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To the Graduate Council:

I am submitting herewith a thesis written by Austin C. Ingram entitled "Developing an Off-Farm Agricultural Education Program, Oliver Springs, Tennessee." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Education.

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DEVELOPING AN OFF-FARM AGRICULTURAL EDUCATION PROGRAM, OLIVER SPRINGS, TENNESSEE

A Thesis

Presented to

the Graduate Council of

The University of Tennessee

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

Austin C. Ingram

December 1971

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ABSTRACT

Purpose

The purpose of the study was to ascertain what skills and attitudes are needed for employment in off-farm occupations in the Oliver Springs High School area.

Method

A survey form was developed by the investigator and information was secured by personal interview from agricultural businesses in the Oliver Springs High School area.

Summary

1. Off-farm agricultural cooperative training stations exist in the Oliver Springs school area.

2. The participating employers felt a degree of competency was needed in thirteen general business skills, seventeen agricultural mechanical skills, thirteen animal science skills and sixteen crop and soil science skills. Twenty-six additional skills were listed as needing special emphasis for employment in agricultural businesses.

3. The employers felt that a development of personal traits within prospective workers was important and they, along with the school and individual, should share in the task of instilling it within prospective workers.

4. The employers were willing to help the vocational agriculture department plan and carry out an off-farm program.

5. The employers felt that vocational agriculture departments have the major role of developing a knowledge of technical agriculture in prospective off-farm employees.

6. It was indicated that personality development in off-farm employment was more important than academic and technical skills.

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CHAPTER I

THE PROBLEM AND ITS DEFINITION

I. PURPOSE

The purpose of this study was to ascertain what skills and attitudes are needed for employment in off-farm occupations in the Oliver Springs High School area.

It was felt that the findings of the study would help in planning the local program of instruction in vocational agriculture by obtaining the answers to the following questions:

1. What skills need to be developed in prospective employees for off-farm employment in the Oliver Springs area?

2. What personal characteristics need to be developed?

3. What responsibility does the school, employer, and individual have in developing these skills and personal traits?

4. What assistance will the local businesses give in carrying out these training objectives?

II. LIMITATIONS OF THE STUDY

The study was limited to the local area since the researcher felt that the local businesses were knowledgeable of needed competencies for employment in the Oliver Springs school area. The researcher felt that local information would be more helpful in the program planning than findings from areas far removed from the fields

of employment of graduates. However, indications are that a need for a much broader study is needed.

This study was limited to businesses that produce, manufacture, distribute or process agricultural products and ornamental horticulture in the Oliver Springs High School area.

III. DEFINITION OF TERMS

Agricultural education. A systematic program of instruction for public school enrollees, out-of-school and post-high school youth, established farmers and other adults who need training for the purpose of improving agricultural methods and rural living.

Agricultural oriented personnel. This term refers to those people who have a knowledge and possess skills in the field of the agricultural sciences.

Agricultural sciences. A branch of knowledge, truths and laws about crops, soils, and farm animals.

Competencies. This term refers to a list of student agricultural objectives stated in terms of abilities, knowledges, and capabilities.

Gainful employment. This term refers to people who possess the knowledge and skill in carrying out their preferred occupations and may be considered happy and productive on the job. He can be recognized as a trained worker and will acquire new knowledge and skills for advancement.

Job titles. This term refers to a group of jobs that have been given a name identifying such a job. An example of some job titles in farm machinery dealerships are: set-up man, parts man, salesman, mechanic and repairman, and truck driver-delivery man.

Off-farm agricultural occupations. This term refers to a group of jobs in agricultural occupations for which knowledges and skills are needed in one or more of the following areas: plant and soil science, animal science, agricultural mechanization, and agricultural business. Some of these occupations are in the area of sales and services to farmers, such as merchandising of farm machinery, feed and other supplies. Some are in the area of marketing and processing farm products and others are in specialized phases of agriculture, such as production and marketing of ornamental plants, operation of garden centers, supervision of city and state parks, and management of wildlife. Many other terms used in this paper are synonymous; fields related to agriculture, related agricultural occupations, agribusiness occupations, and businesses and services other than farming.

Vocational agriculture. The study of agriculture to develop specific skills, knowledges and competencies to prepare the learner for employment in agricultural occupations.

IV. NEED FOR THE STUDY

Until the Vocational Education Act of 1963 and the Amendments of 1968, the primary objectives of agricultural education administered to students on the high school level was to train propective farmers

chiefly for the production of agricultural products. Since the passage of this legislation, the scope of vocational agriculture has broadened considerably. The Act provides for vocational technical training on a broad scale which includes skills for any occupation which deals with the manufacturing, processing or distribution of agricultural products.

The above facts make it necessary for a change in program planning if the needs of the student are to be met. Many statements have been made concerning these changes.

Hoover (9, p. 5) stated that the Vocational Act of 1963 provided that there will be education for occupations which will require knowledge and skills of agriculture whether or not such occupations involve work on the farm.

Norris (13, p. 37) made a study to determine the agricultural manpower needs of Claiborne County, Tennessee. He concluded that schools and businesses need more effective communications to meet training needs. Norris (13, p. 6) also stated that as employment in agriculture changes, it follows that objectives for education in agriculture also change. Consequently, the teacher of agriculture is faced with the question of what steps must be taken to carry out these objectives. Acquiring an answer to the first question involves the careful gathering of all the facts obtainable which concern agriculture and the people working in agriculture. It involves a knowledge of trends in agricultural workers, mobility, and routes to gainful employment. It involves interpretation of such facts and information in terms of the community being served with a specific program. Norris

(13, p. 7) also stated that meaningful programs in vocational agriculture for the next year and the years to follow will not "just happen." They will be the result of a close examination of many factors in each community where education in agriculture is taking place. Norris stated from Roy W. Roberts' "Forward from 50 Years of Experience in Agricultural Education," the need for modernizing and expanding offering of vocational agriculture programs by adjusting the courses and curricula to better meet the students' needs whether they enter farming, allied occupations or other fields of work.

Todd (19, p. 186) suggested that curriculums should be revamped to put more emphasis on agribusiness and the development of occupational experience programs.

Vocational teachers should evaluate and modify programs in order to better guide students toward productive lines in satisfying employers.

Norris (13, p. 37) indicated in his study that people were available to fill jobs in Caliborne County, Tennessee but were not properly trained to meet employers' needs.

Taylor (17, p. 6) found the same thing to be true in a study made in Hawkins County, Tennessee. Taylor found that businessmen and industrial managers interviewed by him indicated that the schools in the county were not doing what they could to prepare the students for the jobs available for them.

The uses of this study have been made evident and pertinent by many statements of other writers above, basically speaking, for the

purpose of planning and executing a program of instruction fitted to the needs of what the employer wants from his employees in and around the Oliver Springs area.

The responsibility of training off-farm workers falls squarely upon the shoulders of the vocational agriculture teacher. However, much of the information for planning and execution of a meaningful program must be obtained from present and future employers of our students.

V. METHODS OF PROCEDURE

This study was designed to find what skills and attitudes are needed for employment in off-farm agricultural occupations in the Oliver Springs High School area and to secure assistance from businesses in carrying out an off-farm type program.

Preliminary methods used in this study included consulting the local telephone directory for forty-five businesses or firms in the Oliver Springs High School area which were known to be involved in at least one or more of the following activities: producing, processing, distributing or performing related services to agricultural products, including ornamental horticulture. Representatives from each business and firm were personally contacted and interviewed for data.

A check list rating sheet was designed for accurately recording the data. In the process of designing such a form, the following references were used: Bundy (3) "A Summary of Competencies in

Agriculture which Relate to Selected Off-Farm Agricultural Occupations," and Uhrbrock (21, pp. 285-316) "Standardization of 724 Rating Scale Statement" to determine the character traits used.

A decision was made to use the check list rating sheet in a field trial in a distant service area. After the field trial, a careful study revealed the need for an alteration for more specific skills information.

The newly developed check list rating sheet was used for collecting data on forty-five business firms in the Oliver Springs High School area. A copy of this instrument is in Appendix B.

VI. RELATED STUDIES

Many studies were reviewed by the writer. Several interesting and helpful summarizations, conclusions, and recommendations were assimilated from these studies or summaries.

