = 0.64

The total mean response for single teachers was 3.83 and that for multiple teacher assignments was 3.87. The -0.40 T-value indicated that no significant effect was made on ratings assigned by teachers when compared by type of department.

TABLE XVII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN SELECTING AND APPLYING PAINT

Single Teacher Dept. (n=56) mean S.D.	Multi Teacher Dept. (n=125) mean S.D.	T - value	probability
3.83 0.64	3.87 0.65	-0.40	.691

TABLE XVIII contains the first significant difference found for a variable in this study. When responses were analyzed according to the years of experience, it was found that a difference of opinion did exist. This is indicated by the 2.28 F-value obtained.

TABLE XVIII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN SELECTING AND APPLYING PAINT

Years of Experience							
1-5 (n=43)	6-10 (n=53)	11-15 (n=32)	16-20 (n=23)	21-25 (n=14)	26-30 (n=9)	31+ (n=11)	F
3.69	3.98	3.70	3.76	3.98	4.17	4.20	2.28*

* A difference at the .05 level

Since the F-value in TABLE XVIII indicated that a significant difference existed somewhere among the age groups, a Duncan's Multiple Range follow-up was used to identify points of differences. TABLE XIX displays the results of that study.

The underlining method, of the Duncan's Multiple Range Test was used. The various groups are arranged in order on the basis of the means, in order of magnitude from the largest to the smallest. A line is then drawn beneath those groups which do not differ significantly from one another. Thus, any groups which are not underlined by the same line are significantly different from each other, Bounds (1974). The table shows that there were seven experience groups, labeled A1-A7. In addition, there is included in the table the sample sizes for each mean.

TABLE XIX

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN APPLYING PAINT

	Years of Experience						
	A7	A6	A5	A2	A4	A3	A1
	31+	26-30	21-25	6-10	16-20	11-15	1-5
	N=11	N=9	N=10	N=53	N=23	N=32	N=43
Mean	4.20	4.17	3.98	3.98	3.76	3.70	3.69

Observation of the descriptive lines in TABLE XIX which show which age groups have no significant differences at the .05 level reveals that a difference exists between the thirty-one plus age group and the group containing teachers with less than five years of experience. Older teachers indicated a 4.20 overall mean and younger teachers yielded a 3.69 mean. Even though a significant difference in importance assigned to selecting and applying paint by younger and older teachers was found, it should be noted that both groups found the skill to be at least of "highly importance".

Conditioning Hand Tools

The findings concerning importance assigned to Hand Tool Conditioning are displayed in TABLE XX. This division contained fine items which were assigned an overall

TABLE XX

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN CONDITIONING HAND TOOLS

Competency N = 185	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Reshape, recondition, and resharpen bits	2.7	9.8	35.9	31.5	20.1	3.57	H
Reshape a screwdriver	4.9	13.0	34.8	31.5	15.8	3.40	M
Reshape and recondition a cold chisel	2.9	17.9	34.8	33.2	11.4	3.30	M
Condition and sharpen a wood chisel	5.4	15.2	38.0	31.0	10.3	3.26	M
Condition and sharpen a plane iron	3.3	25.0	39.7	23.4	8.7	3.26	M
Total Group Mean						3.33*	M

* Standard deviation = 0.81

importance rating of 3.33 with a standard deviation of 0.81.

The only competency receiving ratings high enough to be considered of "high importance" was reshaping, reconditioning, and resharpening bits. The other four items fell within the "medium importance" range.

TABLE XXI shows that teachers in single and multiple teacher departments ranked thecompetencies in this area very close to the same. The mean ratings were 3.34 and 3.33. A T-value of 0.05 showed that there was not a significant difference.

TABLE XXI

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN CONDITIONING HAND TOOLS

Single Teacher Dept. (n=56) mean S.D.	Multi Teacher Dept. (n=125) mean S.D.	T - value	probability
3.34 0.66	3.33 0.88	0.05	0.96

TABLE XXII deals with total group means assigned by seven different age groups. Again, no significant difference existed. This is demonstrated by the 0.60 F-value derived.

TABLE XXII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN CONDITIONING HAND TOOLS

Years of Experience							
1-5 (n=43)	6-10 (n=53)	11-15 (n=32)	16-20 (n=23)	21-25 (n=14)	26-30 (n=9)	31+ (n=11)	F
3.34	3.40	3.25	3.40	3.02	3.51	3.16	0.60

Findings Concerning Selected Competencies in Second Year Agriculture Mechanics

This section deals with selected competencies from the second year of instruction in agriculture mechanics. Data are presented concerning percentages and means related to importance ratings assigned by teachers to proper use of power tools, hot metal work, and concrete work. There were 177 teachers who responded to this area.

Power Tools

TABLE XXIII is used to display percentages and means in the Power Tool division on power tools.

The competency receiving the highest rating was item number one concerning safety. This item received an overall mean rating of 4.85 which indicates "extreme importance". The lowest ranking for a competency was for identification of sabre saw parts which received at 3.37 rating which means the competency was still in the "medium importance" range. All items were deemed to be of at least "medium importance". The overall mean for the division was 3.87 with a standard deviation of .49. The overall mean indicates that competencies in this division were of "high importance".

TABLE XXIV depicts the fact that only slight differences of perceptions across all competencies existed between teachers from single and multiple teacher departments. The T-value of -0.85 is evidence that no significant differences existed on how the two groups of teachers perceived the importance of the power tool skills studied.

TABLE XXIII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN PROPER USE OF POWER TOOLS

Competency N = 177	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Practice safety in the operation of power tools and equipment	-	-	-	15.3	84.7	4.85	H
Operate a portable electric saw	-	0.6	11.9	42.9	44.6	4.32	H
Operate and use a grinder	-	-	15.3	42.9	41.8	4.27	H
Operate a drill press	-	0.6	10.8	53.4	35.2	4.23	H
Operate bench and circular saws	-	0.6	11.3	57.1	31.1	4.19	H
Operate a power metal saw	-	1.1	15.3	47.5	36.2	4.19	H
Operate a saber saw	-	1.1	19.2	43.5	36.2	4.17	H

TABLE XXIII (Continued)

Competency N = 177	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Identify the types of bits and drills	-	1.7	33.9	49.7	14.7	3.78	H
Dress and true a grinding wheel	0.6	2.8	32.8	48.0	15.8	3.76	H
Identify saw types and uses	0.6	1.7	37.3	44.1	16.4	3.74	H
Identify the types of metal cutting power saws	-	4.5	46.9	33.9	14.7	3.59	H
Identify portable electric saw parts	0.6	10.7	40.7	62.2	15.8	3.52	H
Identify the parts of a grinder	0.6	11.3	40.7	30.5	16.9	3.52	H
Identify types and parts of circular saws	0.6	8.5	45.2	36.2	9.6	3.46	M

TABLE XXIII (Continued)

Competency N = 177	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Make special cuts	0.6	7.4	46.0	39.2	6.8	3.44	M
Identify the parts of a drill press	0.6	7.9	48.6	33.9	9.0	3.43	M
Identify the parts of a sabre saw	0.6	14.7	42.9	30.5	11.3	3.37	M
Total Group Mean						3.87*	H

* Standard deviation = 0.49

TABLE XXIV

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN PROPER USE OF POWER TOOLS

Single Teacher Dept. (n=57) mean S.D.	Multi Teacher Dept. (n=118) mean S.D.	T - value	probability
3.82	3.89		
0.52	0.47	-0.85	0.40

Note: There were two teachers who did not respond to whether they were in single or multi-teacher departments

TABLE XXV indicates that importance ratings for this skill group were not affected by years of experience. The obtained F-value of 0.13 shows the lack of significant differences.

TABLE XXV

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN PROPER USE OF POWER TOOLS

Years of Experience							
1-5 (n=56)	6-10 (n=51)	11-15 (n=34)	16-20 (n=18)	21-25 (n=8)	26-30 (n=4)	31+ (n=6)	F
3.90	3.83	3.87	3.92	3.80	3.93	3.85	0.13

Hot Metal Work

The next division studied involved Hot Metal Work competencies. Thirty-one items were selected for the study. TABLE XXVI gives the percentages and means for each competency. Six competencies received ratings high enough to be classified as being of "extreme importance". These competencies included safe operation of oxyacetylene equipment, turning equipment to off and on positions, checking leaks, adjusting regulators, lighting and adjusting flames and safety of arc welding.

The overall rating for all Hot Metal competency items was 4.12 with a standard deviation of .43. It seems apparent that the 177 respondents place a "high importance" rating on skills in this area.

TABLE XXVII indicates that there is a significant difference in the ratings given by teachers from single teacher and from multiple teacher departments. Teachers who had other teachers in the department ranked skills in hot metal higher (4.17) than those from single teacher departments (4.00). Even though a significant difference is shown, it should be noted that both groups ranked hot metal skills as being of "high importance".

TABLE XXVI

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN HOT METAL WORK

Competency N = 177	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Practice safety in the operation of oxyacetylene equipment	-	-	0.6	12.5	86.9	4.86	E
Practice safety in arc welding	-	-	5.1	16.6	78.3	4.73	E
Turn on and shut off equipment	-	0.6	6.3	26.1	67.0	4.60	E
Check for leaks and change cylinders	-	0.6	4.5	32.4	62.5	4.57	E
Adjust pressure regulators	-	0.6	2.3	37.5	59.7	4.56	E
Light and adjust flame	-	-	5.1	36.4	58.0	4.52	E
Operate AC and DC arc welders	-	-	7.4	41.7	50.9	4.43	H

TABLE XXVI (Continued)

Competency N = 177	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Run beads in flat position	-	-	8.0	40.6	51.4	4.43	H
Weld in flat position	-	-	11.4	35.8	52.8	4.41	H
Strike an arc	-	1.1	8.0	42.5	48.3	4.38	H
Run bead with rod	-	-	14.8	37.5	47.7	4.33	H
Cut thick metal	-	-	13.1	43.8	43.2	4.30	H
Select electrodes	-	1.1	8.0	51.4	39.4	4.29	H
Set amperage and polarity	-	0.6	8.0	55.2	36.2	4.27	H
Prepare metal for welding	-	1.1	13.1	42.9	42.9	4.27	H
Weld in vertical, horzintal, and overhead positions	-	0.6	8.6	56.6	34.3	4.25	H

TABLE XXVI (Continued)

Competency N = 177	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Select and clean tips	0.6	0.6	12.5	49.4	36.9	4.22	H
Cut sheet metal	-	-	18.4	47.1	34.5	4.16	H
Weld but, lap, and tee joints	-	-	15.0	57.8	27.2	4.12	H
Make but, lap, and tee welds	-	1.7	14.8	54.5	29.0	4.11	H
Identify safety procedures for TIG and MIG welding	2.9	4.1	16.3	36.6	40.1	4.07	H
Weld in vertical, horizontal, and overhead positions	-	4.0	17.6	52.8	25.6	4.00	H
Braze weld	-	3.4	27.3	45.5	23.9	3.90	H
Operate MIG welder	2.9	2.3	22.5	51.4	20.8	3.85	H

TABLE XXVI (Continued)

Competency N = 177	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Make corner weld without filler rod	1.1	2.3	27.3	52.3	17.0	3.82	H
Make a pad	-	4.0	33.5	39.9	22.5	3.81	H
Weld sheet metal	0.6	11.0	27.7	40.5	20.2	3.69	H
Punch holes and cut with arc welder	0.6	16.8	33.5	33.5	15.6	3.47	M
Operate TIG welder	11.0	7.6	22.7	43.0	15.7	3.45	M
Weld cast iron	1.2	14.5	37.8	40.7	5.8	3.35	M
Hardsurface an implement	1.7	15.1	40.7	32.6	9.9	3.34	M

TABLE XXVI (Continued)

Competency N = 177	Percentage of Response by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Apply hard surfacing material	2.3	19.3	43.8	23.9	10.8	3.22	M
Total Group Mean						4.12*	H

* Standard deviation = 0.43

TABLE XXVII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN HOT METAL WORK

Single Teacher Dept. (n=57) mean S.D.	Multi Teacher Dept. (n=118) mean S.D.	T - value	probability
4.00	4.17		
0.46	0.40	-2.41	0.02*

* A difference at the .05 level

TABLE XXVIII is concerned with the variable of differences in years of experience. When the responses from seven different age groups were analyzed, no significant differences were detected. An F-value of 0.08 was not sufficiently large to show a significant difference in responses at the .05 level.

TABLE XXVIII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN HOT METAL WORK

Years of Experience							
1-5 (n=56)	6-10 (n=51)	11-15 (n=34)	16-20 (n=18)	21-25 (n=8)	26-30 (n=4)	31+ (n=6)	F
4.14	4.10	4.13	4.13	4.14	4.02	4.16	0.08

Concrete Work

Concrete work competencies comprised the next division. TABLE XXIX contains four items along with their respective importance ratings and frequency data.

All four items studied received ratings high enough to be in the "high importance" category. The most important competency was deemed to be calculation of the amount of concrete needed. The overall ranking for the division was 3.92 with a standard deviation of .75.

TABLE XXX provides data to show a comparison of responses in the concrete division by teachers in single department school and those in multiple teacher departments. The T-value shows that no significant difference existed.

TABLE XXIX

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN CONCRETE WORK

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 177	%	%	%	%	%	$\bar{X}$	
Calculate amount of concrete needed	0.6	4.7	18.7	49.1	26.9	3.97	H
Construct and reinforce concrete forms	-	3.5	22.8	48.5	25.1	3.95	H
Mix, place, finish, and cure concrete	-	3.5	26.3	48.0	22.2	3.88	H
Determine amounts of materials	0.6	7.0	25.1	40.4	26.9	3.86	H
Total Group Mean						3.92*	H

* Standard deviation = 0.75

TABLE XXX

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN CONCRETE WORK

Single Teacher Dept. (n=57) mean S.D.	Multi Teacher Dept. (n=118) mean S.D.	T - value	probability
3.86	3.93		
0.87	0.68	-0.42	0.68

TABLE XXXI gives the mean responses on the four items according to years of experience. The average responses ranged from a low of 3.67 to a high of 4.06. An obtained F-value of 0.29 is evidence that years of experience has no significant effect on how teachers rated competencies in the division on concrete.

TABLE XXXI

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN CONCRETE WORK

Years of Experience							
1-5 (n=56)	6-10 (n=51)	11-15 (n=34)	16-20 (n=18)	21-25 (n=8)	26-30 (n=4)	31+ (n=6)	F
3.95	3.90	3.91	4.06	3.78	3.81	3.64	0.29

Findings Concerning Selected Competencies in Third Year Agricultural Mechanics

The third questionnaire was administered to 184 respondents. The division consisted of competency items related to farm electricity, small gasoline engines, tractors maintenance, water supply and sanitation, and farm surveying.

Farm Electricity

TABLE XXXII displays the levels of importance assigned to the twenty four items in Farm Electricity. Percentages of response types along with means for each item is given.

The overall mean for the division was 3.77 with a standard deviation of 0.52. This means, as an overall topic, teachers rating the skill area as "highly important". All items were placed in the "medium" or "high importance" category except item number one. Teachers considered safety to be of "extreme importance".

TABLE XXXII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN FARM ELECTRICITY

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 184	%	%	%	%	%	$\bar{X}$	
Explain the importance of electrical safety	-	1.1	6.0	27.7	65.2	4.57	E
Identify, select, and install circuit protection devices	-	1.6	19.1	48.6	30.6	4.08	H
Splice or connect wires	-	1.6	21.3	44.3	32.8	4.08	H
Check for shorts	-	2.2	1.85	55.2	26.8	4.07	H
Identify, select, and install different wiring materials	-	0.5	20.1	52.7	26.6	4.05	H
Wire single pole switch in a light circuit	-	-	23.9	47.3	28.8	4.05	H

TABLE XXXII (Continued)

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Wire two three-way switches in a light circuit	-	1.6	27.2	41.8	29.3	3.99	H
Define electrical terms	0.5	2.2	17.4	58.2	21.7	3.98	H
Wire light circuit and duplex receptacle circuit from service panel	-	1.1	27.7	43.5	27.7	3.98	H
Diagram 120 volt and 240 volt circuits	-	1.6	28.3	44.0	26.1	3.95	H
Maintain electric motor	-	2.7	25.0	51.6	20.7	3.90	H
Solder and tape connections	-	5.5	26.2	42.1	26.2	3.89	H
Select electric motors according to use	-	3.8	36.1	45.4	14.8	3.71	H

TABLE XXXII (Continued)

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Identify electric motors by name-plate information	-	2.2	38.6	45.1	14.1	3.71	H
Install electric motor	-	4.3	34.2	47.8	13.6	3.71	H
Estimate electrical energy use and cost	0.5	4.9	42.4	36.4	15.8	3.62	H
Use multi-meter to determine volts, amps, and ohms	3.8	6.6	41.5	27.3	20.8	3.55	H
Disassemble and clean electric motor	0.5	8.7	40.8	37.5	12.5	3.53	H
Compare elec-tricity to alternate energy sources	1.1	8.7	44.0	34.2	12.0	3.47	M
Assemble electric motor	0.5	9.8	43.5	35.9	10.3	3.46	M

TABLE XXXII (Continued)

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Plan farm service entrance requirements	2.7	11.4	40.8	28.3	16.8	3.45	M
Plan farm circuitry in compliance with National Electrical Code	2.7	8.7	42.9	33.7	12.0	3.43	M
Identify motor windings by continuity tests and change direction of rotation	4.4	13.7	42.1	32.8	7.1	3.25	M
Select and install drive system	1.6	20.8	47.5	24.6	5.5	3.11	M
Total Group Mean						3.77*	H

* Standard deviation = 0.52

An analysis was made of the responses given by single teacher departments and multiple teacher departments. TABLE XXXIII shows that the mean scores were 3.76 and 3.78 respectively. The T-value of -0.24 is evidence that no significant difference existed between the two study groups.

TABLE XXXIII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM ELECTRICITY

Single Teacher Dept. (n=64) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.76	3.78		
0.45	0.56	-0.24	0.81

Note: There was one teacher who did not respond to whether they were in single or multi-teacher departments

Responses were also compared according to years of experience. Seven different age groups were examined. TABLE XXXIV shows that mean responses ranged from 3.37 to 3.97. The F-value of 2.09 indicated that significant differences existed somewhere among the groups.

3.97
3.37
.60

TABLE XXXIV

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM ELECTRICITY

Years of Experience							
1-5 (n=41)	6-10 (n=52)	11-15 (n=35)	16-20 (n=30)	21-25 (n=9)	26-30 (n=9)	31+ (n=8)	F
3.73	3.88	3.63	3.83	3.97	3.91	3.37	2.09*

* A difference at the .05 level

In order to determine which age groups differed significantly, a Duncan's Multiple Range was administered. TABLE XXXV the results of that analysis.

TABLE XXXV

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT AGE YEARS OF EXPERIENCE IN FARM ELECTRICITY

	Years of Experience						
	A5	A6	A2	A4	A1	A3	A7
	21-25	26-30	6-10	16-20	1-5	11-15	31+
	N=9	N=9	N=52	N=30	N=41	N=35	N=8
Mean	3.97	3.91	3.88	3.83	3.73	3.63	3.70

TABLE XXXV depicts the fact that teachers with thirty one or more years of experience differed significantly at

the .05 level from four other age groups. The only age groups they did not disagree with were those in the one to five year interval and the eleven to fifteen year interval. It should be noted that even with significant numerical differences in responses the importance rating given by all groups were still in the "high importance" category.

Small Gasoline Engines

The next set of competencies studied were those involved with Small Gasoline Engines. Eleven items were used in the set and there were 184 respondents. TABLE XXXVI gives the results of the responses.

All items received responses in the "highly important" category. None received an extreme importance rating. The overall mean for the division was 3.87 with a standard deviation of 0.66.

TABLE XXXVII shows the results after two groups of responses were compared using size of department as a variable. Mean responses and standard deviations are given for single teacher departments and multiple teacher departments.

TABLE XXXVI

LEVELS OF IMPORTANCE FOR COMPETENCIES IN AGRICULTURAL POWER/SMALL GAS ENGINES

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Disassemble a 4-cycle engine	-	1.6	19.0	39.1	40.2	4.18	H
Assemble a 4-cycle engine	-	2.2	17.9	40.2	39.7	4.17	H
Check and service lubrication system	-	0.5	23.4	50.5	25.5	4.01	H
Explain the difference between 4-cycle and 2-cycle engines	1.1	2.2	20.1	50.0	26.6	3.99	H
Check and adjust carburetor	-	0.5	25.1	49.7	24.6	3.98	H
Check and adjust governor	-	3.8	26.1	52.7	17.4	3.84	H
Check and adjust electrical system	-	3.8	31.7	43.7	20.8	3.81	H

TABLE XXXVI (Continued)

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Check and adjust valves	2.7	4.4	30.6	42.6	19.7	3.72	H
Check and adjust cylinders and pistons	0.5	7.1	31.1	42.1	19.1	3.72	H
Assemble 2-cycle engine	-	8.7	42.9	28.3	20.1	3.60	H
Disassemble 2-cycle engine	-	8.7	44.0	26.6	20.7	3.59	H
Total Group Mean						3.87*	H

* Standard deviation = 0.66

TABLE XXXVII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL POWER/SMALL GAS ENGINES

Single Teacher Dept. (n=64) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.74 0.66	3.95 0.64	-2.05	0.04*

* A difference at the .05 level

The total group mean response from single teacher departments was 3.74 with a standard deviation of 0.66. The mean for multiple teacher departments was 3.95 with a standard deviation of 0.64. The T-value of -2.05 shows that significant difference does exist between the two groups. Teachers in multiple unit departments placed more importance on small engine skills than did teachers from single teacher units.

A comparison was also made between the responses of teachers with varying degrees of experience. TABLE XXXVIII gives a summary of that comparison.

TABLE XXXVIII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL POWER/SMALL GAS ENGINES

Years of Experience							
1-5 (n=41)	6-10 (n=52)	11-15 (n=35)	16-20 (n=30)	21-25 (n=9)	26-30 (n=9)	31+ (n=8)	F
3.96	3.89	3.73	3.95	4.21	3.69	3.50	0.19*

* A difference at the .05 level

Responses ranged from 3.50 in the thirty one years plus group to 4.21 in the twenty one to twenty five year group. The F-value of 1.46 is an indication that significant differences existed among the groups.

A Duncan's Multiple Range follow-up was applied to locate the differences. TABLE XXXIX shows the results of that analysis.

TABLE XXXIX

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN AGRICULTURAL POWER/SMALL GAS ENGINES

	Years of Experience						
	A5	A1	A4	A2	A3	A6	A7
	21-25	1-5	16-20	6-10	11-15	26-30	31+
	N=9	N=41	N=30	N=52	N=35	N=9	N=8
Mean	4.21	3.96	3.95	3.89	7.73	3.69	3.50

A significant difference was found to exist between only two of the experience groups studied. Teachers with thirty one or more years experience placed a lower degree of importance on small engine skills than did those with twenty one to twenty five years of experience.

Tractor Maintenance

Tractor maintenance was the next competency group studied. Fifteen items were included in the division with 184 teachers serving as respondents. TABLE XL gives the results of the responses.

The overall group mean response for the division was 3.93 with a standard deviation of 0.64. None of the items were marked of "extreme importance", but all competencies received a mean rating of at lease "high importance".

TABLE XLI displays the results of comparing responses from single teacher departments and multiple teacher departments. The means of 3.94 and 3.93 along with an obtained T-value of 0.07 shows that no significant difference exists between the two groups.

TABLE XL

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN TRACTOR MAINTENANCE

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Operate tractor safely and correctly	-	2.7	10.4	37.2	49.7	4.34	H
Demonstrate components of tractor and equipment safety	-	4.9	19.1	33.3	42.6	4.14	H
Service oil filter system	1.6	1.1	24.6	30.6	42.1	4.10	H
Grease chassis	1.1	2.7	20.8	36.1	39.3	4.10	H
Change crankcase oil	1.1	2.7	23.0	33.9	39.3	4.08	H
Service air cleaner system	1.1	3.8	20.2	41.0	33.9	4.03	H
Follow correct pre-operation procedures	0.5	4.9	19.7	47.0	27.9	3.97	H

TABLE XL (Continued)

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Select fuel and lubricants	0.5	3.8	20.8	53.0	21.9	3.92	H
Hitch and unhitch units properly	0.5	5.5	25.1	43.2	25.7	3.88	H
Troubleshoot and identify problems	1.1	2.7	27.3	50.8	18.0	3.82	H
Perform maintenance jobs as scheduled	1.1	9.3	26.2	39.9	23.5	3.75	H
Design maintenance schedule	1.1	10.4	24.6	42.6	21.3	3.73	H
Explain the classification of oils and types of grease	1.1	1.6	36.6	47.5	13.1	3.70	H
Identify types of air cleaners	1.6	3.3	41.8	31.3	22.0	3.69	H

TABLE XL (Continued)

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 184	%	%	%	%	%	$\bar{X}$	
Select tractor by job requirements	-	10.3	32.1	37.0	20.7	3.68	H
Total Group Mean						3.93*	H

* Standard deviation = 0.64

TABLE XLI

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN TRACTOR MAINTENANCE

Single Teacher Dept. (n=64) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.94 0.57	3.93 0.68	0.07	0.94

Responses were also compared between the various years of experience groups, TABLE XLII shows that no significant difference existed. The obtained F-value was 1.03.

TABLE XLII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN TRACTOR MAINTENANCE

Years of Experience							
1-5 (n=41)	6-10 (n=52)	11-15 (n=35)	16-20 (n=30)	21-25 (n=9)	26-30 (n=9)	31+ (n=8)	F
3.90	3.83	3.87	3.92	3.80	3.93	3.85	1.03

Farm Water Supply and Sanitation

Water Supply and Sanitation competencies were rated by 184 respondents in regard to level of importance. TABLE XLIII shows the results of these responses.

The overall mean response for the division was 3.46 with a standard deviation of 0.60. None of the items were marked of "extreme importance". All items fell within the medium to "high importance" range. The lowest scoring item was cast iron pipe work with a mean of 2.63. The highest item was working with steel pipe with a mean of 3.84.

TABLE XLIV gives the results obtained when responses from single and multiple teacher departments were compared. The respective means were compared. The respective means were 3.49 and 3.45. The T-value of 0.45 was an indication that no significant difference existed between the two groups.

TABLE XLIII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN FARM WATER SUPPLY AND SANITATION

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 184	%	%	%	%	%	$\bar{X}$	
Lay out, cut, ream, and join plastic pipe	-	0.5	1.3	55.7	28.4	4.12	H
Lay out, cut, ream, thread, and join steel pipe	0.5	2.2	32.1	43.5	21.7	4.14	H
Install plumbing fixtures	1.1	2.7	32.8	44.3	19.1	3.78	H
Calculate water needs	-	7.7	43.2	35.5	13.7	3.55	H
Select pump and piping needs	0.5	4.3	46.2	38.6	10.3	3.54	H
Plan a sewage disposal system	1.1	16.9	39.9	32.8	9.3	3.32	M

TABLE XLIII (Continued)

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Read blueprint and recognize plumbing symbols	3.8	13.6	43.5	32.1	7.1	3.25	M
Plan a manure disposal system	5.5	20.2	42.1	25.1	7.1	3.08	M
Lay out, cut, and join cast iron pipe	19.1	22.4	36.1	16.4	6.0	2.68	M
Total Group Mean						3.46*	M

* Standard deviation = 0.60

TABLE XLIV

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM WATER SUPPLY AND SANITATION

Single Teacher Dept. (n=64) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.49	3.45		
0.60	0.60	0.45	0.65

An observation of responses on farm water supply and sanitation was made using years of teaching experience as a variable. TABLE XLV gives the results of that analysis.

TABLE XLV

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN OF FARM WATER SUPPLY AND SANITATION

Years of Experience							
1-5 (n=41)	6-10 (n=52)	11-15 (n=35)	16-20 (n=30)	21-25 (n=9)	26-30 (n=9)	31+ (n=8)	F
3.71	3.42	3.39	3.43	3.32	3.42	3.10	1.92*

* A difference at the .05 level

Means ranged from 3.10 in the most experienced group to 3.71 in the youngest group. The F-value of 1.92 indicated that significant differences existed among the groups.

A Duncan's Multiple Range follow-up was employed to analyze the groups. TABLE XLVI gives the results. There was a significant difference between teachers with five or less years of experience and those with thirty one or more years experience.

TABLE XLVI

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN FARM WATER SUPPLY AND SANITATION

	Years of Experience						
	A1	A4	A6	A2	A3	A5	A7
	1-5	16-20	26-30	6-10	11-15	21-25	31+
	N=41	N=30	N=9	N=52	N=35	N=9	N=8
Mean	3.71	3.43	3.42	3.42	3.39	3.32	3.10

Use of Farm Level

Five competencies involving the Use of Farm Levels were studied using 184 teachers as respondents. TABLE XLVII gives a summary of these responses.

The overall group mean for the division was 3.78 with a standard deviation of 0.79. The division ranked in the high

TABLE XLVII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN USE OF FARM LEVEL

Competency N = 184	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Set up and adjust level	1.6	2.2	19.1	50.3	26.8	3.98	H
Stake out fence line	1.6	4.9	32.2	38.3	23.0	3.76	H
Make differential leveling survey	2.2	9.3	25.8	36.8	25.8	3.75	H
Stake out foundation using level	1.6	3.8	35.5	35.5	23.5	3.75	H
Select level and accessories to meet job requirements	1.1	9.8	27.9	43.7	17.5	3.66	H
Total Group Mean						3.78*	H

* Standard deviation = 0.79

"importance category".

TABLE XLVIII displays a comparison of responses from teachers in single and maypole teacher departments. The respective means were 3.76 and 3.80. No significant difference existed between the two groups.

TABLE XLVIII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN USE OF FARM LEVEL

Single Teacher Dept. (n=64) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.76 0.79	3.80 0.79	-0.35	0.73

Teachers were divided into seven groups according to tears of experience. An analysis of variance was done to check for significant differences among the groups. TABLE XLIX gives a summary of the results.

TABLE XLIX

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN USE OF FARM LEVEL

Years of Experience							
1-5 (n=41)	6-10 (n=52)	11-15 (n=35)	16-20 (n=30)	21-25 (n=9)	26-30 (n=9)	31+ (n=8)	F
3.84	3.79	3.76	3.95	3.58	3.76	3.18	1.17*

* A difference at the .05 level

The group mean responses ranged from a low of 3.18 in the most experienced group to 3.95 in the sixteen to twenty year group. The F-value of 1.17 was significant at the .05 level.

A Duncan's Multiple Range follow-up was administered to locate the difference indicated in the F-test. TABLE L gives the results.

TABLE L

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN USE OF FARM LEVEL

	Years of Experience						
	A4	A1	A2	A3	A6	A5	A7
	16-20	1-5	6-10	11-15	26-30	21-25	31+
	N=30	N=40	N=52	N=35	N=9	N=9	N=8
Mean	3.95	3.84	3.79	3.76	3.76	3.58	3.18

Two sets of significant differences are apparent. There is a difference between the most experienced group and the least experienced group. There is also a significant difference between the most experienced group and the group with twenty-six to thirty years of experience.

Findings Concerning Selected Competencies in Fourth Year Agricultural Mechanics

The next questionnaire dealt with the skill area of ranch building construction, truck and tractor maintenance, farm machinery, advanced welding and brazing, concrete masonry, and farm fencing. TABLE LI gives the summary of responses for items in ranch building construction.

Farm and Ranch Building Construction

Twelve items were employed in the Ranch Building Construction division. TABLE LI shows that there were 168 respondents and that the overall mean was 3.78 with a standard deviation of 0.64. All but three items were placed in the "high importance" category. The other three were in the "medium importance" range.

TABLE LII displays a comparison of responses from single and multiple teacher departments. The T-value of -0.72 showed that there was no significant difference in the responses of the two groups.

TABLE LI

LEVELS OF IMPORTANCE FOR COMPETENCIES IN FARM AND RANCH BUILDING CONSTRUCTION

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Practice safety in construction procedures	4.2	-	12.5	27.4	56.0	4.31	H
Estimate cost of construction	0.6	3.0	21.0	47.3	28.1	3.99	H
Prepare and figure a bill of materials	0.6	2.4	25.0	42.9	29.2	3.98	H
Select proper building materials	0.6	3.6	21.4	51.8	22.6	3.92	H
Calculate materials needed using appropriate formulas	0.6	5.4	28.1	45.5	20.4	3.80	H
Select proper fencing materials	0.6	3.0	36.7	42.8	16.9	3.72	H

TABLE LI (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Select electrical and plumbing fixtures	1.2	3.0	34.5	46.4	14.9	3.71	H
Select construction methods	0.6	4.2	37.5	44.0	13.7	3.66	H
Plan farm buildings and fences to safely match present and future use	1.8	4.2	38.1	39.9	16.1	3.64	H
Sketch construction plans	0.6	15.5	35.7	32.7	15.5	3.47	M
Interpret different types of drawings	1.8	24.4	38.1	28.0	7.7	3.15	M
Calculate material costs	0.6	3.6	20.2	40.5	35.1	3.06	M
Total Group Mean						3.78*	H

* Standard deviation = 0.64

TABLE LII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM AND RANCH BUILDING CONSTRUCTION

Single Teacher Dept. (n=49) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.73 0.64	3.81 0.64	-0.72	0.47

A study of the responses of seven different groups was made using years of experience as a variable. TABLE LIII gives the means of each group and the F-value.

TABLE LIII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM AND RANCH BUILDING CONSTRUCTION

Years of Experience							
1-5 (n=43)	6-10 (n=52)	11-15 (n=28)	16-20 (n=18)	21-25 (n=15)	26-30 (n=8)	31+ (n=4)	F
3.84	3.79	3.76	3.88	3.91	3.69	3.21	0.86*

* A difference at the .05 level

TABLE LIII reveals that means ranged from a low of 3.21 in the most experienced group to 3.91 in the twenty-one to twenty-five year group. An F-value of 0.86 indicated a significant difference somewhere among the groups.

A Duncan Multiple Range follow-up was applied to the seven experience categories to locate significant differences. TABLE LIV displays an analysis of these findings.

TABLE LIV

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN FARM AND RANCH BUILDING CONSTRUCTION

	Years of Experience						
	A5	A4	A1	A2	A3	A6	A7
	21-25	16-20	1-5	6-10	11-15	26-30	31+
	N=15	N=18	N=43	N=52	N=28	N=8	N=4
Mean	3.91	3.88	3.84	3.79	3.76	3.69	3.21

Five sets of significant differences between groups were found as displayed in TABLE LIV. The groups with thirty-one years or more experience differed significantly from all other groups except twenty-six to thirty year group. This seems to indicate that more experienced teachers placed less importance on competencies in the ranch construction division than did less experienced teachers.

Truck and Tractor Maintenance

The next division studied included the competencies in Truck and Tractor Maintenance. Eighteen items were considered. TABLE LV gives a summary of responses from 168 teachers.

TABLE LV contains the results of overall group mean response was 3.50 with a standard deviation of 0.76. This would place this competency category barely in the "high importance" rating. None of the competencies were ranked in the "extreme importance" division.

Responses were analyzed according to type of department. TABLE LVI contains data that displays that almost no difference existed in the responses of the two groups in truck and tractor topics.