Stevenson (15, p. 236), in Oklahoma, interviewed two thousand people in seven hundred businesses with two hundred different agricultural occupational job titles, where he discovered that most employers desired competencies dealing with skills and personal characteristics of employees. The purpose of his study was threefold: (1) to determine present and future needs in the number of employees; (2) to determine the characteristics desired in employees; and (3) to determine the competencies required for initial employment and advancement. He discovered a need and a continued need for trained young men to work in agriculturally related companies. Managers of these

companies expressed considerable interest in, and a willingness to assist with a program in vocational agriculture which would make trained employees available.

Barwick (2, p. 6) reported 20 percent or 32,776 of the 165,009 employees in the state of Delaware, excluding farming, were employed in businesses and services other than farming in which it was believed the employees would find a knowledge of agriculture useful or necessary in their occupations.

Judge (11, p. 29-35) made a study of 378 agriculturally related firms in Massachusetts and concluded that:

1. There are more off-farm agricultural occupations than there are trained workers.

2. Employers want better trained workers in off-farm agricultural occupations and many want further training for present workers.

3. Employers are willing to cooperate with schools in occupational programs.

4. A large number of employers indicated that they preferred on-the-job training for employees.

Norris' (13, p. 36) study on the manpower needs of Claiborne County, Tennessee involved interviews of forty-two businesses with 229 workers which revealed a need for 162 agriculturally oriented people in jobs. Norris concluded that there was a need for more effective communication between businesses and schools to meet these training needs.

Tenney (18, p. 211) stated that agriculture today has changed and is continuing to change rapidly. No longer does it describe only the people who do the actual producing of crops and livestock, but it now includes hundreds of closely associated occupations. Agriculture is comprised of two major components: the farming or production segment, and the nonfarming segment which includes the off-farm functions of agriculture.

Treadway (20, p. 19) in his study of seventy-five former vocational agriculture graduates of the Hampton High School, Tennessee, found two major reasons why students of agriculture were not returning to farms: (1) they preferred a different type of work, and (2) there was a lack of available land for farms.

Treadway (20, p. 53) pointed out in his summary that 19 percent of his graduates were farmers, 11 percent were in occupations related to agriculture, and the remaining 70 percent were in occupations unrelated to agriculture. An interesting fact was that thirty-nine of the seventy-five students found their training in agriculture helpful in their initial occupation.

Taylor (17, p. 58), in a study of the occupational needs of Hawkins County, Tennessee, presented strong evidence of agriculturally related potential being available but persons were not being trained to develop this potential. According to employers, the schools were not doing the job of preparing students for available work.

Taylor said that 80.61 percent of establishments interviewed recommended training for skills in on-the-job training. Taylor

(17, p. 60) concluded that a need existed in the county for expanded high school vocational programs and post-secondary vocational technical programs to meet the needs of the county occupational community. He recommended that a committee be instituted by the school board to study county occupational information and to help plan expanded vocationally oriented programs to meet the needs.

Hoover and others (8, p. 36) found in a Pennsylvania off-farm agriculture occupational study that salesmanship, human relations and business management competencies are needed by varying degrees by all employees.

Clark and Householder (4, p. 169) directed the following question to many agricultural businesses up and down the main streets of a number of Michigan towns: What can the schools do to provide more adequate training for initial employment or for advancement? Answers received most often were to provide more training in mathematics, English, salesmanship, tool skills, and basic agriculture.

Anderson and Iha (1, p. 72) made a study of twenty-five agribusiness firms in North-Central Colorado. The study was designed to find the relationships between the occupational area and agricultural mechanical skills. The results revealed a strong relationship between farm machinery areas of sales and service and processing agricultural products, but a relatively low relationship was found existing between mechanics skills needed in agricultural supplies, sales and services, and horticultural sales and service.

Eck's (6, p. 280) report on "Competencies Needed for Employment in Farm Machinery Dealerships," listed eight important shop skills and several attitudes as requisites for employment. Eck concluded that schools have a responsibility to provide trained workers for farm machinery dealers.

Johnson and Wacholz (10, p. 59), of Minnesota, made a study of competencies needed by agricultural teachers in farm power and found that a higher degree of competencies was needed than was possessed by the teachers.

Kohler and Bundy (12, p. 226) found in their study of the fifteen most progressive farm machinery dealers in Iowa, that employers and employees felt a higher degree of competencies was needed than was possessed by their employees.

Stitt and others (16, p. 67) did a study to determine competencies needed in farm machinery dealership jobs. They ranked the competencies needed according to their importance as follows: safety, good housekeeping, oral communications, maintaining customers, and job functions of the employee. They found that there were at least six specific job titles identified in a farm machinery dealership: set-up man, shop foreman, equipment mechanic, parts man, equipment salesman, and truck driver-delivery man. Stitt and his associates concluded that abilities and understanding should be incorporated into a vocational curriculum on safety, good housekeeping, human relations and understanding job functions for all job titles.

Dillon and Phipp's (5, p. 202) interviews of the many licensed nurseries and horticultural firms on competencies needed by the workers, revealed that basic courses could be offered for all job titles but with varying lengths of time.

Shry (14, p. 225) advocated an educational program for ornamental horticulture that is developed on the basis of the competencies deemed important by businessmen in the industry. He contacted one hundred nurserymen for information on his study. He found that most employers preferred employees who had instruction and work experience in ornamental horticulture prior to employment. Shry found that these prospective employees need comprehensive training in the following competencies: identification of plants, identification of plant diseases and insects, propagation of plants from cuttings and seeds, grafting and budding, selection of soils, lawn care and maintenance, planting and pruning properly, and forcing plants. He found that prospective employees also need a general training in the following competencies: weed control, digging, pruning and transplanting ornamentals, growing houseplants in greenhouses, growing vegetable plants, caring for cut flowers, arranging flowers, growing bulbs and corms, growing annuals and perennials, soil sterilization, compost and manures, mixing soluble fertilizers, potting soil mixtures and watering plants.

Additional competencies stressed were: horticultural mechanics, basic landscaping, land surveying, business techniques, and operation and maintenance of engines and machinery. Interest in one's work was an attitude that needs to be developed by the prospective employee.

Yetman (23, p. 225) made a study to find out what employers want of employees in an ornamental horticulture business. He found that physical strength and a good background in plant materials were stressed needs.

Hamilton and Bundy's (7, p. 175) study on key feed business managers and owners, revealed that workers in this retail feed business need to develop definite competencies in agriculture. Twenty-five competencies in crop and livestock production were deemed as significant along with sixteen competencies in business and dealership phases of management.

Van Loh's (22, pp. 180-181) findings from 120 firms in the retail fertilizer distribution business were that successful job performance is dependent upon the competencies possessed by the employees' understandings and abilities of an agricultural nature.

These studies all indicate a need for training for employment in off-farm agricultural occupations. This will demand a different kind of training than for traditional employment in productive agriculture.

VII. BASIC ASSUMPTIONS

The following assumptions were made:

1. There is a need in the Oliver Springs High School area for an agricultural education program to prepare students for employment in off-farm agricultural occupations.

2. Specialized programs to prepare students for off-farm agricultural occupations should be designed for that purpose. Traditional programs in vocational agriculture are usually production oriented with little emphasis toward other phases of agriculture.

3. There are sufficient off-farm agricultural employers who will cooperate by furnishing requested information to secure data for the study.

4. A large percentage of the agricultural graduates of Oliver Springs High School seek employment in the community and adjoining areas. This situation requires that the agricultural education program be planned according to local needs and trends.

5. The off-farm agricultural employers will employ graduates of Oliver Springs High School who have majored in vocational agriculture.

6. The administrative and supervisory staff of the Roane County school system will encourage and permit changes in the agricultural education program to better prepare students for employment in agricultural occupations.

7. The teacher of vocational agriculture at Oliver Springs High School will make changes in his program to better meet needs of students and employing businesses.

8. The off-farm agricultural businesses in the Oliver Springs school area are similar to other related businesses in East Tennessee or other parts of the State or region to permit the findings of the study to have general applications to other agricultural education programs.