TABLE LV

LEVELS OF IMPORTANCE FOR COMPETENCIES IN FARM TRUCK AND TRACTOR MAINTENANCE

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Practice safety in farm truck and tractor maintenance	2.4	10.2	15.6	26.3	45.5	4.02	H
Lubricate farm trucks and tractors	1.2	7.1	17.9	45.8	28.0	3.92	H
Service battery, spark plugs, distributor, and condenser	3.6	8.9	22.6	44.6	20.2	3.69	H
Identify fuels and lubricants	1.8	7.2	30.5	47.3	13.2	3.63	H
Service fuel system	1.8	10.1	33.3	39.3	15.5	3.57	H
Service the tires and wheels	3.6	10.7	29.2	38.7	17.9	3.57	H

TABLE LV (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Identify parts of the ignition system	1.2	13.1	31.5	39.9	14.3	3.53	H
Identify types and parts of cooling systems	2.4	4.8	41.9	40.7	10.2	3.51	H
Service transmission, differential, and final drive	1.2	14.9	33.3	32.7	17.9	3.51	H
Service cooling system	4.8	5.4	37.7	42.5	9.6	3.47	M
Service the hydraulic system	4.2	12.5	29.2	42.9	11.3	3.45	M
Service generator, alternator, voltage regulator, and starter motor	3.6	19.0	20.8	44.0	12.5	3.43	M
Service brakes	1.8	17.9	32.7	36.3	11.3	3.38	M

TABLE LV (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Time engine ignition	3.6	19.6	29.2	32.7	14.9	3.36	M
Service the steering system	1.2	16.7	38.7	33.3	10.1	3.35	M
Service the clutch	1.2	25.6	29.2	31.0	13.1	3.29	M
Service electronic ignition system	4.2	19.0	38.1	28.0	10.7	3.22	M
Identify types of brakes	2.4	17.3	44.0	31.5	4.8	3.19	M
Total Group Mean						3.50*	H

* Standard deviation = 0.76

TABLE LVI

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN TRUCK AND TRACTOR MAINTENANCE

Single Teacher Dept. (n=49) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.50	3.50		
0.65	0.81	0.003	0.99

TABLE LVII contains results of an analysis of responses in truck and tractor maintenance topics from seven different experiences groups. The F-value of 0.76 indicates that no significant differences exist among the various age groups.

TABLE LVII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN TRUCK AND TRACTOR MAINTENANCE

Years of Experience							
1-5 (n=43)	6-10 (n=52)	11-15 (n=28)	16-20 (n=18)	21-25 (n=15)	26-30 (n=8)	31+ (n=4)	F
3.63	3.34	3.56	3.65	3.56	3.50	3.65	0.76

Farm Machinery

Another division of competencies studied was Farm Machinery. Six items were included in the division and the results are given in TABLE LVIII.

TABLE LVIII displays that there were 168 respondents and that the overall mean response was 3.76. A standard deviation of 0.80 was obtained. All items fell into the "high importance" category.

TABLE LIX contains a summary of data where means from single and multiple teacher departments were compared. The T-value of 0.67 indicated that no significant difference existed.

TABLE LVIII

LEVELS OF IMPORTANCE FOR COMPETENCIES IN FARM MACHINERY

Competency N = 169	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Practice safety in farm machinery inspection, service, and repair	1.8	5.4	13.7	28.0	51.2	4.21	H
Repair and replace broken or worn parts	0.6	12.5	23.8	35.1	28.0	3.77	H
Inspect machinery	0.6	4.8	38.1	35.1	21.4	3.72	H
Adjust and calibrate machinery	0.6	11.3	26.8	42.3	19.0	3.68	H
Tighten loose parts	3.0	10.2	31.7	28.1	26.9	3.66	H

TABLE LVIII (Continued)

Competency N = 169	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Clean, lubricate and paint machinery	0.6	8.3	41.7	38.7	10.7	3.51	H
Total Group Mean						3.76*	H

* Standard deviation = 0.80

TABLE LIX

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM MACHINERY

Single Teacher Dept. (n=49) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.82	3.73		
0.79	0.80	0.67	0.51

When seven different experience groups were studied concerning responses to farm machinery, no significant differences were found. TABLE LX contains the results of an F-value of 0.93.

TABLE LX

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM MACHINERY

Years of Experience							
1-5 (n=43)	6-10 (n=52)	11-15 (n=28)	16-20 (n=18)	21-25 (n=15)	26-30 (n=8)	31+ (n=4)	F
3.89	3.64	3.68	3.80	4.07	3.64	4.00	0.93

Advanced Oxyacetylene Welding and Brazing

The division on advanced oxyacetylene welding and brazing contained twelve items and had 168 respondents. A summary of those responses is shown in TABLE LXI.

The overall responses for the division was 3.68 with a standard deviation of 0.64. This mean was high enough to place the division into the very important category. One skill, that of safety, was placed in the extreme importance category.

TABLE LXII shows results of a comparison of single and multiple teacher department responses. The T-value of 0.19 indicated that no significant difference existed between the two groups.

TABLE LXI

LEVELS OF IMPORTANCE FOR COMPETENCIES IN ADVANCED OXYACETYLENE WELDING AND BRAZING

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Practice safety in oxy-fuel operations	4.2	-	5.4	17.4	73.1	4.55	E
Identify oxy-acetylene equipment parts	0.6	1.2	12.6	47.3	38.3	4.22	H
Service and adjust oxy-fuel equipment	4.2	-	10.2	44.9	40.7	4.18	H
Weld aluminum	2.4	31.1	41.3	16.2	9.0	3.98	H
Weld in flat, vertical, horizontal, and overhead positions	1.8	1.2	24.6	44.9	27.5	3.95	H
Select equipment and accessories to match job requirements	1.8	3.0	19.2	51.5	24.6	3.94	H

TABLE LXI (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Make butt, corner, lap, and fillet welds	1.8	1.2	38.9	36.5	21.6	3.75	H
Weld heavy steel plate	3.0	5.4	37.1	41.3	13.2	3.56	H
Weld sheet metal	0.6	10.8	43.7	33.5	11.4	3.44	M
Bronze weld sheet metal	1.2	15.6	41.3	33.5	8.4	3.32	M
Weld cast iron	1.8	20.4	47.9	22.2	7.8	3.14	M
Bronze weld heavy steel	1.8	22.2	42.5	28.1	5.4	3.13	M
Total Group Mean						3.68*	H

* Standard deviation = 0.64

TABLE LXII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN ADVANCED OXYACETYLENE WELDING AND BRAZING

Single Teacher Dept. (n=49) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.70 0.70	3.67 0.62	0.19	0.85

Also, no significant differences existed among the various groups according to years of experience. TABLE LXIII gives the means for the seven groups and a F-value of 0.86.

TABLE LXIII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN ADVANCED OXYACETYLENE WELDING AND BRAZING

Years of Experience							
1-5 (n=43)	6-10 (n=52)	11-15 (n=28)	16-20 (n=18)	21-25 (n=15)	26-30 (n=8)	31+ (n=4)	F
3.68	3.67	3.56	3.85	3.92	3.60	3.85	0.86

Concrete Masonry

Competencies in Concrete Masonry was studied with the use of nine items and 168 respondents. TABLE LXIV is used to provide a summary of those responses.

The average response for the entire division on concrete masonry was 3.42 with a standard deviation of 0.64. This resulted in the division being placed in the "medium importance" level.

Responses on concrete masonry were analyzed using single and multiple teacher departments as a variable. TABLE LXV shows the two means were 3.51 and 3.38. The T-value of 1.23 indicated that no significant difference existed between the two groups.

TABLE LXIV

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN CONCRETE MASONRY

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Practice safety in concrete masonry procedures	1.8	4.8	25.1	30.5	37.7	3.98	H
Lay out foundation	0.6	4.2	25.7	50.9	18.6	3.83	H
Calculate material cost	0.6	4.2	25.7	51.5	18.0	3.82	H
Mix mortar	1.2	7.8	34.7	44.3	12.0	3.58	H
Lay concrete blocks	1.8	10.2	49.1	33.5	5.4	3.31	M
Cut masonry units	3.0	12.6	52.7	28.1	3.6	3.17	M
Lay brick, tile, and stone	4.2	22.8	37.1	32.3	3.6	3.08	M
Lay a cavity wall	2.4	25.1	40.7	29.3	2.4	3.04	M

TABLE LXIV (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Lay a veneered wall	5.4	25.1	40.7	26.3	2.4	2.95	M
Total Group Mean						3.42*	M

* Standard deviation = 0.64

TABLE LXV

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN CONCRETE MASONRY

Single Teacher Dept. (n=49) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.51	3.38		
0.65	0.64	1.23	0.22

Responses were then compared using years of experience as a variable. TABLE LXVI shows the mean responses for each groups and that significant differences existed according to the 2.26 F-value obtained.

TABLE LXVI

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN CONCRETE MASONRY

Years of Experience							
1-5 (n=43)	6-10 (n=52)	11-15 (n=28)	16-20 (n=18)	21-25 (n=15)	26-30 (n=8)	31+ (n=4)	F
3.59	3.35	3.26	3.48	3.75	3.13	3.08	2.26*

* A difference at the .05 level

A Duncan's Multiple Range follow-up was applied to the data to ascertain the location of differences. TABLE LXVII shows results of that analysis.

TABLE LXVII

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN CONCRETE MASONRY

	Years of Experience						
	A5	A1	A4	A2	A3	A6	A7
	21-25	1-5	16-20	6-10	11-15	26-30	31+
	N=15	N=43	N=18	N=52	N=28	N=8	N=4
Mean	3.75	3.59	3.48	3.35	3.26	3.13	3.08

TABLE LXVII reveals that two sets of significant differences existed. One difference was between the teachers with twenty-one to twenty-five years experience and those with twenty-six to thirty years. The other difference was between the twenty-one to twenty-five year group and the most experienced group.

Farm Fencing

Farm fencing was the next area examined. Six items were used in the division and 168 respondents were employed. A summary of responses is presented in TABLE LXVIII.

TABLE LXVIII shows that from the 168 respondents a mean

TABLE LXVIII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN FARM FENCING

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Practice safety in fence construction procedures	1.8	6.0	16.8	26.3	49.1	4.15	H
Calculate material cost	0.6	5.4	28.3	36.1	29.5	3.89	H
Lay out fence line	0.6	3.0	34.7	30.5	31.1	3.89	H
Select proper fencing materials	0.6	3.0	30.5	41.3	24.6	3.86	H
Construct fence	0.6	6.0	23.4	49.7	20.4	3.83	H

TABLE LXVIII (Continued)

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 168	%	%	%	%	%	$\bar{X}$	
Plan fence to meet job requirements	0.6	7.8	31.1	39.5	21.0	3.72	H
Total Group Mean						3.89*	H

* Standard deviation = 0.78

of 3.89 was obtained with a standard deviation of 0.78. This placed the division in the "highly important" category.

A comparison of single and multiple teacher departments yielded a no significant difference reading. TABLE LXIX shows the mean responses to be 3.81 and 3.92. A T-value of -0.83 was obtained.

TABLE LXIX

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM FENCING

Single Teacher Dept. (n=49) mean S.D.	Multi Teacher Dept. (n=119) mean S.D.	T - value	probability
3.81 0.73	3.92 0.80	-0.83	0.41

When responses were compared using years of experience as a variable, significant differences among groups was found as evident by the 1.67 F-value reported in TABLE LXX.

TABLE LXX

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN FARM FENCING

Years of Experience							
1-5 (n=43)	6-10 (n=52)	11-15 (n=28)	16-20 (n=23)	21-25 (n=18)	26-30 (n=8)	31+ (n=4)	F
4.07	3.81	3.80	3.90	4.24	3.43	3.71	1.67*

* A difference at the .05 level

The mean responses in TABLE LXX range from a low of 3.43 to a high of 4.07. To identify the differences indicated, a Duncan's Multiple Range follow-up was applied. TABLE LXXI gives the results of that analysis.

TABLE LXXI

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN FARM FENCING

	Years of Experience						
	A5	A1	A4	A2	A3	A7	A6
	21-25	1-5	16-20	6-10	11-15	31+	26-30
	N=15	N=43	N=18	N=52	N=28	N=4	N=8
Mean	4.24	4.07	3.90	3.81	3.80	3.71	3.43

The graphics in TABLE LXXI show that only two groups differ significantly. Those with teachers with twenty-six

to thirty years and those with twenty-one to twenty-five years. No explanation for this difference is apparent.

The focus of the study thus far has been on shop related skills. For the rest of the study, the focus will be on agricultural management competencies. Three questionnaires were employed. A brief outline of the divisions of competencies contained in each questionnaire follows:

1. Questionnaire AA
    a. Introduction of Agricultural Management
    b. Principles of Economics
    c. Agricultural Finance
    d. Agricultural Records
2. Questionnaire BB
    a. Agricultural Planning (taken from Vo. Ag. III)
    b. Agricultural Planning (taken from Vo. Ag. IV)
    c. Agricultural Insurance
    d. Agricultural Programs and Services
3. Questionnaire CC
    a. Marketing (taken from Vo.Ag. III)
    b. Marketing (taken from Vo.Ag. IV)
    c. Legal Relationships

Findings Concerning Selected Competencies in Third Year Agricultural Management

Introduction to Agricultural Management

The first set of competencies are those included in Introduction to Agricultural Management. This division consisted of four items. The results of responses for this division are shown in TABLE LXXII.

The average response for the division was 3.75 with a standard deviation of 0.70. There were 175 respondents. Three items were classified as being of "high importance" and one received a "medium importance" rating.

TABLE LXXIII is used to show the comparison of responses from single and multiple teacher departments. The T-value of -0.49 indicates that no significant difference existed.

TABLE LXXII

LEVELS OF IMPORTANCE FOR COMPETENCIES IN INTRODUCTION TO AGRICULTURE MANAGEMENT

Competency N = 175	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Recognize the importance of agricultural management	-	1.1	21.8	40.2	36.2	4.12	H
List steps in agricultural management	-	9.1	26.9	43.4	20.6	3.75	H
Outline organizational and operational decisions necessary in agricultural management	-	5.7	34.9	42.3	17.1	3.71	H

TABLE LXXII (Continued)

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 175	%	%	%	%	%	$\bar{X}$	
Estimate the performance of a known farm manager using factors predicting managerial performance	1.1	11.4	43.4	30.9	13.1	3.43	M
Total Group Mean						3.75*	H

* Standard deviation = 0.70

TABLE LXXIII

CONPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN INTRODUCTION TO AGRICULTURAL MANAGEMENT

Single Teacher Dept. (n=65) mean S.D.	Multi Teacher Dept. (n=110) mean S.D.	T - value	probability
3.72 0.77	3.77 0.65	-0.49	0.63

An analysis of responses was conducted using years of experience as a variable. TABLE LXXIV is used to display the results of that analysis.

TABLE LXXIV

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN INTRODUCTION TO AGRICULTURAL MANAGEMENT

Years of Experience							
1-5 (n=50)	6-10 (n=41)	11-15 (n=28)	16-20 (n=27)	21-25 (n=15)	26-30 (n=8)	31+ (n=6)	F
3.70	3.87	4.00	3.72	3.23	3.84	3.63	2.35*

* A difference at the .05 level

TABLE LXXIV gives the means ranged from a low of 3.23 to a high of 4.00. The F-value of 2.35 indicated that differences existed among the groups.

Statistics applied to the data on introductory skills yielded significant differences between three groups. These differences are graphically displayed in TABLE LXXV.

TABLE LXXV

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN INTRODUCTION TO AGRICULTURAL MANAGEMENT

	Years of Experience						
	A3	A2	A6	A4	A1	A7	A5
	11-15	6-10	26-30	16-20	1-5	31+	21-25
	N=28	N=41	N=8	N=27	N=50	N=6	N=15
Mean	4.00	3.87	3.84	3.72	3.70	3.63	3.23

TABLE LXXV shows that there was a significant difference in responses given by teachers with twenty-one to twenty-five years of experience and those with eleven to fifteen years. Also, a difference existed between the twenty-one to twenty-five year group and the six to ten year group. The other two groups with differences were the twenty-one to twenty-five and twenty-six to thirty groups.

Principles of Economics

The next division studied in competencies related to Principles of Economics. The responses from 175 teachers are summarized in TABLE LXXVI.

The overall mean for the division was 3.71 which resulted in a "high importance" rating on the scale of importance. However, the first two items were ranked as being "high importance" and the second two were ranked as only "medium importance".

A comparison of the responses according to type of department is shown in TABLE LXXVII. The T-value of -0.12 indicated that no significant difference existed between the responses of teachers in single unit departments and those in multiple unit departments.

TABLE LXXVI

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN PRINCIPLES OF ECONOMICS

Competency	Percentage of Respones by Category of Importance					Mean	Category
N = 175	No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	$\bar{X}$	
Define supply and demand as they relate to agricultural products and discuss factors influencing both	0.6	0.6	24.0	40.6	34.3	4.07	H
Explain how an understanding of the law of diminishing returns can be helpful in decision making	0.6	2.9	34.9	38.9	22.9	3.81	H
Illustrate by example comparative advantage	2.3	9.7	40.0	32.6	15.4	3.49	M

TABLE LXXVI

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 175	%	%	%	%	%	$\bar{X}$	
Describe the principle of resource substitution	3.4	12.6	31.4	40.6	12.0	3.45	M
Total Group Mean						3.71*	H

* Standard deviation = 0.77

TABLE LXXVII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN PRINCIPLES OF ECONOMICS

Single Teacher Dept. (n=65) mean S.D.	Multi Teacher Dept. (n=110) mean S.D.	T - value	probability
3.69 0.72	3.71 0.79	-0.12	0.90

When responses on the principles of economics where analyzed using years of experience as variable, no significant differences were detected. TABLE LXXVIII is used to display the mean response of the seven groups and the F-value of 0.90.

TABLE LXXVIII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN PRINCIPLES OF ECONOMICS

Years of Experience							
1-5 (n=50)	6-10 (n=41)	11-15 (n=28)	16-20 (n=27)	21-25 (n=15)	26-30 (n=8)	31+ (n=6)	F
3.63	3.77	3.76	3.83	3.35	3.75	3.92	0.90

Agricultural Finance

The next division involved competencies in Agricultural Finance. Eighteen items were considered by 175 respondents. TABLE LXXIX is used to provide a summary of those responses.

The overall mean for the division was 3.85 with a standard deviation of 0.62. As a division, agricultural finance was rated as "highly important" although item seven concerning financial statements was ranked as being of "medium importance".

A comparison of responses on Agricultural Finance from teachers in single and multiple teacher departments yielded no significant difference. TABLE LXXX is used to display the means of each group and a T-value of 0.85.

TABLE LXXIX

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN AGRICULTURAL FINANCE

Competency	Percentage of Respones by Category of Importance					Mean	Category
N = 175	No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	$\bar{X}$	
Write a check correctly	1.1	5.7	16.6	24.0	52.6	4.21	H
Reconcile bank statements	1.7	7.4	15.4	24.0	51.4	4.16	H
Prepare a deposit slip correctly	1.1	6.9	20.0	28.6	43.4	4.06	H
Prepare a check stub and denote the purpose of the stub	2.9	4.6	23.4	21.7	47.4	4.06	H
List sources of agricultural credit and make a comparison of interest rates, period of loans and percent of appraisal loan value	1.1	7.4	25.7	28.0	37.7	3.94	H

TABLE LXXIX (Continued)

Competency N = 175	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Classify credit based on period of use	1.1	1.7	29.1	43.4	24.6	3.89	H
List factors to consider in selecting a lender and the principles of borrowing	1.1	5.1	22.9	45.1	25.7	3.89	H
Describe equal payment, dedreasing payment, and balloon payment plans	3.4	3.4	25.7	40.0	27.4	3.85	H
Explain three kinds of check endorsements	4.6	6.9	26.3	25.1	37.1	3.83	H
Record ways a borrower can minimize risk	0.6	1.7	33.1	46.9	17.7	3.79	H

TABLE LXXIX (Continued)

Competency N = 175	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Complete a partial budget for a farm enterprise	1.7	1.7	30.9	49.1	16.6	3.77	H
Calculate interest rates by several methods	0.6	2.3	21.7	42.3	33.1	3.77	H
Distinguish between the two kinds of credit	1.1	3.4	33.7	41.7	20.0	3.76	H
Discuss the uses of different kinds of credit instruments	0.6	2.9	40.0	37.1	19.4	3.72	H
Discuss services performed by commercial banks	1.1	8.6	30.3	39.4	20.6	3.70	H
Prepare an annual cash flow projection for a farm	0.6	3.4	41.1	38.9	16.0	3.66	H

TABLE LXXIX (Continued)

Competency N = 175	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Prepare an income statement based on the above cash flow projections and other farm records	1.1	4.6	42.9	38.3	13.1	3.58	H
Prepare a pro-forma financial statement for the farm used above	2.3	10.4	48.6	29.5	9.20	3.33	M
Total Group Mean						3.85*	H

* Standard deviation = 0.62

TABLE LXXX

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCEOF COMPETENCIES IN AGRICULTURAL FINANCE

Single Teacher Dept. (n=65) mean S.D.	Multi Teacher Dept. (n=110) mean S.D.	T - value	probability
3.90	3.82		
0.63	0.62	0.85	0.39

Seven groups of varying experience levels were compared. The results are displayed in TABLE LXXXI.

TABLE LXXXI

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL FINANCE

Years of Experience							
1-5 (n=50)	6-10 (n=41)	11-15 (n=28)	16-20 (n=27)	21-25 (n=15)	26-30 (n=8)	31+ (n=6)	F
3.77	3.90	4.02	3.78	3.66	4.01	3.91	0.90

Means ranged on agricultural finance topics from 3.77 to 4.01. The obtained F-value of 0.90 indicated that no significant difference existed among the different experience groups.

Agricultural Records

Agricultural Records competencies was analyzed using eight items and 175 respondents. TABLE LXXXII is used to display a summary of those responses.

The overall mean for the agricultural records division as shown in TABLE LXXXII is 3.63 with a standard deviation of 0.71. The overall division rated as being of "high importance", but it should be noted that several items fell into the "medium importance" range.

TABLE LXXXIII shows that no significant difference existed between responses of teachers from single and multiple teacher departments. A T-value of -0.14 was obtained.

TABLE LXXXII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN AGRICULTURAL RECORDS

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 175	%	%	%	%	%	$\bar{X}$	
Complete an application for social security number	4.0	5.8	27.7	24.3	38.2	3.87	H
Complete a Form 1040 for income taxes using information provided in the Teaching Taxes kit	2.3	5.2	26.6	38.7	27.2	3.83	H
Prepare a wage and tax statement, form W-2, for an employee	1.7	8.1	30.6	31.2	28.3	3.76	H
List the different kinds of agricultural records	1.2	4.1	30.8	50.0	14.0	3.72	H

TABLE LXXXII (Continued)

Competency N = 175	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Calculate depreciation on a tractor using the accelerated cost recovery system and an optional recovery period	0.6	9.9	29.1	39.5	20.9	3.70	H
Distinguish between the cash and accrual methods of accounting	1.2	9.8	38.7	40.5	9.8	3.48	M
Define adjusted basis, basis, expensing, investment tax credit, and capital item	1.2	9.8	50.3	30.6	8.1	3.35	M

TABLE LXXXII (Continued)

Competency N = 175	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Discuss old-age, survivors, disability, and health insurance aspects of the Social Security Act	4.6	22.5	28.3	27.2	17.3	3.30	M
Total Group Mean						3.63*	H

* Standard deviation = 0.71

TABLE LXXXIII

COMPARISON OF PERCEPTIONS OF SINGLE TEACHER MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL RECORDS

Single Teacher Dept. (n=65) mean S.D.	Multi Teacher Dept. (n=110) mean S.D.	T - value	probability
3.62 0.71	3.63 0.71	-0.14	0.89

TABLE LXXXIV is used to show a comparison of responses according to varying years of experience. The F-value of 0.15 indicates that no significant differences existed among the seven experience groups studied regarding Agricultural Records competencies.

TABLE LXXXIV

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL RECORDS

Years of Experience							
1-5 (n=50)	6-10 (n=41)	11-15 (n=28)	16-20 (n=27)	21-25 (n=15)	26-30 (n=8)	31+ (n=6)	F
3.66	3.73	3.82	3.38	3.31	3.69	3.60	1.58

Findings Concerning Selected Competencies Third and Fourth Year Agricultural Management

Agricultural Planning (Vo Ag III)

The next division of competencies involved those in Agricultural Planning taken from the Vo Ag III Texas curriculum. Twenty-one items were used and 179 respondents completed the forms. TABLE LXXXV is used to present a summary of those responses.

The overall mean response was 3.27 with a standard deviation of 0.62. No item received an average rating qualifying for the "extreme importance" category. The division rating fell into the "medium importance" level. No item had a mean that qualified it for less than a "medium rating".

TABLE LXXXVI is used to show a comparison of responses from single and multiple teacher departments. The obtained T-value of 0.35 indicated that no significant difference existed between the two groups.

TABLE LXXXV

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN AGRICULTURAL PLANNING (VA III)

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Consider factors neccessary in selecting and planning livestock interprises	0.6	1.1	17.1	58.3	22.9	4.02	H
Discuss the information contained in a soil survey	1.1	8.0	30.9	40.6	19.4	3.69	H
Determine the labor requirements for cow-calf, feeding swine, and breeding sheep interprises	4.0	4.0	36.6	36.6	18.9	3.62	H
Describe the more common soils located in the area	0.6	6.9	37.1	43.4	12.0	3.59	H

TABLE LXXXV (Continued)

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Select crops for a farm and develop a cropping system	4.0	6.9	26.0	53.2	9.8	3.58	H
List factors to consider in purchasing farm land	4.6	12.6	27.4	36.0	19.4	3.53	H
List ways of improving labor efficiency	1.7	11.7	34.1	38.0	14.5	3.52	H
Assist with development of a soil and water conservation plan	1.1	14.3	35.4	33.7	15.4	3.48	M
Develop a field layout for cropping system	4.6	8.6	49.1	29.1	8.6	3.29	M

TABLE LXXXV (Continued)

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Discuss the principles involved in developing a farm layout	5.1	12.6	37.7	38.9	5.7	3.27	M
Describe information contained on a SCS general soil map unit and a detailed soil map	3.4	13.7	47.4	38.6	6.9	3.22	M
Describe the control of undesirable aquatic plants in a farm pond or lake	8.4	13.4	37.4	29.6	11.2	3.22	M
Define and develop a cropping sequence	4.6	10.9	54.9	23.4	6.3	3.16	M
Explain how farm labor supply may be balanced	3.4	19.6	45.8	24.8	7.3	3.12	M

TABLE LXXXV (Continued)

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Prepare a labor distribution chart for a farm	5.0	19.0	41.3	29.6	5.0	3.11	M
Assist with the fertilization of a farm pond or lake	6.1	17.3	43.0	27.9	5.6	3.09	M
Determine number of surface acres in a farm pond	4.5	24.0	37.4	29.6	4.5	3.06	M
Explain the feeding of fish in a farm pond or lake	8.4	16.8	45.8	25.1	4.5	3.01	M
Discuss the management of deer population	15.2	21.9	26.4	31.5	5.1	2.89	M
Discuss the management of wild turkeys and Bobwhite quail	15.1	22.3	30.7	26.3	5.6	2.85	M

TABLE LXXXV (Continued)

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Assist in conducting a walking cruise to determine deer population	21.8	23.5	34.6	16.8	3.4	2.56	M
Total Group Mean						3.27*	M

* Standard deviation = 0.62

TABLE LXXXVI

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL PLANNING (VAIII)

Single Teacher Dept. (n=66) mean S.D.	Multi Teacher Dept. (n=113) mean S.D.	T - value	probability
3.29 0.58	3.26 0.64	0.35	0.73

Seven levels of experience were used to analyze responses on agricultural planning. The results are displayed in TABLE LXXXVII.

TABLE LXXXVII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL PLANNING (VAIII)

Years of Experience							
1-5 (n=35)	6-10 (n=53)	11-15 (n=36)	16-20 (n=23)	21-25 (n=16)	26-30 (n=13)	31+ (n=3)	F
3.43	3.26	3.11	3.26	3.24	3.47	2.92	1.22

TABLE LXXXVII displays that the average responses of the seven experience groups ranged from a low of 2.92 to 3.47. The F-value of 1.22 indicated that no significant differences existed among the seven study groups.

Agricultural Planning (Vo Ag IV)

Agricultural Planning skills taken from the Vo Ag IV curriculum were used to make the next division of study. Six items were used and there were 179 respondents. TABLE LXXXVIII is used to present a summary of responses.

The overall mean for the division on agricultural planning was 3.64 with a standard deviation of 0.66. The obtained mean placed the division in the "high importance" category.

TABLE LXXXIX is used to display a comparison of responses on Agricultural Planning between single teacher and multiple teacher departments. The obtained T-value of 0.52 indicates that no significant differences exist between the two groups.

TABLE LXXXVIII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN AGRICULTURAL PLANNING (VA IV)

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Determine the interprise that will provide the greatest return in the area	1.1	2.2	29.1	39.1	28.5	3.92	H
Outline ways of reducing machinery and equipment costs	1.1	7.3	27.4	49.7	14.5	3.69	H
Determine the capacity of equipment needed for a farm using number of acres cultivated, width of machine,speed of travel, and maintenance and service time	1.1	5.0	33.0	52.0	8.9	3.63	H

TABLE LXXXVII (Continued)

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Calculate the operating and fixed cost for a specific piece of farm machinery	1.7	7.8	29.1	49.2	12.3	3.63	H
Make a family investment plan	1.7	8.4	36.9	41.9	11.2	3.53	H
Discuss the general rules and steps in farm planning	1.1	10.1	39.7	41.9	7.3	3.44	M
Total Group Mean						3.64*	H

* Standard deviation = 0.66

TABLE LXXXIX

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL PLANNING (VAIV)

Single Teacher Dept. (n=66) mean S.D.	Multi Teacher Dept. (n=113) mean S.D.	T - value	probability
3.67	3.62		
0.68	0.65	0.52	0.60

A comparison of mean responses of seven categories of experience levels is displayed in TABLE XC. The F-value of 0.90 showed that significant differences existed among the groups.

TABLE XC

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL PLANNING (VAIV)

Years of Experience							
1-5 (n=35)	6-10 (n=53)	11-15 (n=36)	16-20 (n=23)	21-25 (n=16)	26-30 (n=13)	31+ (n=3)	F
3.78	3.64	3.53	3.66	3.70	3.59	3.00	0.90*

* A difference at the .05 level

In order to locate differences among the seven experience groups, a Duncan's Multiple Range follow-up was applied. The results of that analysis is included in TABLE XCI.

TABLE XCI

RESULTS OF THE DUNCAN'S MULTIPLE RANGE FOR THE MAIN EFFECT YEARS OF EXPERIENCE IN AGRICULTURAL PLANNING (VAIV)

	Years of Experience						
	A1	A5	A4	A2	A6	A3	A7
	1-5	21-25	16-20	6-10	26-30	11-15	31+
	N=35	N=16	N=23	N=53	N=13	N=36	N=3
Mean	3.78	3.70	3.66	3.64	3.59	3.53	3.00

TABLE XCI shows five significant differences exist among the seven experience groups. A study of the graphic lines reveals five sets of groups with significantly different responses. Teachers with thirty-one or more years of teaching differed from all other groups except the one nearest their experience level.

Agricultural Insurance

Agricultural Insurance was the next division studied. Eight items were used and 179 teachers served as respondents. TABLE XCII is used to display a summary of those responses.

The average response for the entire division on Agricultural Insurance was 3.41 which places the division into the "medium importance" category. only two individual competencies received a high importance rating.

A comparison of responses on insurance was made using single and multiple teacher departments as study groups. TABLE XCIII depicts that no significant difference existed between the two groups. The obtained T-value was 0.55.

TABLE XCII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN AGRICULTURAL INSURANCE

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Discuss the kinds of liability insurance	2.8	8.9	39.7	30.7	17.9	3.52	H
Explain Texas Workman's Compensation as it relates to farm employees	3.4	12.3	26.8	44.1	13.4	3.52	H
Differentiate between the types of insurance coverage available for vehicles	3.9	7.3	41.3	32.4	15.1	3.47	M
Describe the differnet types of life insurance policies	5.0	14.0	27.4	38.5	15.1	3.45	M

TABLE XCII (Continued)

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Describe the types of health insurance available	3.4	16.2	33.0	31.3	16.2	3.41	M
Discuss the riders often being a part of property insurance policies	2.8	16.2	33.5	36.3	11.2	3.37	M
Total Group Mean						3.41*	M

* Standard deviation = 0.84

TABLE XCIII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL INSURANCE

Single Teacher Dept. (n=66) mean S.D.	Multi Teacher Dept. (n=113) mean S.D.	T - value	probability
3.45	3.38		
0.78	0.87	0.55	0.58

When responses to items on agricultural insurance were analyzed using years of experience as a variable, no significant differences were found among the seven study groups. TABLE XCIV displays the average responses from each of the seven groups and displays a F-value of 0.82.

TABLE XCIV

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL INSURANCE

Years of Experience							
1-5 (n=35)	6-10 (n=53)	11-15 (n=36)	16-20 (n=23)	21-25 (n=16)	26-30 (n=13)	31+ (n=3)	F
3.51	3.25	3.37	3.64	3.45	3.49	3.00	0.82

Agricultural Programs and Services

Four items were used to study the division on Agricultural Programs and Services. Respondents consisted of 179 teachers. TABLE XCV is used to display a summary of those responses.

TABLE XCV displays an overall group mean for the division as 3.58 which places it in the "highly important" category. None of the four items was ranked any lower than "highly important".

Responses regarding importance of agricultural programs and services were analyzed using single and multiple teacher departments and years of experience as variables. TABLEs XCVI and XCVII display that neither variable produced significant differences in mean responses.

TABLE XCV

LEVELS OF IMPORTANCE FOR COMPETENCIES IN AGRICULTURAL PROGRAMS AND SERVICES

Competency N = 179	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
List the objectives of the ASCS	2.8	5.0	29.6	49.7	12.8	3.65	H
List the objectives of the SCS	2.2	5.0	30.7	50.8	11.2	3.64	H
List the objectives of the Federal Land Bank	3.4	6.1	36.6	42.5	11.7	3.53	H
List the ovjectives of the Farmers Home Administration	2.8	4.5	43.0	38.0	11.7	3.51	H
Total Group Mean						3.58*	H

* Standard deviation = 0.79

TABLE XCVI

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL PROGRAMS AND SERVICES

Single Teacher Dept. (n=66) mean S.D.	Multi Teacher Dept. (n=113) mean S.D.	T - value	probability
3.63	3.56		
0.80	0.79	0.55	0.58

TABLE XCVII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN AGRICULTURAL PROGRAMS AND SERVICES

Years of Experience							
1-5 (n=35)	6-10 (n=53)	11-15 (n=36)	16-20 (n=23)	21-25 (n=16)	26-30 (n=13)	31+ (n=3)	F
3.77	3.56	3.49	3.55	3.53	3.60	3.33	0.48

Findings Concerning Selected Competencies Third and Fourth Year Agricultural Management

The final questionnaire dealt with marketing competencies taken from the Vo Ag III Texas curriculum, marketing competencies from the Vo Ag IV curriculum,and those concerning legal relationships. Teacher respondents totaled 168.

Marketing (VAIII)

Six items were used in the Vo Ag III Marketing division. A summary of responses is given in TABLE XCVIII.