CHAPTER II

PRESENTATION OF DATA

To simplify and enhance program planning for the Oliver Springs High School Vocational Agriculture Department, the forty-five businesses were classified into five major categories. Table 1 shows the five categories and the types of service in which each was engaged. It also shows that there were 4 agricultural technical service firms, 6 farm supply stores, 13 agricultural mechanics businesses, 9 food service firms, and 13 horticultural businesses surveyed for the study.

The Oliver Springs High School area serves both urban and rural people: therefore, one firm or business could be classified as a producer, manufacturer, distributor, and offer services. These functions were necessary for successful operation since the volume of business done by most was small.

Thirty-five of the businesses were distributors, 22 provided services, 5 were manufacturers, 1 was doing agricultural research and 7 were producers of horticultural products. Two of the businesses were operated exclusively for recreational purposes.

Managers or owners of the firms were asked to use a rating scale relative to the importance of competencies needed in general business, agricultural mechanics, animal science, crop and soil science, and personal traits for employment in their businesses. The rating scale

TABLE 1

CLASSIFICATIONS OF FIRMS AND RELATED TYPES OF SERVICES

Classifications	No. of firms	Services				
		Distributor	Service	Manu-facturer	Research	Producer
Agricultural technical services	4	0	4	0	0	0
Farm supply	6	6	6	0	0	0
Agriculture mechanics	13	12	6	3	0	0
Food services	9	9	2	2	0	0
Horticultural	13	8	4	0	1	7
Total	45	35	22	5	1	7

for the competencies was 0 - ability not needed; 1 - little ability needed; 2 - some ability needed; 3 - much ability needed; and 4 - very much ability needed. The rating scale for the personal traits was as follows: 0 - not important; 1 - slightly important; 2 - moderately important; 3 - considerably important; 4 - of major importance.

Table 2 shows thirteen general business competencies and the rated ability for employment according to responses of employers in four firms which offer agricultural technical help to farmers. The ability to follow instructions was needed very much with a mean score of 4.00. The ability to care for tools and equipment, to make mathematical calculations, to maintain a good personal appearance, and to write legibly had a mean score of 3.00 or better. The remaining competencies had a much smaller need as rated by employers in agricultural technical businesses.

Table 3 shows seven agricultural mechanics competencies and the rated ability needed by employees of three firms offering agricultural technical help to farmers. To practice safety was needed very much with a mean score of 4.00. To use shop tools and equipment, to use farm surveying equipment, to figure a bill of materials for buildings, and to perform electrical wiring was rated indicating that competency in the area was needed. The mean scores varied from 2.00 to 2.67.

Table 4 presents the rated animal science competencies needed for employment in two of the agricultural technical firms. The ability to advise on chemicals used for pest control, to treat common diseases

TABLE 2

RATED ABILITY OF THIRTEEN GENERAL BUSINESS COMPETENCIES FOR EMPLOYMENT IN FIRMS OFFERING AGRICULTURAL TECHNICAL SERVICE

Competencies	Total Ratings*	Mean
Ability to:		
Follow instructions	16	4.00
Care for tools and equipment	15	3.75
Make mathematical calculations accurately	14	3.50
Maintain a good personal appearance	14	3.50
Write legibly	12	3.00
Use correct English	11	2.75
Use good telephone procedure	9	2.25
Meet the public	9	2.25
Drive a car or truck safely	9	2.25
Use cash register, adding machine, scales, etc.	7	1.75
Direct and supervise others	6	1.50
Apply principles of salesmanship	6	1.50
Evaluate credit risk of customers	3	.75

N = 4

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

TABLE 3

RATED ABILITY OF SEVEN AGRICULTURE MECHANICS COMPETENCIES FOR EMPLOYMENT IN FIRMS OFFERING AGRICULTURAL TECHNICAL SERVICE

Competencies	Total Ratings*	Mean
Ability to:		
Practice safety	12	4.00
Use shop tools and equipment	8	2.67
Use farm surveying equipment	8	2.67
Figure a bill of materials for building construction	6	2.00
Perform electrical wiring	6	2.00
Construct buildings used in agriculture	4	1.33
Advise on machinery needs of farmers	2	.67

N = 3

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

TABLE 4

RATED ABILITY OF FOURTEEN ANIMAL SCIENCE COMPETENCIES FOR EMPLOYMENT IN FIRMS OFFERING AGRICULTURAL TECHNICAL SERVICE

Competencies	Total Ratings*	Mean
Ability to:		
Advise on chemicals used to kill animal pests	2	1.00
Advise on chemicals used to treat and control common diseases	2	1.00
Advise on management practices for animals	2	1.00
Advise on nutrient need of animals	1	.50
Advise on equipment needs for specialized animal enterprises	1	.50
Balance rations	1	.50
Mix feeds	1	.50
Advise on market trends and forecasts of animal enterprises	1	.50
Advise on housing requirements and facilities for animals	1	.50

N = 2

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

of animals were rated as being important with a mean score of 1.00. The need for animal science competencies was considered the least important of all the areas of competencies which were rated for agricultural technical service businesses.

The crop and soil science competencies as shown in Table 5 indicate that employees of agricultural technical businesses need much ability to identify crops and plants commonly grown in the area, with a mean score of 3.00. The table also shows that some ability is needed to advise on fertilizer needs and to read and interpret soil test results, with mean scores of 2.33 and 2.00.

Employers of four agricultural technical firms were asked to rate eight personal traits necessary for employment in their firms. Table 6 shows that the ability to get along with people, initiative and enthusiasm, dependability and reliability were rated highest with a mean score of 3.75. Good moral character and accuracy in work had a mean score of 3.25. A knowledge of technical agriculture and neatness in dress and appearance showed a mean score of 3.00. A knowledge of business procedure had the lowest mean score of .75.

The managers and owners of the four firms were asked to suggest skills that should be given special emphasis for preparing workers for employment in their businesses. They suggested the following topics:

1. Understanding farm animals.
2. Ability to handle animals.
3. Ability to write news articles and reports.

TABLE 5

RATED ABILITY OF THIRTEEN CROP AND SOIL SCIENCE COMPETENCIES FOR EMPLOYMENT IN FIRMS OFFERING AGRICULTURAL TECHNICAL SERVICE

Competencies	Total Ratings*	Mean
Ability to:		
Identify crops and plants commonly grown in area	9	3.00
Advise on fertilizer needs	7	2.33
Read and interpret soil test results	6	2.00
Advise on crop varieties adopted to the area	5	1.67
Identify weeds	4	1.33
Advise on safe chemicals for insect and weed contol	3	1.00
Detect nutritional and disease symptoms of plants	3	1.00
Calibrate a chemical sprayer	2	.67
Identify different types of seeds	2	.67
Recommend equipment needed for specialized crops	2	.67
Grow plants in a greenhouse	1	.33
Grow nursery stock	1	.33
Advise farmers on market trends and forecasts of crop enterprises	1	.33

N = 3

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

TABLE 6

RATED IMPORTANCE OF EIGHT PERSONAL TRAITS FOR EMPLOYMENT IN FIRMS OFFERING AGRICULTURAL TECHNICAL SERVICE

Traits	Total Ratings*	Mean
Ability to get along with people	15	3.75
Initiative and enthusiasm for doing job well	15	3.75
Dependability, reliability, etc.	15	3.75
Good moral character	14	3.25
Accuracy in work	14	3.25
Knowledge of technical agriculture	12	3.00
Neatness in dress and appearance	12	3.00
Knowledge of business procedures	3	.75

N = 4

*Ratings used: 0 - not important
1 - slightly important
2 - moderately important
3 - considerably important
4 - of major importance

4. Understanding maps.

5. Map making.

Employers in six farm supply stores were surveyed relative to needed competencies for employment in their businesses. The responses to the general business competencies are shown in Table 7. The results show that the abilities to care for tools, to follow instruction and apply the principles of salesmanship were the most needed competencies with a mean score of 3.83. The abilities to use good telephone procedure and to operate cash registers and business machines were rated next with a mean score of 3.67. They rated the ability to meet the public next with a mean score of 3.50. All the store managers rated these thirteen general business competencies as being rather important for employment in their businesses.