The overall mean for the marketing division was 3.67 with a standard deviation of 0.59. The overall rating fell into the "highly important" category. Only the competency dealing with cooperatives fell into the "medium importance" range.

TABLES XCIX and C show that the variables of type of department (single or multiple teacher) and years of experience had no significant effect on responses for Marketing competencies. The T-value of -1.36 is shown in TABLE XCIX and the F-value of 0.81 is shown in TABLE C.

TABLE XCVIII

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN MARKETING (VA III)

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 168	%	%	%	%	%	$\bar{X}$	
Identify methods of marketing agricultural products	-	-	25.1	50.9	24.0	3.99	H
Discuss factors that affect production cycles and seasonal price variations	-	2.4	28.0	51.2	18.5	3.86	H
Describe marketing functions that occur in marketing agricultural products	-	3.6	32.1	47.6	16.7	3.77	H
Describe the price support programs (target prices, land diversion, set aside, acreage reduction, and loans) for corn and wheat	0.6	12.0	37.7	29.3	20.4	3.57	H

TABLE XCVIII (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Recognize the functions of marketing agencies	-	6.0	44.0	41.7	8.3	3.52	H
Explain the basic principles of operation for cooperatives	1.8	17.4	38.9	33.5	8.4	3.29	M
Total Group Mean						3.67*	H

* Standard deviation = 0.59

TABLE XCIX

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE OF COMPETENCIES IN MARKETING (VAIII)

Single Teacher Dept. (n=66) mean S.D.	Multi Teacher Dept. (n=101) mean S.D.	T - value	probability
3.59 0.57	3.71 0.60	-1.36	0.17

Note: There was one teacher who did not respond to whether they were in single or multi-teacher departments

TABLE C

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN MARKETING (VAIII)

Years of Experience							
1-5 (n=39)	6-10 (n=36)	11-15 (n=31)	16-20 (n=33)	21-25 (n=13)	26-30 (n=9)	31+ (n=7)	F
3.79	3.66	3.56	3.71	3.54	3.72	3.42	0.81

Marketing (VAIV)

Marketing competencies taken from the Vo. Ag IV Texas curriculum were submitted to 168 respondents. TABLE CI gives a summary of those responses.

The overall response for the division on Vo Ag IV Marketing competencies is displayed in TABLE CI to be 3.55 which places the division barely into the "highly important" category. It should be noted that the competency on grading corn had a mean of 2.96 which was relatively low compared with ranking thus far.

The Marketing responses were studied for differences using type of department (single or multiple teacher) and years of experience as variables. TABLE CII and CIII display that neither of the variables caused a significant difference in responses.

TABLE CI

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN MARKETING (VA IV)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Discuss the importance of USDA grades and standards	1.2	2.4	9.6	47.9	38.9	4.21	H
Discuss the selling of livestock on quality, weight, and grade	1.2	0.6	10.7	51.8	35.7	4.20	H
Discuss the preparation of livestock for selling	1.2	2.4	23.4	56.3	16.8	3.85	H
Compare the different livestock markets	0.6	5.4	31.3	43.4	19.3	3.75	H

TABLE CI (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Chart the prices for a specie of livestock over a period of time to show seasonal price variations	-	7.2	34.1	46.7	12.0	3.63	H
Demonstrate the awareness of computer applications in agriculture	3.6	10.2	28.7	37.7	19.8	3.60	H
Operate a computer	8.4	16.2	21.6	22.8	31.1	3.52	H
Explain the use of the futures market in meeting the price objective for feeder cattle	2.4	13.7	34.5	31.5	17.9	3.49	M
List sources of accurate market news	-	10.8	39.5	40.7	9.0	3.47	M

TABLE CI (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Use market news terminolgy	1.8	12.0	41.3	37.7	7.2	3.37	M
Calculate the difference in net returns for moisture variations in grains	2.4	29.3	33.5	33.5	1.2	3.02	M
List alternatives to forward pricing of grains	3.0	26.3	40.1	28.7	1.8	3.00	M
Secure sample and grade corn using USDA standards as a basis	3.6	28.9	41.0	25.3	1.2	2.96	M
Total Group Mean						3.55*	H

* Standard deviation = 0.53

TABLE CII

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN MARKETING (VAIV)

Single Teacher Dept. (n=66) mean S.D.	Multi Teacher Dept. (n=101) mean S.D.	T - value	probability
3.55	3.55		
0.48	0.56	0.08	0.94

TABLE CIII

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN MARKETING (VAIV)

Years of Experience							
1-5 (n=39)	6-10 (n=36)	11-15 (n=31)	16-20 (n=33)	21-25 (n=13)	26-30 (n=9)	31+ (n=7)	F
3.68	3.51	3.48	3.54	3.43	3.56	3.58	0.64

Legal Relationships

The last division in the study was the one dealing with Legal Relationships. Twenty-four items were submitted to 168 respondents. TABLE CIV is used to display a summary of those responses.

The overall importance rating given to the division on Legal Relationships was 3.57 with a standard deviation of 0.60. This mean was sufficient to place the division into the "highly important" category. Only six of the twenty-four competencies received ratings of less than "highly important".

When types of department (single or multiple teacher) and years of experience were used as variables in comparing responses, not significant differences were detected. TABLES CV and CVI give a T-value of -1.30 and a F-value of 0.55. Type of department or years of experience have no significant effect on the degree of importance teachers assign to the legal relationships skills studied.

TABLE CIV

LEVELS OF IMPORTANCE FOR COMPETENCIES
IN LEGAL RELATIONSHIPS

Competency	Percentage of Respones by Category of Importance					Mean	Category
	No Importance	Low Importance	Med Importance	High Importance	Extreme Importance		
N = 168	%	%	%	%	%	$\bar{X}$	
Appraise a tract of land using an appraisal form	5.4	16.7	45.2	28.6	4.2	4.00	H
List the advantages and disadvantages of contract farming	0.6	10.7	36.3	39.3	13.1	3.90	H
Discuss the law regarding handling of estates	1.8	8.4	25.7	45.5	18.6	3.88	H
Discuss the purpose of and improtance of easements	3.0	9.6	38.0	41.0	8.4	3.87	H
Define real property, interstate, and community and separate property	0.6	8.4	41.3	29.3	20.4	3.87	H

TABLE CIV (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Explain the purposes of property appraisal	-	4.2	41.7	41.1	13.1	3.76	H
List the limitations of action for land	0.6	12.1	40.6	39.4	7.3	3.74	H
Discuss factors to consider and procedures for purchasing land	0.6	5.4	23.8	43.5	26.8	3.72	H
Describe the law regarding trespassing	1.2	3.6	31.1	47.9	16.2	3.71	H
Explain the terms assessed value and tax rate and their relationship in property taxes	1.2	7.8	31.1	48.5	11.4	3.64	H

TABLE CIV (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
List the classes of seed and explain the laws regarding labeling of seed	3.0	11.9	39.9	35.7	9.5	3.63	H
List the kinds of deeds and note purposes of each	-	6.6	34.9	38.0	20.5	3.61	H
List advantages of a will	1.2	0.6	23.8	45.8	28.6	3.60	H
Determine the school tax on a tract of land using local values and tax rates	2.4	5.4	32.9	43.7	15.6	3.57	H
List factors affecting property values	-	4.2	31.0	49.4	15.5	3.55	H
Describe the different types of farm leases	-	6.5	22.6	48.2	22.6	3.55	H

TABLE CIV (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Discuss factors to consider in determining basis for sharing costs on leased property	0.6	10.7	32.1	46.4	10.1	3.54	H
Describe the law of adverse possession	7.3	19.4	43.0	25.5	4.8	3.42	M
Discuss boundry lines and fencing rights	0.6	6.6	21.7	47.6	23.5	3.41	M
Explain the procedures for selecting and registering brands and marks	0.6	4.8	21.4	52.4	20.8	3.37	M
Explain procedures used in making property appraisals	0.6	10.8	33.1	43.4	12.0	3.17	M

TABLE CIV (Continued)

Competency N = 168	Percentage of Respones by Category of Importance: No Importance %	Low Importance %	Med Importance %	High Importance %	Extreme Importance %	Mean $\bar{X}$	Category
Define ground-water, recharge water, surface water, percol-ating water, water course, diffused surface water, and ri-parian water rights	2.4	6.0	46.7	32.3	12.6	3.11	M
Determine the location of a piece of property using a Govern-ment Survey system	4.8	16.8	44.3	24.6	9.6	3.10	M
Explain the classes and types of water permits	4.8	16.8	45.5	28.1	4.8	3.01	M
Total Group Mean						3.57*	H

* Standard deviation = 0.60

TABLE CV

COMPARISON OF PERCEPTIONS OF SINGLE AND MULTI TEACHER DEPARTMENTS REGARDING THE IMPORTANCE OF COMPETENCIES IN LEGAL RELATIONSHIPS

Single Teacher Dept. (n=66) mean S.D.	Multi Teacher Dept. (n=113) mean S.D.	T - value	probability
3.50	3.62		
0.59	0.61	-1.30	0.20

TABLE CVI

COMPARISON OF PERCEPTIONS ACCORDING TO YEARS OF EXPERIENCE REGARDING THE IMPORTANCE OF COMPETENCIES IN LEGAL RELATIONSHIPS

Years of Experience							
1-5 (n=39)	6-10 (n=36)	11-15 (n=31)	16-20 (n=33)	21-25 (n=13)	26-30 (n=9)	31+ (n=7)	F
3.57	3.53	3.52	3.64	3.41	3.80	3.68	0.55

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

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

Purpose

The purpose of this study was to determine the perceptions of teachers of vocational agriculture concerning the degree of importance of selected competencies within the curriculum areas of agricultural mechanics and agricultural management.

Need for the Study

It was hoped that information gained from this study would aid the Texas state staff in agricultural education in determining what competencies were needed in the Texas vocational agricultural curriculum in the areas of agricultural mechanics and agricultural management. Also, to refine a methodology so that the other areas in the

vocational agricultural curriculum could be evaluated using the same methodology as this study.

Specific Objectives

The objectives of this study were as follows:

1. To determine the degree of importance assigned by vocational agriculture instructors to the competencies currently included in agricultural mechanics and agricultural management.

2. To compare the perceptions of less experienced teachers to those of more experienced teachers concerning the degree of importance assigned to agricultural mechanics and agricultural management competencies areas.

3. To compare the perceptions of teachers in single-teacher departments with those in multi-teacher departments concerning the importance assigned to agricultural mechanics and agricultural management competencies areas.

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 total number of vocational agriculture teachers in Texas.

2. Develop instruments for collection of data.

3. Revise instruments after analysis of pilot study.

4. Develop a means of dispersing questionnaires.

5. Develop a method for assimilating the collected data.

6. Use appropriate procedures for analyzing the data.

Design and Conduct of the Study

Seven hand delivered questionnaires were utilized to collect data for the study. Each teacher that attended the annual summer meeting of teachers in Dallas was given one of seven randomly assigned questionnaires. Of the approximate thirteen hundred teachers who attended the conference 1236 completed the questionnaires. There are 1495 instructors of vocational agriculture in Texas.

Findings of the Study

Demographic Data Concerning the Teachers Participating in the Study

The 1236 responding teachers were representative of the ten geographical areas in Texas. It was found that 1008, 81.6 percent of teachers teach Vocational Agriculture I, 955, 77.3 percent teach Vocational Agriculture II, 833, 67.4 percent teach Vocational Agriculture III, and 589, 47.7 percent teach Vocational Agriculture IV. The other areas of teaching assignments were also broken down. There were 423 respondents who taught in single teacher departments, and 805 who taught in multiple teacher departments. Eight

TABLE CVII

SUMMARY COMPARISON OF IMPORTANCE RATINGS FOR AREAS
OF AGRICULTURAL MACHANICS INSTRUCTION
FIRST YEAR

Division	Mean Response by Comparison Group			Years of Experience						
	Overall	Single Teacher	Multi Teacher	1-5	6-10	11-15	16-20	21-25	26-30	31+
Shop Orientaiton	4.64(E)	4.69(E)	4.62(E)	4.52(E)	4.67(E)	4.66(E)	4.71(E)	4.69(E)	4.60(E)	4.74(E)
Farm Carpentry	3.59(H)	3.56(H)	3.62(H)	3.65(H)	3.62(H)	3.48(M)	3.68(H)	3.57(H)	3.62(H)	3.44(M)
Cold Metal Work	3.78(H)	3.75(H)	3.80(H)	3.75(H)	3.79(H)	3.74(H)	3.84(H)	3.71(H)	3.98(H)	3.65(H)
Selecting and Applying Paint	3.86(H)	3.83(H)	3.78(H)	3.69(H)#	3.98(H)	3.70(H)	3.76(H)	3.98(H)	4.17(H)	4.20(H)*#
Conditioning Hand Tools	3.33(M)	3.34(M)	3.33(M)	3.34(M)	3.40(M)	3.25(M)	3.40(M)	3.02(M)	3.51(H)	3.16(M)

* ANOVA difference at the .05 level
\# Duncan's Multiple Range shows difference among other years of experience groups

hundred and sixty teachers were on twelve month teaching contract, 314 were on eleven month contracts, and 62 were on ten month contracts. There were 569 respondents who had received the career ladder raise, and 663 who indicated they had not received the raise. The number of years of teaching experience ranged from one to thirty one years plus.

Findings Concerning Selected Competencies in First Year Agricultural Mechanics

The competencies included in this division of the study were: shop orientation, farm carpentry, cold metal work selection and application of paint, and conditioning hand tools. There was a total of 185 teachers who responded to this questionnaire. Fifty six teachers were in single teacher departments and one hundred and twenty five were in multi-teacher department. The years of teaching experience broke down in the following manner: 1 to 5 years, 43 respondents; 6 to 10 years, 53 respondents; 11 to 15 years, 32 respondents; 16 to 20 years, 23 respondents; 21 to 25 years, 14 respondents; 26 to 30 years, 9 respondents; 31 plus years, 11 respondents.

Shop Orientation

In TABLE CVII the data are displaying the over all division mean as being of "high importance". In comparing single teacher with multi teacher department respondents both groups ranked them to be of "extreme importance". In

the seven groups of teaching experience, all groups perceived all divisions as being of "extreme importance".

Farm Carpentry

Again in TABLE CVII, the overall mean is rated to be of "high importance". In comparing single teacher with multi-teacher respondents, both groups ranked them to be of "high importance". In the seven groups of teaching experience, groups 11 to 15 and 31 plus ranked the competencies as "medium importance", the other five groups ranked them as "high importance".

Cold Metal Work

TABLE CVII presents the overall mean as being of "high importance". Comparing single teacher with multi-teacher respondents, both groups ranked them to be of "high importance". The seven groups of teaching experience, all divisions as being of "high importance".

Selecting and Applying Paint

TABLE CVII presents the overall mean as being of "high importance". In comparing single teacher with multi teacher respondents, both groups ranked them to be of "high importance". All seven groups of teaching experience ranked all competencies as being of "high importance", even though there was statistical differences found among the groups.

Conditioning Hand Tools

TABLE CVII illustrates the overall mean as being of "medium importance". In comparing single teacher and multi-teacher departments, both groups ranked the competencies as being of "medium importance". In the years of teaching experience the group with 26 to 30 years of experience ranked the competencies as being of "high importance", the other six groups ranked them as being of "medium importance".

Second Year

The competency divisions in this study were: proper use of power tools, hot metal work and concrete. There was a total of 177 teachers who responded to this questionnaire. Fifty seven teachers were in single teacher departments and one hundred and eighteen were in multi-teacher departments. The years of teaching experience broke down in the following manner: 1 to 5 years, 56 respondents; 6 to 10 years, 51 respondents; 11 to 15 years, 34 respondents; 16 to 20 years, 18 respondents, 21 to 25 years, 8 respondents, 26 to 30 years, 4 respondents; 31 plus years, 6 respondents.

Proper Use of Power Tools

TABLE CVIII indicates the overall mean as being of "high importance". Comparing single teacher departments with multi-teacher respondents, both groups ranked them of "high importance". All seven groups of years of teaching

TABLE CVIII

SUMMARY COMPARISON OF IMPORTANCE RATINGS FOR AREAS
OF AGRICULTURAL MACHANICS INSTRUCTION
SECOND YEAR

Division	Mean Response by Comparison Group			Years of Experience						
	Overall	Single Teacher	Multi Teacher	1-5	6-10	11-15	16-20	21-25	26-30	31+
Use of Power Tools	3.78(H)	3.82(H)	3.89(H)	3.90(H)	3.83(H)	3.87(H)	3.92(H)	3.80(H)	3.93(H)	3.85(H)
Hot Metal Work	4.12(H)	4.00(H)	4.17(H)**	4.14(H)	4.10(H)	4.13(H)	4.13(H)	4.14(H)	4.02(H)	4.16(H)
Concrete Work	3.92(H)	3.86(H)	3.93(H)	3.95(H)	3.90(H)	3.91(H)	4.06(H)	3.78(H)	3.81(H)	3.64(H)

** T-Test differnce at the .05 level

experience ranked the competencies as being of "high importance".

Hot Metal Work

TABLE CVIII presents data which depicts the overall mean as being of "high importance". Comparing single teacher departments with multi-teacher respondents, both groups perceived the competencies as being of "high importance", even though there was significant statistical difference at the .05 level. All seven groups of years of teaching experience ranked the competencies as being of "high importance".

Concrete Work

TABLE CVIII indicates the overall mean as being of "high importance". In comparison between single teacher and multi-teacher department respondents, both ranked the competencies as being of "high importance". All seven groups of years of teaching experience ranked the competencies as being of "high importance".

Third Year

The competency divisions in this study were: farm electricity, agricultural power/small gas engines, tractor maintenance, water supply and sanitation, and use of farm level. There was a total of 183 teachers who responded to this questionnaire. Sixty four teachers were in single

teacher departments and one hundred and nineteen were in multi-teacher departments. The years of teaching experience broke down in the following manner; 1 to 5 years, 41 respondents; 6 to 10 years, 52 respondents, 11 to 15 years, 35 respondents; 16 to 20 years, 30 respondents; 21 to 25 years, 9 respondents; 26 to 30 years, 9 respondents; 31 plus years, 8 respondents.

Farm Electricity

TABLE CIX portrays the overall mean as being of "high importance". In comparing single teacher department respondents with those in multi-teacher departments, both groups perceived the competencies to be of "high importance". The first six groups of years of teaching experience ranked the competencies as being of "high importance". The group with 31 plus years ranked the competencies as being of "medium importance". There was significant statistical differences found among those groups at the .05 level.

Agricultural Power/Small Gas Engines

TABLE CIX illustrates the overall mean as being of "high importance". Both single teacher and multi-teacher department respondent groups ranked the competencies as being of "high importance", even though there was a significant statistical difference between the two groups at

TABLE CIX

SUMMARY COMPARISON OF IMPORTANCE RATINGS FOR AREAS
OF AGRICULTURAL MECHANICS INSTRUCTION
THIRD YEAR

Division	Mean Response by Comparison Group			Years of Experience						
	Overall	Single Teacher	Multi Teacher	1-5	6-10	11-15	16-20	21-25	26-30	31+
Farm Electricity	3.77(H)	3.76(H)	3.78(H)	3.73(H)	3.88(H)#	3.63(H)	3.83(H)#	3.97(H)#	3.91(H)#	3.37(H)*#
Small Gas Engines	3.87(H)	3.74(H)	3.95(H)**	3.96(H)	3.89(H)	3.73(H)	3.95(H)	4.21(H)#	3.69(H)	3.50(H)*#
Tractor Maintenance	3.93(H)	3.94(H)	3.93(H)	3.90(H)	3.83(H)	3.87(H)	3.92(H)	3.80(H)	3.93(H)	3.85(H)
Water Supply & Sanitation	3.46(M)	3.49(M)	3.45(M)	3.71(H)#	3.42(M)	3.39(M)	3.43(M)	3.32(M)	3.42(M)	3.10(M)*#
Use of Farm Level	3.78(H)	3.76(H)	3.80(H)	3.84(H)#	3.79(H)	3.76(H)	3.95(H)#	3.58(H)	3.76(H)	3.18(M)*#

* ANOVA difference at the .05 level
** T-Test difference at the .05 level
\# Duncan's Multiple Range shows difference among other years of experience groups

the .05 level. Also, all seven groups of years of teaching experience ranked the competencies as being of "high importance". There was also significant statistical differences found among the seven groups at the .05 level.

Tractor Maintenance

TABLE CIX indicates the overall mean as being of "high importance". In both single teacher and multi-teacher departments respondents perceived the competencies to be of "high importance". Also, all seven groups of years of teaching experience ranked the competencies as being of "high importance".

Farm Water and Sanitation

TABLE CIX indicates the overall mean as being of "medium importance". In analyzing single teacher departments compared to multi-teacher departments responses, they both ranked the competencies as being of "medium importance". In the seven groups representing years of experience all groups ranked the competencies as being of "medium importance" except for the first group (1 to 5) years of experience and they ranked the competencies as being of "high importance". There was significant statistical differences found among the groups at the .05 level.

Use of the Farm Level

TABLE CIX illustrates the overall mean as being of "high importance". In comparing single teacher and multi-teacher departments respondents both groups ranked the competencies as being of "high importance". In the seven groups representing years of teaching experience the first six groups perceived the competencies as being of "high importance", and the group 31 plus years perceived the competencies as being of "medium importance". There was significant statistical differences found among the groups at the .05 level.

Fourth Year

The competency divisions in this study were: farm and ranch building construction, truck and tractor maintenance, farm machinery, advanced oxyacetylene welding and bronzing, concrete masonry, and farm fencing. There was a total of 168 teachers who responded to this questionnaire. Forty nine teachers were in single teacher departments and one hundred and nineteen were in multi-teacher department. The years of teaching experience broke down in the following manner: 1 to 5 years, 43 respondents; 6 to 10 years, 52 respondents; 11 to 15 years, 28 respondents; 16 to 20 years, 18 respondents, 21 to 25 years, 15 respondents; 26 to 30 years, 8 respondents; 31 plus years, 4 respondents.

Farm and Ranch Building Construction

TABLE CX indicates the overall mean as being of "high importance". In comparing single teacher with multi-teacher departments responses, both groups ranked the competencies as being of "high importance". In the years of teaching experience all groups ranked the competencies as being "high" except for the 31 plus group, and they ranked the competencies as being of "medium importance". There was significant statistical differences found among these groups at the .05 level.

Truck and Tractor Maintenance

TABLE CX portrays the overall mean as being of "high importance". In both variables studied, single teacher and multi-teacher departments, as well as years of teaching experience all ranked the competencies as being of "high importance".

Farm Machinery

TABLE CX indicates in the overall mean as being of "high importance". Again in both variables studied, single teacher and multi-teacher departments, as well as years of teaching experience all ranked the competencies as being of "high importance".

TABLE CX

SUMMARY COMPARISON OF IMPORTANCE RATINGS FOR AREAS
OF AGRICULTURAL MACHANICS INSTRUCTION
FOURTH YEAR

Division	Mean Response by Comparison Group			Years of Experience						
	Overall	Single Teacher	Multi Teacher	1-5	6-10	11-15	16-20	21-25	26-30	31+
Farm & Ranch Building Construction	3.78(H)	3.73(H)	3.81(H)	3.84(H)#	3.79(H)#	3.76(H)#	3.88(H)#	3.91(H)#	3.69(H)	3.21(M)*#
Truck & Tractor Maintenance	3.50(H)	3.50(H)	3.50(H)	3.63(H)	3.34(M)	3.56(H)	3.65(H)	3.56(H)	3.50(H)	3.65(H)
Farm Machinery	3.76(H)	3.82(H)	3.73(H)	3.89(H)	3.64(H)	3.68(H)	3.80(H)	4.07(H)	3.64(H)	4.00(H)
Advanced Oxyacetylene Welding & Brazing	3.68(H)	3.70(H)	3.67(H)	3.68(H)	3.67(H)	3.56(H)	3.85(H)	3.92(H)	3.60(H)	3.85(H)
Concrete Masonry	3.42(M)	3.51(H)	3.38(M)	3.59(H)	3.35(M)	3.26(M)	3.48(M)	3.75(H)#	3.13(M)#	3.08(M)*
Farm Fencing	3.89(H)	3.81(H)	3.92(H)	4.07(H)	3.81(H)	3.80(H)	3.90(H)	4.24(H)#	3.43(M)#	3.71(H)*#

* ANOVA difference at the .05 level
\# Duncan's Multiple Range shows difference among other years of experience groups

Advanced Oxyacetylene Welding and Brazing

TABLE CX portrays the overall mean as being of "high importance". In comparing single teacher with multi-teacher department responses, both groups ranked the competencies as being of "high importance". All seven groups of years of teaching experience ranked the competencies as being of "high importance".

Concrete Masonry

TABLE CX depicts the overall mean as being of "medium importance". In comparing single teacher and multi-teacher departments, single teachers perceived the competencies as being of "high importance", multi-teacher departments perceived them as being of "medium importance". In comparing the seven groups of teaching experience, groups with 1 to 5, and 21 to 25 ranked the competencies as being of "high importance", while the other five groups ranked them as "medium importance". There was significant statistical differences found among these groups.

Farm Fencing

TABLE CX illustrates the overall mean as being of "high importance". In single teacher and multi-teacher departments, both ranked the competencies as being of "high importance". The six groups of years of experience ranked the competencies as being of "high importance", the group 21 to 25 years ranked them as being of "medium importance".

There was significant statistical differences found among these groups at the .05 level.

Findings Concerning Selected Competencies in Third Year Agricultural Management

The competencies divisions in this study were: introduction of agricultural management, principles of economics, agricultural finance, and agricultural records. There was a total of 175 teachers who responded to the questionnaire. Sixty five teachers were in single teacher departments and one hundred and ten were in multi-teacher departments. The years of teaching experience broke down in the following manner: 1 to 5 years, 50 respondents; 6 to 10 years, 41 respondents, 11 to 15 years, 28 respondents; 16 to 20 years, 27 respondents; 21 to 25 years, 15 respondents; 26 to 30 years, 8 respondents; 31 plus years, 6 respondents.

Introduction to Agricultural Management

TABLE CXI indicates the overall mean as being of "high importance". In comparing single teacher with multi-teacher departments responses, both groups ranked the competencies as being of "high importance". In the seven groups representing the years of teaching experience all ranked the competencies as being of "high importance" except the group 21 to 25 years, they ranked the competencies as being of "medium importance". There was significant statistical differences found among these groups at the .05 level.

TABLE CXI

SUMMARY COMPARISON OF IMPORTANCE RATINGS FOR AREAS
OF AGRICULTURAL MANAGEMENT INSTRUCTION
THIRD YEAR

Division	Mean Response by Comparison Group			Years of Experience						
	Overall	Single Teacher	Multi Teacher	1-5	6-10	11-15	16-20	21-25	26-30	31+
Introduction to Agricultural Management	3.75(H)	3.72(H)	3.77(H)	3.70(H)	3.87(H)#	4.00(H)#	3.72(H)	3.23(M)#	3.84(H)#	3.63(H)*
Principles of Economics	3.71(H)	3.69(H)	3.71(H)	3.63(H)	3.77(H)	3.76(H)	3.83(H)	3.35(M)	3.75(H)	3.92(H)
Agricultural Finance	3.85(H)	3.90(H)	3.82(H)	3.77(H)	3.90(H)	4.02(H)	3.78(H)	3.66(H)	4.01(H)	3.91(H)
Agricultural Records	3.63(H)	3.62(H)	3.63(H)	3.66(H)	3.73(H)	3.82(H)	3.38(M)	3.31(M)	3.69(H)	3.60(H)

* ANOVA difference at the .05 level
\# Duncan's Multiple Range shows difference among other years of experience groups

Principles of Economics

TABLE CXI provides data which indicates the overall mean as being of "high importance". Both single and multi-teacher respondents ranked all competencies as being of "high importance". In the seven groups representing years of teaching experience all groups ranked the competencies as being of "high importance" except the group with 21 to 25 years, they perceived the competencies as being of "medium importance".

Agricultural Finance

TABLE CXI illustrates the overall mean as being of "high importance". In comparing single teacher and multi-teacher groups, both groups ranked the competencies as being of "high importance". In the seven groups of teaching experience all groups ranked the competencies as being of "high importance".

Agricultural Records

TABLE CXI depicts the overall mean as being of "high importance". Comparing single and multi-teacher department responses, they both ranked the competencies as being of "high importance". In the groups representing the years of teaching experience all groups ranked the competencies as being of "high importance", except for the groups 16 to 20 years and 21 to 25 years who perceived them as being of "medium importance".

Third and Fourth Year

The competency divisions in this study were: agricultural planning (V.A. III), agricultural planning (V.A. IV), agricultural insurance, and agricultural programs and services. There was a total of 179 teachers who responded to the questionnaire. Sixty six teachers were in single teacher departments and one hundred and thirteen were in multi-teacher departments. The years of teaching experience broke down in the following manner: 1 to 5 years, 35 respondents, 6 to 10 years, 53 respondents; 11 to 15 years, 36 respondents; 16 to 20 years, 23 respondents; 21 to 25 years, 16 respondents; 26 to 30 years, 13 respondents; 31 plus years, 3 respondents.

Agricultural Planning (V.A. III)

TABLE CXII illustrates the overall mean as being of "medium importance". In both single and multi-teacher department responses, both groups ranked the competencies as being of "medium importance". All seven of the groups representing years of teaching experience ranked the competencies as being of "medium importance".

Agricultural Planning (V.A. IV)

TABLE CXII indicates the overall mean as being of "high importance". In both variables studied, single and multi-teacher departments, and years of teaching experience all groups ranked the competencies as being of "high

TABLE CXII

SUMMARY COMPARISON OF IMPORTANCE RATINGS FOR AREAS
OF AGRICULTURAL MANAGEMENT INSTRUCTION
THIRD AND FORTH YEAR

Division	Mean Response by Comparison Group			Years of Experience						
	Overall	Single Teacher	Multi Teacher	1-5	6-10	11-15	16-20	21-25	26-30	31+
Agricultural Planning (V A III)	3.27(M)	3.29(M)	3.26(M)	3.43(M)	3.26(M)	3.11(M)	3.26(M)	3.24(M)	3.47(M)	2.92(M)
Agricultural Planning (V A IV)	3.64(H)	3.67(H)	3.62(H)	3.78(H)#	3.64(H)#	3.53(H)	3.66(H)#	3.70(H)#	3.59(H)#	3.00(M)*#
Agricultural Insurance	3.41(M)	3.45(M)	3.38(M)	3.51(H)	3.25(M)	3.37(M)	3.64(H)	3.45(M)	3.49(M)	3.00(M)
Agricultural Programs and Services	3.58(H)	3.63(H)	3.56(H)	3.77(H)	3.56(H)	3.49(M)	3.55(H)	3.53(H)	3.60(H)	3.33(M)

* ANOVA difference at the .05 level
\# Duncan's Multiple Range shows difference among other years of experience groups

importance". There were significant statistical differences found among the seven groups of teaching experience at the .05 level.

Agricultural Insurance

TABLE CXII portrays the overall mean as being of "medium importance". In comparing single and multi-teacher departments, both groups ranked the competencies as being of "medium importance". In comparing the seven groups of years of teaching experience the groups with 1 to 5 years and 16 to 20 years ranked the competencies as being of "high importance", and the other groups ranked them as being of "medium importance".

Agricultural Programs and Services

TABLE CXII indicates the overall mean as being of "high importance". In single and multi-teacher departments, both groups ranked the competencies as being of "high importance". In comparing the seven groups of years of teaching experience all groups ranked the competencies as being of "high importance", except for the groups with 11 to 15 years and 31 plus years who ranked them as being of "medium importance".

Third and Fourth Year

The competency divisions in this study were: marketing V.A.III), marketing (V.A.IV), and legal relationships.

There was a total of 168 teachers who responded to the questionnaire. Sixty six teachers were in single teacher departments, and one hundred and one were in multi-teacher departments. The years of teaching experience broke down in the following manner: 1 to 5 years, 39 respondents, 6 to 10 years, 36 respondents; 11 to 15 years, 31 respondents; 16 to 20 years, 33 respondents; 21 to 25 years, 13 years; 26 to 30 years, 9 respondents; 31 plus years, 7 respondents.

Marketing (V.A.III)

TABLE CXIII illustrates the overall mean as being of "high importance". In comparing single and multi-teacher departments, they both perceived the competencies as being of "high importance". In the seven groups representing the years of teaching experience the first six groups ranked the competencies as being of "high importance", and the group with 31 plus years ranked them as "medium importance".

Marketing (V.A.IV)

TABLE CXIII portrays the overall mean as being of "high importance". In single and multi-teacher departments, both ranked the competencies as being of "high importance". In the groups representing years of teaching experience all groups ranked the competencies as being of "high importance" except for the groups 11 to 15 years and 21 to 25 years who ranked the competencies as being of "medium importance".

TABLE CXIII

SUMMARY COMPARISON OF IMPORTANCE RATINGS FOR AREAS
OF AGRICULTURAL MANAGEMENT INSTRUCTION
THIRD AND FORTH YEAR

Division	Mean Response by Comparison Group			Years of Experience						
	Overall	Single Teacher	Multi Teacher	1-5	6-10	11-15	16-20	21-25	26-30	31+
Marketing (V A III)	3.67(H)	3.59(H)	3.71(H)	3.79(H)	3.66(H)	3.56(H)	3.71(H)	3.54(H)	3.72(H)	3.42(M)
Marketing (V A IV)	3.55(H)	3.55(H)	3.55(H)	3.68(H)	3.51(H)	3.48(M)	3.54(H)	3.43(M)	3.56(H)	3.58(H)
Legal Relationships	3.57(H)	3.50(H)	3.62(H)	3.57(H)	3.53(H)	3.52(H)	3.64(H)	3.41(M)	3.80(H)	3.68(H)

Legal Relationships

TABLE CXIII illustrates the overall mean as being of "high importance". In single and multi-teacher departments, both ranked the competencies as being of "high importance". In the groups representing years of teaching experience all groups ranked the competencies as being of "high importance" except for the group 21 to 25 years who ranked the competencies as being of "medium importance."

Conclusions

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

1. Based on the methodology and results of the responses to the demographics of the questionnaires, it would appear that the ten geographical areas in Texas were well represented in the study.

2. Based upon the findings of this study it was concluded that some of the teachers have had to start teaching other non-agriculture courses and no longer have the extra periods for planning and supervising occupational experience programs (SOEP's).

3. It was concluded that over one-half of the teachers had received the career ladder raise, however it should be noted that many young teachers were not eligible because of years of experience.

4. As a result of House Bill 72, approximately one-

third of the teacher's contracts were cut back to ten or eleven months.

5. Teachers in general perceived the agricultural mechanics and agricultural management competencies are primarily of high importance.

6. A majority of the teachers who participated in the study were from multiple teacher departments. Both multiple and single teacher department teachers perceived both the agricultural mechanics and agricultural management competencies as being of high importance.

7. The range of years of teaching experience ranged from 1 to 43 years of experience, with the mean years of experience being 12.0 years. All seven groups of years teaching experience perceived both agricultural mechanics and agricultural management competencies as being of high importance.

8. It was concluded that significant differences were determined in multiple and single teacher departments, they were in the divisions of: Hot Metal Work, and Agricultural Power/Small Gas Engines. Even though significant differences were found, it was concluded from the findings that no division was found to be of low or no importance.