Table 8 shows the ratings of agricultural mechanics competency ability needed to be an employee in a farm supply store. To practice safety, to use shop tools and equipment, to overhaul a small gasoline engine, were ranked as the most needed skills. They received mean scores of 3.00 to 3.50. The managers indicated that the remaining competencies listed were needed almost none to little with mean ratings of .33 to 1.67.

Table 9 shows how four of the six farm supply owners and managers rated the abilities of the animal science competencies. The abilities to advise on chemicals used to kill animal pests and chemicals used to treat and control common diseases of animals had a mean score of 3.50. The ability to advise on nutrient needs and management practices for

TABLE 7

RATED ABILITY OF THIRTEEN GENERAL BUSINESS COMPETENCIES FOR EMPLOYMENT IN FARM SUPPLY STORES

Competencies	Total Ratings*	Mean
Ability to:		
Care for tools and equipment	23	3.83
Follow instructions	23	3.83
Apply principles of salesmanship	23	3.83
Use good telephone procedure	22	3.67
Use cash register, adding machine, scales, etc.	22	3.67
Meet the public	21	3.50
Write legibly	20	3.33
Maintain a good personal appearance	20	3.33
Make mathematical calculations accurately	19	3.17
Drive a car or truck safely	17	2.83
Evaluate credit risk of customers	17	2.83
Use correct English	15	2.50
Direct and supervise others	12	2.00

N = 6

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

TABLE 8

RATED ABILITY OF SIXTEEN AGRICULTURAL MECHANICS COMPETENCIES FOR EMPLOYMENT IN FARM SUPPLY STORES

Competencies	Total Ratings*	Mean
Ability to:		
Practice safety	21	3.50
Use shop tools and equipment	18	3.00
Overhaul a small gasoline engine	18	3.00
Use a parts manual	10	1.67
Tune an internal combusion engine	10	1.67
Figure a bill of materials for building construction	9	1.50
Perform electrical wiring	8	1.33
Repair farm machinery	7	1.17
Adjust farm machinery	7	1.17
Set up farm machinery	7	1.17
Operate farm equipment	5	.83
Construct buildings used in agriculture	5	.83
Advise on machinery needs of farmers	4	.67
Use an arc welder	3	.50
Use an acetylene welder	2	.33
Overhaul a large farm engine	2	.33
N = 6		

*Ratings used: 0 - none, 1 - little, 2 - some, 3 - much, 4 - very much

TABLE 9

RATED ABILITY OF ELEVEN ANIMAL SCIENCE COMPETENCIES FOR EMPLOYMENT IN FARM SUPPLY STORES

Competencies	Total Ratings*	Mean
Ability to:		
Advise on chemicals used to kill animal pests	14	3.50
Advise on chemicals used to treat and control common diseases of animals	14	3.50
Advise on nutrient needs of animals	10	2.50
Advise on management practices of animals	10	2.50
Balance rations	9	2.25
Advise on housing requirements and facilities for animals	9	2.25
Advise on equipment needs for specialized animal enterprises	8	2.00
Mix feeds	5	1.25
Recognize animal grades	5	1.25
Operate feed mixing and grinding equipment	4	1.00
Advise on market trends and forecasts of animal enterprises	2	1.00

N = 4

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

animals was needed next with a mean score of 2.50. The abilities to balance a ration, to advise on housing, facilities and equipment needs for animals, had the next highest mean score of 2.25. The ability to advise on equipment needs for specialized animal enterprises was needed to some degree as indicated with a mean score of 2.00. Only four of the farm supply stores were feed distributors.

Five of the six feed store managers responded to the crop and soil competencies as shown in Table 10. To advise on fertilizer needs ranked highest with a mean score of 3.60. To identify crops and plants commonly grown in the area was rated secondly with a mean score of 3.00. The abilities to advise on crop varieties adapted to the area, to detect nutritional and disease symptoms of plants, to identify fertilizer materials, to advise on safe chemical use and to identify different types of seeds were ranked as listed. The order of mean scores were 2.80, 2.60, 2.60, 2.40 and 2.20. The remaining competencies for employment in farm supply stores were rated as being of little importance.

The six farm supply store managers rated the eight personal traits according to need for employment in their stores. The results appear in Table 11. The abilities to get along with people and dependability and reliability were rated of major importance with a mean score of 4.00. The store managers and owners ranked the following personal traits: initiative and enthusiasm and accuracy in work with a mean score of 3.67; good moral character and neatness in dress and appearance with a mean score of 3.50; knowledge of business procedures

TABLE 10

RATED ABILITY OF SIXTEEN CROP AND SOIL SCIENCE COMPETENCIES FOR EMPLOYMENT IN FARM SUPPLY STORES

Competencies	Total Ratings*	Mean
Ability to:		
Advise on fertilizer needs	18	3.60
Identify crops and plants commonly grown in area	15	3.00
Advise on crop varieties adapted to the area	14	2.80
Detect nutritional and disease symptons of plants	13	2.60
Identify fertilizer materials	12	2.40
Advise on safe chemicals for insect and weed control	12	2.40
Identify different types of seeds	11	2.20
Calibrate a chemical sprayer	8	1.60
Identify weeds	8	1.60
Read and interpret soil test results	7	1.40
Recommend equipment needed for specialized crops	6	1.20
Recognize crop grades and quality	5	1.00
Grow plants in a greenhouse	3	.60
Grow nursery stock	2	.40
Advise farmers on market trends and forecasts of crop enterprises	2	.40
Establish and maintain landscaped areas	1	.20

N = 5

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

TABLE 11

RATED IMPORTANCE OF EIGHT PERSONAL TRAITS FOR EMPLOYMENT IN FARM SUPPLY STORES

Traits	Total Ratings*	Mean
Ability to get along with people	24	4.00
Dependability, reliability, etc.	24	4.00
Initiative and enthusiasm for doing job well	22	3.67
Accuracy in work	22	3.67
Good moral character	21	3.50
Neatness in dress and appearance	21	3.50
Knowledge of business procedures	20	3.33
Knowledge of technical agriculture	14	2.33

N = 6

*Ratings used: 0 - not important
1 - slightly important
2 - moderately important
3 - considerably important
4 - of major importance

with a mean score of 3.33; and a knowledge of technical agriculture last with a mean score of 2.33.

Suggested skills that should be given special emphasis for preparing workers for employment in farm supply stores included:

1. How to service tires.
2. Recognizing different feed requirements for older and younger animals.
3. The ability to lift heavy objects and materials safely.
4. Read instructions and directions on packages and containers.
5. Keeping things in the proper place.
6. Importance of good storekeeping.
7. Importance of displaying seasonal stock.

Employers in thirteen agricultural mechanics firms were interviewed. All responded by rating the general business competencies. The services provided by these firms were numerous. The services provided included: farm equipment sales and service; building supplies and construction; cabinet making; and small engine sales and service.

It is shown in Table 12 that the ability to follow instructions was the most needed ability with a mean score of 3.85. The ability to care for tools and equipment rated secondly with a mean score of 3.62. The abilities to meet the public and make mathematical calculations had a mean score of 3.31 and 3.15, respectively. To write legibly, to use good telephone procedure, to drive a vehicle safely, to use business machines, to maintain a good personal appearance, and to apply the principles of salesmanship were rated with a mean score

TABLE 12

RATED ABILITY OF THIRTEEN GENERAL BUSINESS COMPETENCIES FOR EMPLOYMENT IN AGRICULTURAL MECHANICS FIRMS

Competencies	Total Ratings*	Mean
Ability to:		
Follow instructions	50	3.85
Care for tools and equipment	47	3.62
Meet the public	43	3.31
Make mathematical calculations accurately	41	3.15
Write legibly	38	2.92
Use correct English	35	2.69
Use good telephone procedure	35	2.69
Drive a car or truck safely	35	2.69
Use cash register, adding machine, scales, etc.	34	2.62
Maintain a good personal appearance	33	2.54
Apply principles of salesmanship	26	2.00
Direct and supervise others	21	1.62
Evaluate credit risk of customers	12	.92

N = 13

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

of between 2.00 and 3.00. The employers in agricultural mechanics businesses indicated that to supervise others and to evaluate credit risk of customers were of little value to their employees.