9. It was concluded that significant differences were determined in years of teaching experience groups, they were in the divisions of: Selecting and Applying Paint, Farm Electricity, Agricultural Power/Small Gas Engines, Farm Water Supply and Sanitation, Farm Level, Farm and Ranch

Building Construction, Concrete Masonry, Farm Fencing, Introduction to Agricultural Management, and Agricultural Planning (V.A. IV).

Even though significant differences were found, it was concluded from the findings that no division was found to be of low or no importance.

10. The majority of the vocational agricultural teachers in Texas perceived the competencies in agricultural mechanics and agricultural management to be of importance to their program.

11. Teachers perceived the importance levels of agricultural mechanics and agricultural management areas differently. As a whole, teachers ranked competencies within the agricultural mechanics area higher than competencies within the agricultural management area.

12. It would appear that teachers' perceptions concerning safety as an essential competency were considered of extreme importance.

Recommendations

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

Recommendations to the Study

1. It is recommended that the data in this study be evaluated on a geographical area basis. It is further recommended that area analysis be provided to teachers,

state staff, and educational training institutions so that program adaptations can be made on the basis of the analysis of this data.

2. Based upon the findings and conclusions of this study it is recommended that the agricultural mechanics and agricultural management competencies be evaluated at the state level for inclusion or elimination of specific competencies in each program area. It is further recommended that the addition or deletion to the areas of agricultural mechanics or agricultural management be based upon the perceptions of the teachers to the importance of the competencies. If competencies are considered for deletion they should be deleted from the lowest levels of importance.

Recommendations to the Methodology

1. It is recommended that other studies provide for follow-up information on non-respondents.

2. It is recommended in the methodology that was outlined and defined in this study be utilized in other studies investigating other competency areas so that comparisons can be made among studies.

Recommendation for Future Studies

1. It is recommended that a study be conducted to determine the relative time spent performing the

competencies perceived as important in the areas of agricultural mechanics and agricultural management.

2. It is recommended that future studies be conducted to determine the perceived importance of competencies in other divisions in the Texas Agricultural Science Curriculum.

3. It is recommended that a comparative study be done using the perceptions of teachers, and involving occupations or industries perceptions designated as agricultural mechanics and agricultural management occupations be evaluated and compared.

It was the desire of the researcher that this study assist the agricultural education Texas state staff in evaluating competencies needed in the areas of agricultural mechanics and agricultural management. It was also a desire to establish a methodology which could be used in future studies concerning student competencies in the Texas vocational agriculture curriculum.

SELECTED BIBLIOGRAPHY

Amberson, M. "The Competency-Based Core Curriculum: Innnovative and Accountable." The Agricultural Education Magazine. Vol. 52, No. 10 (April, 1980), 4-5.

Blair, W. H., R. L. Cross, D. D. Ingold, C. P. Whitman. SAS Users Guide. 1979 Edition. North Carolina: SAS Institute Inc., 1979.

Borden, Robert B. "A State Advisory Council Looks at Curiculum." Journal of the American Vocational Association. Vol 60, No.2 (March, 1985), 33-35.

Bounds, W. G., Jr., W. H. Cormier, S. W. Huck. Reading Statistics and Research. New York, New York: Harper and Row, Publishers, 1974.

Christiansen, J. E. "What Is A Competency-Based Core Curiculum In Vocational Agriculture?" The Agriculutural Education Magazine. Vol. 52, No. 10 (April, 1980), 6-7, 14.

Craik, M. B. "Writing Objectives for Progrmmed Instruction". Behavioral Objectives in Curriculum Development. Englewood cliffs, New Jersey: Educational Technology Publications, 1971.

Eudy, Jay. Personal Interview. Austin, Texas, March 14, 1986.

Knotts, C. D. "Agricultural mechanical skills needed by farmers in Texas" (Unpub. Ph.D. disertation, Texas A&M University, 1970).

Massey, Harold, E. "Selected Provisions of the Exact Law, House Bill 72." Tassp Legislative Newsletter. (July 1984).

McCormick, F. G. "Implementing A Competency-Based Curriculum." The Agricultural Education Magazine. Vol. 52, No. 10 (April, 1980), 8-10.

Rawls, B. F. "Facing a Decade of Change." The Agricultural Education Magazine. Vol. 52, No. 10 (April, 1980), 5-6.

Texas Education Agency. Basic Curriculum For Agricultural Sciences in Texas. Austin, Texas: Texas Education Agency, 1986.

Texas Education Agency. Basic Curriculum For Vocational Agriculture in Texas Production Agriculture (third draft). Austin, Texas: Texas Education Agency, March, 1968.

Texas Education Agency. Competency Profile VAI-VAIV. Austin, Texas: Texas Education Agency, 1984.

Texas Education Agency. Directory of Vocational Agriculture Teachers in Texas. Austin, Texas: Texas Education Agency, 1985.

Texas Education Agency. Undergraduate Catalog. College Station, Texas: Texas A&M University, 1987.

Tyler, R. W. Basic Princples of Curriculum and Instruction. Chicago, Illinois: University of Chicago, 1967.

U. S. Congress. Public Law 88-210, The Vocational Education Act of 1963. Washington, D. C.: U. S. Government Printing Office, 1963.

U. S. Congress. Public Law 90-576, The Vocational Education Amendments of 1968. Washington, D. C.: U. S. Government Printing Office, 1968.

Weber, W. A., J. M. Cooper, W. R. Houston. A Guide to Competency Based Teacher Education. Westfield, Texas: Competency Based Instructional System, 1973.

APPENDIXES

APPENDIX A

SAMPLE OF TEACHER QUESTIONNAIRES

Texas Education Agency
1701 NORTH CONGRESS AVENUE AUSTIN, TEXAS 78701-1494 (512) 463-9734

Vocational Agriculture Teacher,

We are attempting to refine our list of essential elements in production agriculture. Please complete this questionnaire before you leave here today. Just leave the completed form in your chair before leaving. There are seven different questionnaires in the areas of agricultural mechanics and agricultural management. You are being asked to respond to one of them. I solicit your honest reactions to the degree of importance on the selected essential elements.

Thank you for your help.

Sincerely,

Jay L. Eudy

Jay L.Eudy, Director
Agricultural Education

AREA IN WHICH YOU TEACH (CIRCLE) I II III IV V VI VII VIII IX X

SUBJECTS TAUGHT: (CHECK ALL THAT APPLY)

VO AG I _____ PRE-LAB _____ TYPE _____

II _____ CO-OP _____

III _____ PRE-VOC _____

IV _____ OTHER (PLEASE LIST) _____

NUMBER OF YEARS OF EXPERIENCE YOU HAVE TEACHING VO AG _____

NUMBER OF TEACHERS IN YOUR PRESENT VO AG DEPARTMENT _____

LENGTH OF YOUR CURRENT CONTRACT (CIRCLE) 10 MO. 11 MO. 12 MO.

DID YOU RECEIVE A CAREER LADDER PAY RAISE? YES NO

(QUESTIONNAIRE BEGINS ON BACK)

INSTRUCTIONS: Circle the degree of importance as an essential element for each of these competencies. In other words, how important is the learning of this competency to the success of production agriculture students. Use the following rating scale.

1 = NO IMPORTANCE
2 = LOW IMPORTANCE
3 = MEDIUM IMPORTANCE
4 = HIGH IMPORTANCE
5 = EXTREME IMPORTANCE

AGRICULTURAL MECHANICS	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

A. Shop Orientation

1.	Explain the importance of agricultural mechanics.	1 2 3 4 5
2.	Follow rules and regulations.	1 2 3 4 5
3.	Demonstrate shop safety practices.	1 2 3 4 5
4.	Identify shop safety practices.	1 2 3 4 5
5.	Maintain safe shop.	1 2 3 4 5

B. Farm Carpentry

1.	Select nail hammers.	1 2 3 4 5
2.	Identify parts and types of nail hammers.	1 2 3 4 5
3.	Use nail hammer.	1 2 3 4 5
4.	Select hand planes.	1 2 3 4 5
5.	Identify parts and types of hand planes.	1 2 3 4 5
6.	Use hand plane.	1 2 3 4 5

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		1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE				
7.	Select hand saw.	1	2	3	4	5
8.	Identify parts and types of hand saws.	1	2	3	4	5
9.	Use hand saw.	1	2	3	4	5
10.	Select wood chisels.	1	2	3	4	5
11.	Identify parts and types of wood chisels.	1	2	3	4	5
12.	Select brace and bit.	1	2	3	4	5
13.	Identify parts of brace and types of bits.	1	2	3	4	5
14.	Use brace and bit.	1	2	3	4	5
15.	Select hand drill.	1	2	3	4	5
16.	Identify parts and types of hand drills.	1	2	3	4	5
17.	Use hand drill.	1	2	3	4	5
18.	Select screwdriver.	1	2	3	4	5
19.	Identify parts and types of screwdrivers.	1	2	3	4	5
20.	Use screwdriver.	1	2	3	4	5
21.	Identify types of fasteners.	1	2	3	4	5
22.	Select and use appropriate fasteners.	1	2	3	4	5
23.	Identify classes and grades of lumber.	1	2	3	4	5
24.	Select lumber for a job.	1	2	3	4	5
25.	Figure bill of materials.	1	2	3	4	5
26.	Select measuring and marking devices.	1	2	3	4	5
27.	Identify types of measuring and marking devices.	1	2	3	4	5
28.	Use measuring and marking devices.	1	2	3	4	5
29.	Use wood chisels.	1	2	3	4	5

	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE					
C.	Cold Metal Work					
1.	Identify common metals and their properties.	1	2	3	4	5
2.	Cut with hacksaw.	1	2	3	4	5
3.	Cut with cold chisel.	1	2	3	4	5
4.	Use files.	1	2	3	4	5
5.	Bend and shape metal.	1	2	3	4	5
6.	Drill holes.	1	2	3	4	5
7.	Cut thread with tap and die.	1	2	3	4	5
8.	Install screws and bolts.	1	2	3	4	5
9.	Install rivets.	1	2	3	4	5
10.	Remove broken bolts or studs.	1	2	3	4	5
D.	Selecting and Applying Paint					
1.	Select paint and preservatives.	1	2	3	4	5
2.	Prepare wood surface for painting.	1	2	3	4	5
3.	Prepare metal surface for painting.	1	2	3	4	5
4.	Compute area for applying paint.	1	3	3	4	5
E.	Conditioning Hand Tools					
1.	Condition and sharpen a plane iron.	1	2	3	4	5
2.	Condition and sharpen a wood chisel.	1	2	3	4	5
3.	Reshape, recondition, and resharpen bits.	1	2	3	4	5
4.	Reshape a screwdriver.	1	2	3	4	5
5.	Reshape and recondition a cold chisel.	1	2	3	4	5

INSTRUCTIONS: Circle the degree of importance as an essential element for each of these competencies. In other words, how important is the learning of this competency to the success of your production agriculture students. Use the following rating scale.

1 = NO IMPORTANCE
2 = LOW IMPORTANCE
3 = MEDIUM IMPORTANCE
4 = HIGH IMPORTANCE
5 = EXTREME IMPORTANCE

AGRICULTURAL MECHANICS 1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

A. Proper Use of Power Tools

1.	Practice safety in the operation of power tools and equipment.	1	2	3	4	5
2.	Identify types and parts of circular saws.	1	2	3	4	5
3.	Operate bench and circular saws.	1	2	3	4	5
4.	Make special cuts.	1	2	3	4	5
5.	Identify the parts of a drill press.	1	2	3	4	5
6.	Identify the types of bits and drills.	1	2	3	4	5
7.	Operate a drill press.	1	2	3	4	5
8.	Identify portable electric saw parts.	1	2	3	4	5
9.	Operate a portable electric saw.	1	2	3	4	5
10.	Identify the parts of a grinder.	1	2	3	4	5
11.	Dress and true a grinding wheel.	1	2	3	4	5
12.	Operate and use a grinder.	1	2	3	4	5
13.	Identify the types of metal cutting power saws.	1	2	3	4	5
14.	Operate a power metal saw.	1	2	3	4	5
15.	Identify the parts of a sabre saw.	1	2	3	4	5
16.	Operate a sabre saw.	1	2	3	4	5
17.	Identify saw blade types and uses.	1	2	3	4	5

		1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE
B.	Hot Metal Work	
1.	Practice safety in the operation of oxyacetylene equipment.	1 2 3 4 5
2.	Turn on and shut off equipment.	1 2 3 4 5
3.	Check for leaks and change cylinders.	1 2 3 4 5
4.	Adjust pressure regulators.	1 2 3 4 5
5.	Select and clean tips.	1 2 3 4 5
6.	Light and adjust flame.	1 2 3 4 5
7.	Cut sheet metal.	1 2 3 4 5
8.	Cut thick metal.	1 2 3 4 5
9.	Run bead with rod.	1 2 3 4 5
10.	Weld in flat position.	1 2 3 4 5
11.	Weld in vertical, horizontal, and overhead positions.	1 2 3 4 5
12.	Braze weld.	1 2 3 4 5
13.	Make butt, lap, and tee welds.	1 2 3 4 5
14.	Make corner weld without filler rod.	1 2 3 4 5
15.	Apply hard surfacing material.	1 2 3 4 5
16.	Practice safety in arc welding.	1 2 3 4 5
17.	Operate AC and DC arc welders.	1 2 3 4 5
18.	Select electrodes.	1 2 3 4 5
19.	Set amperage and polarity.	1 2 3 4 5
20.	Strike an arc.	1 2 3 4 5
21.	Prepare metal for welding.	1 2 3 4 5
22.	Run beads in flat position.	1 2 3 4 5

		1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE
23.	Make a pad.	1 2 3 4 5
24.	Weld but, lap, and tee joints.	1 2 3 4 5
25.	Weld cast iron.	1 2 3 4 5
26.	Weld sheet metal.	1 2 3 4 5
27.	Hardsurface an implement.	1 2 3 4 5
28.	Punch holes and cut with arc welder.	1 2 3 4 5
29.	Identify safety procedures for TIG and MIG welding.	1 2 3 4 5
30.	Operate TIG welder.	1 2 3 4 5
31.	Operate MIG welder.	1 2 3 4 5

C. Concrete

1.	Calculate amount of concrete needed.	1 2 3 4 5
2.	Determine amounts of materials.	1 2 3 4 5
3.	Construct and reinforce concrete forms.	1 2 3 4 5
4.	Mix, place, finish, and cure concrete.	1 2 3 4 5

INSTRUCTIONS: Circle the degree of importance as an essential element for each of these competencies. In other words, how important is the learning of this competency to the success of production agriculture students. Use the following rating scale.

1 = NO IMPORTANCE
2 = LOW IMPORTANCE
3 = MEDIUM IMPORTANCE
4 = HIGH IMPORTANCE
5 = EXTREME IMPORTANCE

AGRICULTURAL MECHANICS	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

A. Farm Electricity

1.	Explain the importance of electrical safety.	1	2	3	4	5
2.	Define electrical terms.	1	2	3	4	5
3.	Compare electricity to alternate energy sources.	1	2	3	4	5
4.	Estimate electrical energy use and cost.	1	2	3	4	5
5.	Diagram 120 volt and 240 volt circuits.	1	2	3	4	5
6.	Use multi-meter to determine volts, amps, and ohms.	1	2	3	4	5
7.	Identify, select, and install circuit protection devices.	1	2	3	4	5
8.	Identify, select, and install different wiring materials.	1	2	3	4	5
9.	Splice or connect wires.	1	2	3	4	5
10.	Solder and tape connections.	1	2	3	4	5
11.	Check for shorts.	1	2	3	4	5
12.	Wire single pole switch in a light circuit.	1	2	3	4	5
13.	Wire two three-way switches in a light circuit.	1	2	3	4	5
14.	Wire light circuit and duplex receptacle circuit from service panel.	1	2	3	4	5

		1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE				
15.	Plan farm circuitry in compliance with National Electrical Code.	1	2	3	4	5
16.	Plan farm service entrance requirements.	1	2	3	4	5
17.	Select electric motors according to use.	1	2	3	4	5
18.	Identify electric motors by nameplate information.	1	2	3	4	5
19.	Identify motor windings by continuity tests and change direction of rotation.	1	2	3	4	5
20.	Select and install drive system.	1	2	3	4	5
21.	Install electric motor.	1	2	3	4	5
22.	Maintain electric motor.	1	2	3	4	5
23.	Disassemble and clean electric motor.	1	2	3	4	5
24.	Assemble electric motor.	1	2	3	4	5

B. Agricultural Power/Small Gas Engines

1.	Explain the differences between 4-cycle and 2-cycle engines.	1	2	3	4	5
2.	Disassemble a 4-cycle engine.	1	2	3	4	5
3.	Assemble 4-cycle engine.	1	2	3	4	5
4.	Disassemble 2-cycle engine.	1	2	3	4	5
5.	Assemble 2-cycle engine.	1	2	3	4	5
6.	Check and adjust carburetor.	1	2	3	4	5
7.	Check and adjust governor.	1	2	3	4	5
8.	Check and adjust valves.	1	2	3	4	5
9.	Check and adjust electrical system.	1	2	3	4	5
10.	Check and adjust cylinders and pistons.	1	2	3	4	5
11.	Check and service lubrication system.	1	2	3	4	5

	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE					
C.	Tractor Maintenance					
1.	Select tractor by job requirements.	1	2	3	4	5
2.	Demonstrate components of tractor and equipment safety.	1	2	3	4	5
3.	Follow correct pre-operation procedures.	1	2	3	4	5
4.	Operate tractor safely and correctly.	1	2	3	4	5
5.	Hitch and unhitch units properly.	1	2	3	4	5
6.	Select fuel and lubricants.	1	2	3	4	5
7.	Design maintenance schedule.	1	2	3	4	5
8.	Perform maintenance jobs as scheduled.	1	2	3	4	5
9.	Troubleshoot and identify problems.	1	2	3	4	5
10.	Service air cleaner system.	1	2	3	4	5
11.	Identify types of air cleaners.	1	2	3	4	5
12.	Explain the classification of oils and types of grease.	1	2	3	4	5
13.	Change crankcase oil.	1	2	3	4	5
14.	Service oil filter system.	1	2	3	4	5
15.	Grease chassis.	1	2	3	4	5
D.	Farm Water Supply and Sanitation					
1.	Calculate water needs.	1	2	3	4	5
2.	Read blueprint and recognize plumbing symbols.	1	2	3	4	5
3.	Select pump and piping system.	1	2	3	4	5
4.	Lay out, cut, ream, thread, and join steel pipe.	1	2	3	4	5
5.	Lay out, cut, ream, and join plastic pipe.	1	2	3	4	5

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6.	Lay out, cut, and join cast iron pipe.	1	2	3	4	5
7.	Install plumbing fixtures.	1	2	3	4	5
8.	Plan a sewage disposal system.	1	2	3	4	5
9.	Plan a manure disposal system.	1	2	3	4	5

E. Farm Level

1.	Select level and accessories to meet job requirements.	1	2	3	4	5
2.	Set up and adjust level.	1	2	3	4	5
3.	Make differential leveling survey.	1	2	3	4	5
4.	Stake out foundation using level.	1	2	3	4	5
5.	Stake out fence line.	1	2	3	4	5

INSTRUCTIONS: **Circle the degree of importance as an essential element for each of these competencies. In other words, how important is the learning of this competency to the success of production agriculture students. Use the following rating scale.**

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AGRICULTURAL MECHANICS 1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

A. Farm and Ranch Building Construction

1.	Plan farm buildings and fences to safely match present and future use.	1	2	3	4	5
2.	Select construction methods.	1	2	3	4	5
3.	Calculate material costs.	1	2	3	4	5
4.	Estimate cost of construction.	1	2	3	4	5
5.	Calculate materials needed using appropriate formulas.	1	2	3	4	5
6.	Select proper building materials.	1	2	3	4	5
7.	Select proper fencing materials.	1	2	3	4	5
8.	Select electrical and plumbing fixtures.	1	2	3	4	5
9.	Sketch construction plans.	1	2	3	4	5
10.	Interpret different types of drawings.	1	2	3	4	5
11.	Prepare and figure a bill of materials.	1	2	3	4	5
12.	Practice safety in construction procedures.	1	2	3	4	5

B. Farm Truck and Tractor Maintenance

1.	Identify types and parts of cooling systems.	1	2	3	4	5
2.	Service cooling system.	1	2	3	4	5

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3.	Identify fuels and lubricants.	1	2	3	4	5
4.	Service fuel system.	1	2	3	4	5
5.	Identify parts of the ignition system.	1	2	3	4	5
6.	Service electronic ignition system.	1	2	3	4	5
7.	Service battery, spark plugs, distributor, and condenser.	1	2	3	4	5
8.	Service generator, alternator, voltage regulator, and starter motor.	1	2	3	4	5
9.	Time engine ignition.	1	2	3	4	5
10.	Lubricate farm trucks and tractors.	1	2	3	4	5
11.	Service transmission, differential, and final drive.	1	2	3	4	5
12.	Service the clutch.	1	2	3	4	5
13.	Identify types of brakes.	1	2	3	4	5
14.	Service brakes.	1	2	3	4	5
15.	Service the hydraulic system.	1	2	3	4	5
16.	Service the steering system.	1	2	3	4	5
17.	Service the tires and wheels.	1	2	3	4	5
18.	Practice safety in farm truck and tractor maintenance.	1	2	3	4	5

C. Farm Machinery

1.	Inspect machinery.	1	2	3	4	5
2.	Adjust and calibrate machinery.	1	2	3	4	5
3.	Clean, lubricate, and paint machinery.	1	2	3	4	5
4.	Tighten loose parts.	1	2	3	4	5
5.	Repair and replace broken or worn parts.	1	2	3	4	5
6.	Practice safety in farm machinery inspection, service and repair.	1	2	3	4	5

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D.	Advanced Oxyacetylene Welding and Brazing					
1.	Identify oxyacetylene equipment parts.	1	2	3	4	5
2.	Practice safety in oxy-fuel operations.	1	2	3	4	5
3.	Service and adjust oxy-fuel equipment.	1	2	3	4	5
4.	Weld in flat, vertical, horizontal, and overhead positions.	1	2	3	4	5
5.	Select equipment and accessories to match job requirements.	1	2	3	4	5
6.	Make butt, corner, lap, and fillet welds.	1	2	3	4	5
7.	Weld sheet metal.	1	2	3	4	5
8.	Weld heavy steel plate.	1	2	3	4	5
9.	Weld cast iron.	1	2	3	4	5
10.	Weld aluminum.	1	2	3	4	5
11.	Bronze weld sheet metal.	1	2	3	4	5
12.	Bronze weld heavy steel.	1	2	3	4	5
E.	Concrete Masonry					
1.	Calculate material cost.	1	2	3	4	5
2.	Lay out foundation.	1	2	3	4	5
3.	Practice safety in concrete masonry procedures.	1	2	3	4	5
4.	Mix mortar.	1	2	3	4	5
5.	Cut masonry units.	1	2	3	4	5
6.	Lay concrete blocks.	1	2	3	4	5
7.	Lay a cavity wall.	1	2	3	4	5
8.	Lay a veneered wall	1	2	3	4	5
9.	Lay brick, tile, and stone.	1	2	3	4	5

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F.	Farm Fencing					
1.	Plan fence to meet job requirements.	1	2	3	4	5
2.	Select proper fencing materials.	1	2	3	4	5
3.	Calculate material cost.	1	2	3	4	5
4.	Lay out fence line.	1	2	3	4	5
5.	Practice safety in fence construction procedures.	1	2	3	4	5
6.	Construct fence.	1	2	3	4	5

INSTRUCTIONS: **Circle the degree of importance as an essential element for each of these competencies. In other words, how important is the learning of this competency to the success of production agriculture students. Use the following rating scale.**

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AGRICULTURAL MANAGEMENT	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

A. Introduction

1.	Recognize the importance of agricultural management.	1	2	3	4	5
2.	Estimate the performance of a known farm manager using factors predicting managerial performance.	1	2	3	4	5
3.	Outline organizational and operational decisions necessary in agricultural management.	1	2	3	4	5
4.	List steps in agricultural management decision making.	1	2	3	4	5

B. Principles of Economics

1.	Define supply and demand as they relate to agricultural products, and discuss factors influencing both.	1	2	3	4	5
2.	Explain how an understanding of the law of diminishing returns can be helpful in decision making.	1	2	3	4	5
3.	Illustrate by example comparative advantage.	1	2	3	4	5
4.	Describe the principle of resource substitution.	1	2	3	4	5

C. Agricultural Finance

1.	Classify credit based on period of use.	1	2	3	4	5

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2.	Distinguish between the two kinds of credit.	1	2	3	4	5
3.	Calculate interest rates by several methods.	1	2	3	4	5
4.	Complete a partial budget for a farm enterprise.	1	2	3	4	5
5.	Prepare an annual cash flow projection for a farm.	1	2	3	4	5
6.	Prepare an income statement based on the above cash flow projections and other farm records.	1	2	3	4	5
7.	Prepare a pro-forma financial statement for the farm used above.	1	2	3	4	5
8.	List sources of agricultural credit and make a comparison of interest rates, period of loans, and percent of appraisal loan value.	1	2	3	4	5
9.	Discuss the uses of different kinds of credit instruments.	1	2	3	4	5
10.	List factors to consider in selecting a lender and the principles of borrowing.	1	2	3	4	5
11.	Describe equal payment, decreasing payment, and balloon payment plans.	1	2	3	4	5
12.	Record ways a borrower can minimize risk.	1	2	3	4	5
13.	Discuss services performed by commercial banks.	1	2	3	4	5
14.	Prepare a deposit slip correctly.	1	2	3	4	5
15.	Write a check correctly.	1	2	3	4	5
16.	Explain three kinds of check endorsements.	1	2	3	4	5
17.	Reconcile bank statements.	1	2	3	4	5
18.	Prepare a check stub and denote the purpose of the stub.	1	2	3	4	5

	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE
D.	Agricultural Records
1.	List the different kinds of agricultural records. 1 2 3 4 5
2.	Calculate depreciation on a tractor using the accelerated cost recovery system and an optional recovery period. 1 2 3 4 5
3.	Define adjusted basis, basis, expensing, investment tax credit, and capital item. 1 2 3 4 5
4.	Complete a Form 1040 for income taxes using information provided in the Teaching Taxes Kit. 1 2 3 4 5
5.	Prepare a wage and tax statement, form W-2, for an employee. 1 2 3 4 5
6.	Distinguish between the cash and accrual methods of accounting. 1 2 3 4 5
7.	Complete an application for social security number. 1 2 3 4 5
8.	Discuss old-age, survivors, disability, and health insurance aspects of the Social Security Act. 1 2 3 4 5

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AGRICULTURAL MANAGEMENT	1 = NO IMPORTANCE	5 = EXTREME IMPORTANCE

A. Agricultural Planning

1.	List factors to consider in purchasing farm land.	1 2 3 4 5
2.	Discuss the principles involved in developing a farm layout.	1 2 3 4 5
3.	Discuss the information contained in a soil survey.	1 2 3 4 5
4.	Assist with development of a soil and water conservation plan.	1 2 3 4 5
5.	Describe information contained on a SCS general soil map unit and a detailed soil map.	1 2 3 4 5
6.	Describe the more common soils located in the area.	1 2 3 4 5
7.	consider factors necessary in selecting and planning livestock enterprises.	1 2 3 4 5
8.	Select crops for a farm and develop a cropping system.	1 2 3 4 5
9.	Determine the labor requirements for cow-calf, feeding swine, and breeding sheep enterprises.	1 2 3 4 5
10.	Develop a field layout for cropping system.	1 2 3 4 5
11.	Define and develop a cropping sequence.	1 2 3 4 5

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12.	Prepare a labor distribution chart for a farm.	1	2	3	4	5
13.	Explain how farm labor supply may be balanced.	1	2	3	4	5
14.	List ways of improving labor efficiency.	1	2	3	4	5
15.	Discuss the management of deer population.	1	2	3	4	5
16.	Assist in conducting a walking cruise to determine deer population.	1	2	3	4	5
17.	Discuss the management of wild turkeys and Bobwhite quail.	1	2	3	4	5
18.	Determine number of surface acres in a farm pond.	1	2	3	4	5
19.	Explain the feeding of fish in a farm pond or lake.	1	2	3	4	5
20.	Assist with the fertilization of a farm pond or lake.	1	2	3	4	5
21.	Describe the control of undesirable aquatic plants in a farm pond or lake.	1	2	3	4	5

B. Agricultural Planning

1.	Discuss the general rules and steps in farm planning.	1	2	3	4	5
2.	Determine the enterprise that will provide the greatest return in the area.	1	2	3	4	5
3.	Determine the capacity of equipment needed for a farm using number of acres cultivated, width of machine, speed of travel, and maintenance and service time.	1	2	3	4	5
4.	Calculate the operating and fixed cost for a specific piece of farm machinery.	1	2	3	4	5
5.	Outline ways of reducing machinery and equipment costs.	1	2	3	4	5
6.	Make a family investment plan.	1	2	3	4	5

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C.	Agricultural Insurance					
1.	Describe the different types of life insurance policies.	1	2	3	4	5
2.	Describe the types of health insurance available.	1	2	3	4	5
3.	Discuss the riders often being a part of property insurance policies.	1	2	3	4	5
4.	Describe coverages offered by the Federal Crop Insurance Corporation.	1	2	3	4	5
5.	Explain the specialized insurance available for livestock.	1	2	3	4	5
6.	Differentiate between the types of insurance coverage available for vehicles.	1	2	3	4	5
7.	Discuss the kinds of liability insurance.	1	2	3	4	5
8.	Explain Texas Workman's Compensation Insurance as it relates to farm employees.	1	2	3	4	5
D.	Agricultural Programs and Services					
1.	List the objectives of the ASCS.	1	2	3	4	5
2.	List the objectives of the SCS.	1	2	3	4	5
3.	List the objectives of the Farmers Home Administration.	1	2	3	4	5
4.	List the objectives of the Federal Land Bank.	1	2	3	4	5

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AGRICULTURAL MANAGEMENT	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

A. Marketing

1.	Describe marketing functions that occur in marketing agricultural products.	1	2	3	4	5
2.	Discuss factors that affect production cycles and seasonal price variations.	1	2	3	4	5
3.	Recognize the functions of marketing agencies.	1	2	3	4	5
4.	Identify methods of marketing agricultural products.	1	2	3	4	5
5.	Describe the price support programs (target prices, land diversion, set aside, acreage reduction, and loans) for corn and wheat.	1	2	3	4	5
6.	Explain the basic principles of operation for cooperatives.	1	2	3	4	5

B. Marketing

1.	Chart the prices for a specie of livestock over a period of time to show seasonal price variations.	1	2	3	4	5
2.	Compare the different livestock markets.	1	2	3	4	5
3.	Discuss the selling of livestock on quality, weight, and grade.	1	2	3	4	5
4.	Explain the use of the futures market in meeting the price objective for feeder cattle.	1	2	3	4	5

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5.	Discuss the preparation of livestock for selling.	1	2	3	4	5
6.	Discuss importance of USDA grades and standards.	1	2	3	4	5
7.	Secure sample and grade corn using USDA standards as a basis.	1	2	3	4	5
8.	Calculate the difference in net returns for moisture variations in grains.	1	2	3	4	5
9.	List alternatives to forward pricing of grains.	1	2	3	4	5
10.	List sources of accurate market news.	1	2	3	4	5
11.	Use market news terminology.	1	2	3	4	5
12.	Demonstrate awareness of computer applications in agriculture.	1	2	3	4	5
13.	Operate a computer.	1	2	3	4	5

C. Legal Relationships

1.	Define groundwater, recharge water, surface water, percolating water, water course, diffused surface water, and riparian water rights.	1	2	3	4	5
2.	Explain the classes and types of water permits.	1	2	3	4	5
3.	Describe the law of adverse possession.	1	2	3	4	5
4.	Discuss the purpose of and the kinds of easements.	1	2	3	4	5
5.	Discuss boundary lines and fencing rights.	1	2	3	4	5
6.	List the limitations of action for land.	1	2	3	4	5
7.	Describe the law regarding trespassing.	1	2	3	4	5
8.	Discuss the law regarding handling of estates.	1	2	3	4	5

		1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE				
9.	Explain the procedures for selecting and registering brands and marks.	1	2	3	4	5
10.	List the classes of seed and explain the laws regarding labeling of seed.	1	2	3	4	5
11.	Explain the purposes of property appraisal.	1	2	3	4	5
12.	List factors affecting property values.	1	2	3	4	5
13.	Explain procedures used in making property appraisals.	1	2	3	4	5
14.	Determine the location of a piece of property using a Government Survey system.	1	2	3	4	5
15.	Appraise a tract of land using an appraisal form.	1	2	3	4	5
16.	List advantages of a will.	1	2	3	4	5
17.	Define real property, interstate, and community and separate property.	1	2	3	4	5
18.	Describe the different types of farm leases.	1	2	3	4	5
19.	Discuss factors to consider in determining basis for sharing costs on leased property.	1	2	3	4	5
20.	List the advantages and disadvantages of contract farming.	1	2	3	4	5
21.	Discuss factors to consider and procedures for purchasing land.	1	2	3	4	5
22.	List kinds of deeds and note purposes of each.	1	2	3	4	5
23.	Explain the terms assessed value and tax rate and their relationship in property taxes.	1	2	3	4	5
24.	Determine the school taxes on a tract of land using local values and tax rates.	1	2	3	4	5

APPENDIX B

CORRESPONDENCE

Texas Education Agency
1701 NORTH CONGRESS AVENUE AUSTIN, TEXAS 78701-1494 (512) 463-9734

March 14, 1986

TO WHOM IT MAY CONCERN:

Ms. Sandy Hunter has discussed with me the possibility of doing a study of the essential elements as mandated by House Bill 72. The study should be of considerable value to our staff as we refine and improve the essential elements. I recommend the study and pledge the support of our office in this effort.

Sincerely,

Jay L. Eudy

Jay L. Eudy, Director
Agricultural Education

JLE:ld

VITA

Sandra K. Hunter

Candidate for the Degree of

Doctor of Education

Thesis: VOCATIONAL AGRICULTURAL TEACHERS PERCEPTIONS OF AGRICULTURAL MECHANICS AND AGRICULTURAL MANAGEMENT COMPETENCIES OF STUDENTS IN THE VOCATIONAL AGRICULTURAL SCIENCE PROGRAM IN TEXAS.

Major Field: Agricultural Education

Biographical:

Personal Data: Born in Abilene, Texas, October 31, 1956, the daughter of Mr. and Mrs. Archie Hunter.

Education: Attended Roscoe Public Schools in Nolan County, Texas; graduated from Roscoe High School in May, 1975; received the Bachelor of Science degree from Tarleton State University, Stephenville, Texas, with a major in Agricultural Education in December, 1979; received the Master of Science Teaching degree from Tarleton State University, Stephenville, Texas, in August 1983, with a major in Agricultural Education; attended Oklahoma State University, Stillwater, Oklahoma, from September, 1985 to May, 1987; completed requirements for the Doctor of Education degree at Oklahoma State University in May, 1987.

Professional Experience: Taught vocational agriculture at Bandera, Texas, January 1, 1980, to June 30, 1982; taught vocational agriculture at Huckabay, Texas, July 1, 1982 to June 30, 1983; taught vocational agriculture at Lingleville, Texas, July 1, 1982 to June 30, 1985; graduate teaching assistant, Agricultural Education Department, Oklahoma State University, from September, 1985 to May 1987.