Table 13 gives the mean scores of the mechanics abilities needed for employment in thirteen agricultural mechanics firms. To practice safety was rated highest with a mean score of 3.62. The second highest ability needed was to use shop tools and equipment with a mean score of 3.00. The third highest ability needed was to set up farm machinery with a score of 2.00. The following abilities were ranked in the following order with mean scores of 1.85 to 1.00: to use a parts manual; to overhaul a small gasoline engine; to tune an internal combustion engine; to figure a bill of materials for building construction; to adjust farm machinery; to construct buildings used in agriculture; and to advise on machinery needs for farmers. Several competencies received a low rating.

Table 14 shows how thirteen agricultural mechanics employers responded to eight personal traits. Initiative and enthusiasm for doing a job well, and dependability and reliability proved to be of major importance to the employers with a mean score of 4.00. Personal traits, the ability to get along with people and accuracy in work, had a mean score of 3.92. Good moral character showed a mean score rating of 3.77. The knowledge of business procedure had a mean score of 3.15. The table shows that neatness in dress and appearance and a knowledge of technical agriculture were considered last with mean scores of 2.38 and 1.69.

TABLE 13

RATED ABILITY OF SEVENTEEN MECHANICS COMPETENCIES FOR EMPLOYMENT IN AGRICULTURAL MECHANICS FIRMS

Competencies	Total Ratings*	Mean
Ability to:		
Practice safety	47	3.62
Use shop tools and equipment	39	3.00
Set up farm machinery	26	2.00
Use a parts manual	24	1.85
Overhaul a small gasoline engine	19	1.45
Tune an internal combustion engine	18	1.38
Figure a bill of materials for building construction	17	1.31
Adjust farm machinery	14	1.08
Construct buildings used in agriculture	13	1.00
Advise on machinery needs of farmers	13	1.00
Repair farm machinery	11	.85
Use an arc welder	8	.62
Use an acetylene welder	8	.62
Perform electrical wiring	8	.62
Operate farm equipment	7	.54
Overhaul a large farm engine	5	.38
Use farm surveying equipment	4	.31

N = 13

*Ratings by firms were: 0 - none, 1 - little, 2 - some, 3 - much, 4 - very much

TABLE 14

RATED IMPORTANCE OF EIGHT PERSONAL TRAITS FOR EMPLOYMENT IN AGRICULTURAL MECHANICS FIRMS

Traits	Total Ratings*	Mean
Initiative and enthusiasm for doing job well	52	4.00
Dependability, realiability, etc.	52	4.00
Ability to get along with people	51	3.92
Accuracy in work	51	3.92
Good moral character	49	3.77
Knowledge of business procedures	41	3.15
Neatness in dress and appearance	31	2.38
Knowledge of technical agriculture	22	1.69

N = 13

*Ratings used: 0 - not important
1 - slightly important
2 - moderately important
3 - considerably important
4 - of major importance

Employers of the agricultural mechanics businesses suggested that the following topics should be given special emphasis in preparing prospective employees for work in their firms:

1. Importance in servicing engines and machinery.
2. Knowing names, sizes, and correct use of all hand tools.
3. Shop and work safety.
4. Teach students to accomplish something.
5. Importance of shop order and safety.

Employers of nine food service firms were contacted and requested to respond to the questionnaire. The firms consisted of one milk manufacturing plant, one meat processing plant, and seven grocery chain stores. All employers from the firms reacted to the general business competencies as shown in Table 15. They considered the greatest need for their employees was to meet the public as the indicated mean score 4.00 reveals. The second most important need for their employees was to follow instructions which is indicated with a score of 3.89. Employers in the food services rated the following general business abilities accordingly: using cash registers, adding machines and scales with a mean score of 3.67; maintaining a good personal appearance, 3.56; writing ability and caring for tools and equipment, 3.22; and making mathematical calculations and using correct English, 3.11. To apply the principles of salesmanship, to use good telephone procedure, to direct and supervise others and to drive a vehicle were considered of some to little use to their workers.

Employers in the food service firms responded to four agricultural mechanics competencies as shown in Table 16. They indicated that

TABLE 15

RATED ABILITY OF TWELVE GENERAL BUSINESS COMPETENCIES FOR EMPLOYMENT IN FOOD SERVICE FIRMS

Competencies	Total Ratings*	Mean
Ability to:		
Meet the public	36	4.00
Follow instructions	35	3.89
Use cash register, adding machine, scales, etc.	33	3.67
Maintain a good personal appearance	32	3.56
Write legibly	29	3.22
Care for tools and equipment	29	3.22
Make mathematical calculations accurately	28	3.11
Use correct English	28	3.11
Apply principles of salesmanship	22	2.44
Use good telephone procedure	20	2.22
Direct and supervise others	15	1.67
Drive a car or truck safely	14	1.56

N = 9

*Rating scale: 0 - none
1 - little
2 - some
3 - much
4 - very much

TABLE 16

RATED ABILITY OF FOUR AGRICULTURAL MECHANICS COMPETENCIES FOR EMPLOYMENT IN FOOD SERVICE FIRMS

Competencies	Number of Firms	Total Ratings*	Mean
Ability to:			
Practice safety	9	36	4.00
Use shop tools and equipment	9	8	4.00
Use arc welder	1	3	3.00
Use an acetylene welder	1	3	3.00
N = 9			

*Rating scale: 0 - None
1 - little
2 - some
3 - much
4 - very much

to practice safety and to use shop tools and equipment were very much needed for employment in their firms. One milk manufacturer considered arc and gas welding would be of importance to his employees because he operated a maintenance shop.

The employers of the food service firms rated the eight personal traits required of their employees as shown in Table 17. The table shows that good moral character, the ability to get along with people and neatness in dress and appearance are equally important with a mean score of 3.89. The employers rated dependability, reliability, accuracy in work, initiative, enthusiasm and knowledge of business procedure with mean scores of 3.78 to 3.22. The managers and owners of these firms rated a knowledge of technical agriculture least important with a mean score of 2.22. It was indicated by the employers that the following skills should be given special emphasis in training prospective workers:

1. Importance of rotating stock.
2. Meat cutting skills.
3. Making applications for jobs.

Thirteen employers of horticultural businesses responded to the general business competencies as shown in Table 18. The managers and owners of these firms rated the ability to follow instructions very much, with a mean score of 4.00. They rated the abilities to care for tools and equipment and to meet the public with mean scores of 3.69 and 3.00. The ability to drive safely and write legibly was rated equally important with a mean score of 2.62. The next highest

TABLE 17

RATED IMPORTANCE OF EIGHT PERSONAL TRAITS FOR EMPLOYMENT IN FOOD SERVICE FIRMS

Traits	Total Ratings*	Mean
Good moral character	35	3.89
Ability to get along with people	35	3.89
Neatness in dress and appearance	35	3.89
Dependability, reliability, etc.	34	3.78
Accuracy in work	33	3.67
Initiative and enthusiasm for doing a job well	32	3.56
Knowledge of business procedures	29	3.22
Knowledge of technical agriculture	20	2.22

N = 9

*Rating used: 0 - not important
1 - slightly important
2 - moderately important
3 - considerably important
4 - of major importance

TABLE 18

RATED ABILITY OF THIRTEEN GENERAL BUSINESS COMPETENCIES FOR EMPLOYMENT IN HORTICULTURAL FIRMS

Competencies	Total Ratings*	Mean
Ability to:		
Follow instruction	52	4.00
Care for tools and equipment	48	3.69
Meet the public	39	3.00
Drive a car or truck safely	34	2.62
Write legibly	33	2.62
Use correct English	32	2.46
Maintain a good personal appearance	32	2.46
Apply principles of salesmanship	31	2.39
Make mathematical calculations accurately	30	2.31
Use good telephone procedure	29	2.23
Direct and supervise others	29	2.23
Use cash register, adding machine, scales, etc.	22	1.69
Evaluate credit risk of customers	8	.62

N = 13

*Ratings used: 0 - none
1 - little
2 - some
3 - much
4 - very much

rating, with a mean score of 2.46, was for the abilities to use correct English and maintain a good personal appearance. To apply the principles of salesmanship, to make mathematical calculations, to use good telephone procedure, to direct and supervise others rated respectively with mean scores of 2.39, 2.31, and 2.23. The owners and managers of the horticultural firms rated the ability to use business machines and to evaluate credit risk of customers with ratings of none, little and some skill needed with mean scores of .62 to 1.69.

The employers of the firms were asked to rate the agricultural mechanics competencies needed by employers in their businesses, Table 19 shows that to practice safety had the highest mean score of 3.92. The abilities to use shop tools and equipment, to operate farm equipment with mean scores of 2.00 and 2.15, had the second highest rating. The abilities to repair farm machinery, to perform electrical wiring, to adjust farm machinery, to tune an internal combustion engine, to overhaul a small gasoline engine and to set up farm machinery was rated with mean scores of 1.00 to 1.39. The horticultural business managers rated the last eight competencies with none to little ability needed for working in their businesses.

Table 20 shows that only ten of the horticultural firms responded to the crop and soil science competencies. The managers and owners indicated a mean of 3.10 for the top ability, to identify crops and plants commonly grown in the area. To identify weeds scored second with a mean score of 3.00. The abilities to advise on crop varieties adapted to the area, to detect nutritional and disease

TABLE 19

RATED ABILITY OF SEVENTEEN AGRICULTURAL MECHANICS COMPETENCIES FOR EMPLOYMENT IN HORTICULTURAL FIRMS

Competencies	Total Ratings*	Mean
Ability to:		
Practice safety	50	3.92
Use shop tools and equipment	28	2.15
Operate farm equipment	26	2.00
Repair farm machinery	18	1.39
Perform electrical wiring	18	1.39
Adjust farm machinery	17	1.31
Tune an internal combustion engine	15	1.15
Overhaul a small gasoline engine	15	1.15
Set up farm machinery	13	1.00
Overhaul a large farm engine	12	.92
Construct buildings used in agriculture	11	.85
Figure a bill of materials for building construction	10	.77
Use an arc welder	9	.69
Use an acetylene welder	9	.69
Use a parts manual	8	.62
Advise on machinery needs of farmers	7	.54
Use farm surveying equipment	5	.39

N = 13

*Ratings used: 0 - none, 1 - little, 2 - some, 3 - much, 4 - very much

TABLE 20

RATED ABILITY OF SIXTEEN CROP AND SOIL SCIENCE COMPETENCIES FOR EMPLOYMENT IN HORTICULTURAL FIRMS

Competencies	Total Ratings*	Mean
Ability to:		
Identify crops and plants commonly grown in area	31	3.10
Identify weeds	30	3.00
Advise on crop varieties adapted to areas	26	2.60
Detect nutritional and disease symptoms of plants	26	2.60
Advise on safe chemicals for insect and weed control	25	2.50
Grow plants in a greenhouse	25	2.50
Identify fertilizer materials	24	2.40
Grow nursery stock	24	2.40
Advise on fertilizer needs	23	2.30
Identify different types of seeds	22	2.20
Establish and maintain landscaped areas	20	2.00
Calibrate a chemical sprayer	17	1.70
Read and interpret soil test results	16	1.60
Recognize crop grades and quality	15	1.50
Recommend equipment needed for special crops	14	1.40
Advise farmers on market trends and forecasts of crop enterprises	4	.40

N = 10

*Ratings used: 0 - none, 1 - little, 2 - some, 3 - much, 4 - very much

symptoms, to advise on safe chemicals for insects and weed control, to grow plants in a greenhouse, to grow nursery stock, to identify fertilizer materials, to advise on fertilizer needs, to identify different types of seeds and to establish and maintain landscaped areas received a mean score of 2.00 to 2.60.

The five least needed abilities were: to calibrate a chemical sprayer, to read and interpret soil test results, to recognize crop grades and quality, to recommend equipment needed for special crops, and to advise farmers on market trends and forecast crop enterprises.

Table 21 shows how the horticultural managers and owners rated eight personal traits for employement. The traits, initiative and enthusiasm for doing a job well, dependability and reliability were rated of major importance with a mean score of 4.00. Good moral character, ability to get along with people, accuracy in work, knowledge of technical agriculture and knowledge of business procedures were grouped in order as the next highest needs for employment in horticulture with mean scores of 3.84 to 3.15.

Neatness in dress and appearance was the least important personal trait needed for employment in the horticultural firms.

The employers of the horticultural firms suggested that the following should be given special emphasis in preparing horticultural workers for jobs:

1. Understanding and appreciation of plant growth.
2. Understanding of plant ecology.

TABLE 21

RATED IMPORTANCE OF EIGHT PERSONAL TRAITS FOR EMPLOYMENT IN HORTICULTURAL FIRMS

Traits	Total Ratings*	Mean
Initiative and enthusiasm for doing a job well	52	4.00
Dependability, reliability, etc.	52	4.00
Good moral character	50	3.84
Ability to get along with people	47	3.62
Accuracy in work	46	3.54
Knowledge of technical agriculture	41	3.15
Knowledge of business procedures	41	3.15
Neatness in dress and appearance	31	2.31

N = 13

* Ragings used: 0 - not important
1 - slightly important
2 - moderately important
3 - considerably important
4 - of major importance

3. Possess a strong physical condition.

4. Learn to follow directions closely.

5. Ability to apply for a job.

6. Loyalty to firms they work for.

Table 22 shows the degree of responsibility, by the forty-five employers, placed upon the school, employer and the individual relative to developing within prospective employees the desired personal traits. The ability to get along with people was charged, first, the responsibility of the individual with a mean score of 2.87; secondly, the responsibility of the school with a mean score of 2.40; and thirdly, the responsibility of the employer with a mean score of 1.78. Responsibility for accuracy in work, first, belonged to the individual, secondly to the school, and thirdly to the employer with mean scores of 2.98, 2.44, and 2.38. The traits dependability and reliability were delegated, first, the responsibility of the individual, secondly, the responsibility of the employer and thirdly, the responsibility of the school with mean scores of 3.00, 1.73 and 1.29. Good moral character development, according to Table 22, delegated the first responsibility to the individual, second to the school, and third to the employer with mean scores of 2.96, 2.02, and 2.00. The employers interviewed delegated the first responsibility for development of initiative and enthusiasm for doing a job well to the individual, second to the school and last to the employer with mean scores of 3.00, 2.20, and 2.11. Table 22 shows that a knowledge of business procedure was the responsibility of the school and the

TABLE 22

RESPONSIBILITY OF SCHOOL, EMPLOYER, AND INDIVIDUAL IN DEVELOPING DESIRED PERSONAL TRAITS FOR SUCCESSFUL EMPLOYMENT IN THE OLIVER SPRINGS HIGH SCHOOL AREA

	School		Employer		Individual	
Trait	Total	Mean	Total	Mean	Total	Mean
Ability to get along with people	108	2.40	80	1.78	129	2.87
Accuracy in work	110	2.44	107	2.38	134	2.98
Dependability, reliability, etc.	103	1.29	88	1.73	135	3.00
Good moral character	91	2.02	90	2.00	133	2.96
Initiative and enthusiasm for doing a job well	99	2.20	95	2.11	135	3.00
Knowledge of business procedure	116	2.58	116	2.58	114	2.53
Knowledge of technical agriculture	117	2.60	80	1.78	105	2.11
Neatness in dress and appearance	93	2.07	97	2.16	132	2.93

N = 45

*Responsibility rating: 0 - no responsibility
1 - slight responsibility
2 - some responsibility
3 - major responsibility

employer equally with a mean score of 2.58 and that the individual had the second responsibility with a mean score of 2.53. The employers determined that the knowledge of technical agriculture was designated, first, the responsibility of the school with a mean score of 2.60; secondly, the responsibility of the individual with a mean score of 2.11; and thirdly, the responsibility of the employer with a mean score of 1.78. Neatness in dress and appearance was the first responsibility of the individual; secondly, the responsibility of the employer; and, thirdly, the responsibility of the school with mean scores of 2.93, 2.16, and 2.07. The table shows that the school, the employer, and the individual share a responsibility. It is noted in the table that the individual shares the major responsibility, the school the next responsibility, and the employer the least responsibility. It also indicates that a knowledge of business procedure can be taught in both the school and by the employer, however, a knowledge of technical agriculture can best be taught in school.

Table 23 shows how each of the 45 managers and owners of the firms were willing to help the Oliver Springs Vocational Agriculture Department in carrying out its program of off-farm occupational training. Twenty-seven were willing to provide part-time employment to students for the purpose of training on the job; 43 were willing to offer facilities for field trips and demonstrations; 38 employers were willing to provide some of the work personnel for resource reasons; 32 were willing to loan supplies and equipment to the vocational agriculture department for uses as teaching materials; and 37 were willing to provide the department with any models, posters, films or bulletins they may have.

TABLE 23

NUMBER OF FIRMS WILLING TO ASSIST THE OLIVER SPRINGS HIGH SCHOOL IN CARRYING OUT A VOCATIONAL AGRICULTURE PROGRAM

Classification of Firms	No. of Firms	Assistance: Part-Time Employment for Student Training			Facilities for Field Trips and Demonstrations			Provide Personnel for Demonstrations			Loan of Supplies and Equipment			Provide Posters, Models, Films and Bulletins		
		Yes	No	Other	Yes	No	Other	Yes	No	Other	Yes	No	Other	Yes	No	Other
Agricultural technical services	4	0	4	0	4	0	0	4	0	0	2	2	0	3	1	0
Farm supply	6	3	3	0	5	1	0	5	1	0	5	1	0	5	1	0
Farm mechanics	13	7	5	1	12	0	1	10	3	1	8	4	1	11	2	1
Food service	9	7	2	0	9	0	0	8	0	1	8	1	0	9	0	0
Horticultural	13	10	3	0	13	0	0	12	0	1	9	1	3	10	3	0
Total	45	27	17	1	43	1	1	38	4	3	32	9	4	37	7	1

N = 45

CHAPTER III

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

This study was conducted because the writer desired specific information relative to the occupations other than farming in the Oliver Springs High School area which could be used to aid in planning and carrying an instructional and guidance program that could be used as a guide to prepare students for off-farm agricultural jobs. A definite need was determined for answers to the following questions:

1. What skills need to be developed in prospective employees for off-farm employment?

2. What personal characteristics need to be developed in prospective employees?

3. What responsibility does the school, employer, and individual have in developing these skills and personal traits?

4 What assistance will the local businesses give in carrying out these training objectives?

Forty-five business managers and owners were contacted and interviewed for this information. The forty-five businesses were classified into five major categories. They were classified as agricultural technical services, farm supply stores, agricultural mechanics firms, food services, and horticultural businesses. Most

firms were small and provided many services to their patrons. Employees working in these businesses functioned in many job titles, therefore, workers needed to perform in many skills.

Data show that the thirteen general business competencies were needed to some degree by all forty-five firms except in the food services where the ability to evaluate credit risk of customers was not needed. All forty-five employers wanted people for employment who possessed a good personality and personal appearance. They want workers who will follow instructions and care for their tools and equipment. The employers considered personality development more important than possessing technical skills.

The forty-five employers responded to some or all of the seventeen agricultural mechanics competencies. The abilities rating the highest mean scores were to practice safety and use shop tools and equipment. The remaining abilities needed for employment depended upon the service offered by the firms and the job titles of the workers.

The agricultural technical employers responded to seven of the agricultural mechanics competencies with emphasis on surveying and building.

Data show that the farm supply employees should possess at least an understanding of mechanics whereas employees in agricultural mechanics firms and horticultural businesses need more manipulative ability in mechanics. Some degree of competency was needed in all seventeen agricultural mechanics abilities.

Six of the forty-five employers interviewed responded to needs of skills in animal science. The six employers responding included managers or owners in two agricultural technical services and four farm supply stores. Data show that to be able to advise on animal health was the most important need with skills in animal management practice least important. Animal science competencies were not needed to a very high degree in the Oliver Springs off-farm program according to the employers.

Data show that eighteen employers from the forty-five businesses responded to the crop and soil science competencies. The abilities to identify crops and plants commonly grown in the area was rated the most important for employees to know while working in the eighteen firms. Three of the employers were from the agricultural technical services, five were from the farm supply stores and ten were from the horticultural businesses. The ten horticultural employers rated the crop and soil science competencies the highest, employers of the farm supply stores rated them second and the agricultural technical services rated them last. The order of importance as rated by the forty-five employers for the competencies are as follows: 1 - general business skills; 2 - agricultural mechanics skills; 3 - crop and soil science skills; and 4 - animal science skills.

The forty-five employers rated most of the eight personal traits rather high proving them to be quite important to employees working in all firms. It should be noteworthy that the employers

rated a knowledge of business procedure lower. This points to the fact that good personal development is much more important to employees in these firms than knowledge of a technical nature.

Neatness in dress was rated lower on the scale by the employers in the horticultural and agricultural mechanics firms but still was important according to the level of scoring.

The data reveal that those employers who were more closely related to agriculture rated a knowledge of technical agriculture above the knowledge of business procedures whereas employers who were not so closely related to agriculture rated a knowledge of business procedures first.

Data show that the school, the employer, and the individual all share a high degree of responsibility relative to development of desirable character traits for employment in the forty-five firms. It is revealed in the data that the employer and the school share equal responsibility for development of business procedures knowledge, whereas, the school has the major responsibility to teach the technical agricultural knowledges. It should also be noted that for personal development, the major responsibility is with the individual himself.

Data in this study show that of the forty-five employers responding, twenty-five are willing to hire students part time for training purposes; forty-three are willing to offer their facilities or places of business for field trips and demonstrations; thirty-eight are willing to make provisions for personnel to give demonstrations;

thirty-two are willing to loan the department supplies or equipment; and thirty-seven are willing to provide posters, models, films or any other such items that can be used for instructional purposes.

The employers suggested twenty-six topics or skills which should be given special emphasis in training prospective workers for employment. See Appendix C for a list of these topics or skills.

II. CONCLUSIONS

The conclusions reached from the study are as follows:

1. Off-farm cooperative training stations exist in the Oliver Springs school community.

2. All of the employers felt a degree of competency in thirteen general business, seventeen agricultural mechanical, thirteen animal, and sixteen crop and soil science skills should be taught to the off-farm occupational students of the Oliver Springs High School.

3. All of the employers felt that development of personal traits within prospective workers was important and, they, along with the individual and school shared in the task of instilling it within the prospective workers.

4. A major part of the forty-five employers were willing to help the vocational agriculture department plan and execute an off-farm agricultural program.

5. Some of the forty-five employers suggested twenty-six ideas that should be emphasized in training prospective off-farm employees.

6. The vocational agriculture department has the major role in developing a knowledge of technical agriculture in prospective off-farm employees.

7. Personality development in off-farm employment is more important than academic and technical skills.

III. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made for the Oliver Springs Vocational Agriculture Department:

1. An off-farm advisory committee should be organized using employers from these firms and businesses to help plan and execute an off-farm occupational program.

2. An off-farm program be planned and instituted on the basis of the competencies and personal traits rated by the employers.

3. The agriculture department and the distributive education department work together in a cooperative program in job placement and teaching general business skills.

4. More out-of-school time be provided for the vocational agriculture teacher to work with businesses for job placement, student supervision, and public relations.

5. Conferences be held constantly between students, teachers, parents, and business employers to work out worthwhile job training objectives.

6. More funds to be made available for an off-farm instructional program.

7. Employers be contacted again to study what they can provide in the way of valuable instructional and resource materials.

8. Awareness of total school faculty involved in the task of training the future off-farm worker.

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APPENDIX

APPENDIX A

LIST OF BUSINESSES AND ORGANIZATIONS FURNISHING EMPLOYMENT IN AREAS OF AGRICULTURE

Agricultural Technical Service Area

1. Agricultural Stabilization and Conservation Service
2. Soil Conservation Service
3. Brummitt's Land Surveyors
4. Roane County Veterinary Clinic

Farm Supply Area

5. Brown and Ellis Motors
6. Anderson County Co-Op
7. Roane County Co-Op
8. Morgan County Co-Op
9. Cross Coal and Feeds
10. White's Auto Store

Agricultural Mechanics Area

11. Babbs Sawmill
12. Liles and Culpepper Cabinet Shop
13. Marrow's Cabinet Shop
14. Scandlyn's
15. Anco Supply
16. Brown Builders and Supply
17. Ford Tractor and Implement Company

18. Schubert's Motor Company
19. England Auto Parts
20. Oak Ridge Fix-It Shop
21. Norwood Parts and Service
22. Crouch's Saw Shop
23. Sever Saw Shop

Food Services Area

24. Davis Slaughter House
25. Norris Creamery
26. Darnell's Super Market
27. Piggly-Wiggly
28. Cas Walker's Super Market
29. Jack's IGA
30. Kroger's
31. A & P Stores
32. French's Super Market

Horticultural Area

33. Brater-Brockwell Greenhouse
34. Southard's Plants
35. Kee's Greenhouses
36. Bob's Flower Place
37. Thompson's Nursery
38. Weldon's Quality Nursery
39. Butler's Florist

Horticultural Area (cont.)

40. Bowden's Greenhouses
41. Plateau Electric
43. University of Tennessee - AEC
44. South West Point Gulf
45. City of Oak Ridge

APPENDIX B

INSTRUMENT FOR COLLECTING DATA

COMPETENCIES FOR AGRICULTURALLY RELATED BUSINESSES

Please respond to each statement. Your response will be used in developing an off-farm agricultural education program in the Oliver Springs High School.

I. Personal Data

Name of Firm: _____ Number: _____

Person interviewed: _____ Date: _____

Title of person interviewed: _____

Check whether: Processor _____
Distributor _____
Manufacturer _____
Other: _____

II. Needed Competencies

Indicate according to the needed competency for employment in your business:

0 - none; 1 - little; 2 - some; 3 - much; 4 - very much

A. General Business Competencies

Ability to:

1. Make mathematical calculations accurately _____
2. Use correct English _____
3. Write legibly _____
4. Care for tools and equipment _____
5. Use good telephone procedure _____
6. Use cash register, adding machine, scales, etc. _____
7. Meet the public _____
8. Follow instructions _____
9. Direct and supervise others _____
10. Apply principles of salesmanship _____
11. Drive a car or truck safely _____
12. Maintain a good personal appearance _____
13. Evaluate credit risk of customers _____
14. Other _____

B. Agricultural Mechanics Competencies

Ability to:

1. Use shop tools and equipment _____
2. Use an arc welder _____
3. Use an acetylene welder _____
4. Practice safety _____
5. Repair farm machinery _____
6. Adjust farm machinery _____
7. Set up farm machinery _____
8. Use a part's manual _____
9. Tune an internal combustion engine _____
10. Overhaul a large farm engine _____
11. Overhaul a small gasoline engine _____
12. Operate farm equipment _____
13. Figure a bill of materials for building construction _____
14. Construct buildings used in agriculture _____
15. Perform electrical wiring _____
16. Use farm surveying equipment _____
17. Advise on machinery needs of farmers _____
18. Other _____

C. Animal Science Competencies

Ability to:

1. Advise on nutrient needs of animals _____
2. Advise on chemicals used to kill animal pests _____
3. Advise on chemicals used to treat and control common diseases of animals _____
4. Advise on equipment needs for specialized animal enterprises _____
5. Balance rations _____
6. Mix feeds _____
7. Operate feed mixing and grinding equipment _____
8. Advise on market trends and forecasts of animal enterprises _____
9. Advise on management practices of animals _____
10. Advise on housing requirements and facilities for animals _____
11. Recognize animal grades _____
12. Other _____

D. Crop and Soil Science Competencies

Ability to:

1. Advise on fertilizer needs _____
2. Detect nutritional and disease symptoms of plants _____
3. Advise on crop varieties adapted to the area _____
4. Advise on safe chemicals for insect and weed or herb control _____

5. Calibrate a chemical sprayer _____
6. Identify weeds _____
7. Identify different types of seeds _____
8. Read and interpret soil test results _____
9. Identify fertilizer materials _____
10. Identify crops and plants commonly grown in area _____
11. Recommend equipment needed for specialized crops _____
12. Grow plants in a greenhouse _____
13. Grow nursery stock _____
14. Establish and maintain landscaped areas _____
15. Advise farmers on market trends and forecasts of crop _____
16. Recognize crop grades and quality _____

III. Personal Traits and Responsibility for Developing

If individual employed by your business is to possess the following traits, indicate the relative importance of these traits for successful employment.

0 - no importance; 1 - slight importance; 2 - moderate importance; 3 - considerable importance; 4 - major importance

Also indicate who should be responsible for developing the desired traits. Assign responsibility to either the school, employer, or individual. (It would be possible to assign some level of responsibility to all three categories.) Use the following scale:

Traits	Importance	Responsibility: School	Employer	Individual
1. Knowledge of technical agriculture	_____	_____	_____	_____
2. Knowledge of business	_____	_____	_____	_____
3. Good moral character	_____	_____	_____	_____
4. Ability to get along with people	_____	_____	_____	_____
5. Initiative and enthusiasm for doing a job well	_____	_____	_____	_____
6. Dependability, reliability, etc.	_____	_____	_____	_____

Traits	Responsibility			
	Importance	School	Employer	Individual
7. Accuracy in work	____	____	____	____
8. Neatness in dress and appearance	____	____	____	____

IV. Miscellaneous

Answer with yes or no. (If you are undecided or services are unavailable, also indicate.)

1. Would you employ a high school student to work part time while attending school for the purpose of training? ____

2. Would you offer your facilities for field trip activities and demonstrations at school? ____

3. Would you provide personnel to present demonstrations on use to the school? ____

4. Would you loan equipment or supplies for demonstrations on use to the school? ____

5. Would you provide resource materials such as posters, models, films, bulletins, etc.? ____

6. Can you suggest a skill that should be given special emphasis for preparing workers for employment in your business? ____

   Suggested skill: _____

7. Can you suggest a character trait which is very important for employment in your business? ____

   Suggested skill: _____

APPENDIX C

Twenty-six suggested skills that should be given special emphasis for preparing workers for employment in:

A. Agricultural Technical Services

1. Understanding farm animals
2. Ability to handle animals
3. Ability to write news articles and reports
4. Understanding maps
5. Marking maps

B. Farm Supply Stores

6. How to service tires
7. Recognizing different feed requirements for older and younger animals
8. The ability to lift heavy objects and materials safely
9. Read instructions and directions on packages and containers
10. Keeping things in the proper place
11. Importance of good storekeeping
12. Inportance of displaying seasonal stock

C. Agricultural Mechanics Firms

13. Importance of servicing engines and machinery
14. Knowing names, sizes and correct use of all hand tools
15. Shop and work safety
16. Teach students to accomplish something
17. Importance of shop order and safety

D. Food Services

18. Importance of rotating stock

19. Meat cutting skills

20. Making applications for jobs

E. Horticultural Firms

21. Understanding and appreciation of plant growth

22. Understanding of plant ecology

23. Possess a strong physical condition

24. Learn to follow directions closely

25. Ability to apply for a job

26. Loyalty to firms they work for

VITA

Austin C. Ingram was born on May 17, 1922 in Tellico Plains, Tennessee to Mr. and Mrs. W. L. Ingram.

He enrolled in the Madisonville High School at the beginning of the fall term in 1941, but left for the Armed Forces shortly thereafter. He served four years and eight months as a rifleman in the United States Marine Corps. During this time he received the Good Conduct Award from the Marine Corps. Upon his return from service, he scored high enough on the GED test to qualify as a senior high school student and received the high school diploma from the Hiwassee High School Department, Madisonville, Tennessee in 1948.

In 1949, he enrolled in pre-agriculture at Hiwassee College and received the A. A. degree in 1951. He continued his undergraduate work at The University of Tennessee, receiving the Bachelor of Science degree with a major in Agricultural Education on June 8, 1953.

In the summer of 1958, he enrolled in the Graduate School at The University of Tennessee, Knoxville, to begin his work toward the Master of Science degree, with a major in Agricultural Education.

He worked as a supply checker in the New York Naval Shipyards from October 1945 to September 1947, and from July 1953 to June 1958 he was employed as a vocational agriculture teacher at Vonore High School in the Monroe County school system. From September 1958 to the present time he has been employed by the Roane County school system as the vocational agriculture teacher at Oliver Springs High School.