ABSTRACT OF THESIS

EFFICIENCY OF SUPERVISED FARM PRACTICE WORK IN TWENTY-TWO DEPARTMENTS OF VOCATIONAL AGRICULTURE NEAR REYNOLDS, ILLINOIS.

Submitted by

R. O. Robinson

In partial fulfillment of the requirements

for the Degree of Master of Science

Colorado State College

of

Agriculture and Mechanic Arts

Fort Collins, Colorado

August, 1940

ABSTRACT OF THESIS

by R. O. Robinson

Statement of the problem.-- The objective in selecting this problem was to make a study of the supervised farm practice program in a section of Illinois, in and around Reynolds, the home of the writer, in order to find how to make the conduction of the program efficient and effective.

Materials and methods.-- In order to secure the degree of participation in the program of supervised farm practice the writer prepared an inquiry blank which he mailed to 26 teachers of vocational agriculture. Twenty-two were returned and used in this study.

The writer had previously conferred with these teachers, soliciting their interest and cooperation in making the study an accurate representation of the conditions of the program.

As a guide in enabling the writer to set up a complete study of the supervised farming program he consulted The Report of the National Committee on Standards in Vocational Education in Agriculture.--1/

Seven phases were considered in the study:

1. Making Preliminary Arrangements
2. General Planning
3. Provisions for Instruction
4. Making Job Plans

1/ Mimeograph 67004--Federal Board for Vocational Education.

5. Record Keeping

6. Supervisions

7. Results of the Program

In order to draw general well-founded conclusions in a comparative study of the effectiveness of the seven phases of the supervised farming program, the distributions of responses relative to questions covering these phases were subjected to statistical analysis.

In order to differentiate between weaker and stronger phases of the supervised farm program and to discern where coordination or lack thereof exists, statistical hypotheses of equal efficiency and effectiveness were constructed. To test these hypotheses the well known, X^2, chi square test was employed.

Discussion of findings.--Comparative statistical analysis was made, phase with phase, from the summations of the responses of each of the four categories, "always", "quite generally", "rarely", and "not at all".

Since this study of twenty-two teachers was considered rather limited the findings were submitted to the probability theory. Thus the expected response frequencies were calculated for the population of agriculture teachers. The observed response frequencies of the sample of twenty-two teachers made some interesting comparisons with the expected response frequencies of the population of agriculture teachers.

From these frequencies were constructed the $X^2 = \sum \frac{(O - T)^2}{T}$ chi square, discrepancies, of the whole program and also those of phase with phase. These discrepancies were compared with the critical

value, $X^2_{.05}$, to determine if the hypothesis might be rejected. As this turned out to be the case, it was then presumed that there existed inherent differences in the effectiveness between those phases of the program, which is not merely incident to the teachers and schools, incorporated in this study; but is characteristic of the program quite generally.

The critical value, $X^2_{.05}$, is based upon considerations of probability in accordance with a certain number of "degree of freedom", which is the number of equations by which the hypothesis being tested is being expressed.

Most of the discrepancies between phases were greater than the critical value and were called significant. The few lesser discrepancies were called non-significant. All of the significant ones have been discussed and conclusions drawn, but there would be danger of making the wrong predictions in discussing the non-significant ones.

Summary.-- The more detailed findings of this study follow:

1. Making the Preliminary Arrangements for supervised farm practice is being conducted with the least efficiency of all the seven phases studied.

2. The inefficiency of conducting the Preliminary Arrangements is reflected throughout the entire program.

3. General Planning is being more efficiently conducted than Preliminary Arrangements.

4. Provisions for Instruction are being more efficiently administered than Job Planning.

5. Making the teaching timely is the most serious fault in the Provisions for Instruction phase.

6. Job Planning is not being conducted very well by most of the teachers in the area of this study.

7. Record Keeping is being the most efficiently conducted of all the seven phases studied.

8. Supervision of the project work is inadequately handled.

9. Lack of efficiency in Supervision is due to lack of purpose for project visits made.

10. Less than half the teachers stated that they visited the boys projects at all critical periods.

11. There is a lack of keeping records of project visits, and a relating of the project record book to the project.

12. There is a lack of having students analyze the records of their completed projects.

13. Students, often, have not determined how to improve their projects.

14. Only two teachers reported that the capital and income from the project work is "always" retained by the student.

15. There is a noticeable lack of the project work becoming larger and better each year.

16. The phase, Results, has suffered from the inefficiency of the other six phases.

17. In the whole supervised farming program there were only three hundred observed responses in the "always" category out of a total of eight hundred fourteen responses made.

Recommendations.-- Some suggestions that seem to evolve from this study for the improvement of the efficiency of the supervised farm practice program in twenty-two departments of vocational agriculture included in this study are:

1. More thoroughness in making Preliminary Plans, especially between teacher and parents, before the student starts to school.

2. Make more use of the written agreement between parent, student and teacher.

3. Establish the boy's ownership or desirable partnership relation always.

4. Make long-time supervised farming programs as a result of previous, carefully, studies, preliminary arrangements.

5. Make the supervised farming program more like that in which the student expects to engage.

6. Include more improved practices.

7. Have students prepare budgets for each project.

8. Give the instruction at such a time so that it will provide the greatest assistance to the student in carrying out his supervised farm projects.

9. Give instructions in and have students make Job Plans for each project job in their supervised farming program.

10. Have students make written statements of what they intend to do about each job plan.

11. Visit the students projects at all critical times.

12. Have a definite purpose for each project visit.

13. Have the students analyze their completed project record books and determine how to improve their projects.

14. Make arrangements whereby the student retains the capital and income from his supervised farm practice work.

These recommendations are necessarily of a general nature and will not apply equally to all teachers in this study. They will

not insure one hundred percent efficiency if followed, but it is felt that improvement according to the fourteen recommendations, will increase the efficiency of the supervised farm practice program of th the twenty-two departments of vocational agriculture in Illinois, close to Reynolds, Illinois, materially.

T H E S I S

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I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY R. O. ROBINSON ENTITLED EFFICIENCY OF SUPERVISED FARM PRACTICE WORK IN TWENTY-TWO DEPARTMENTS OF VOCATIONAL AGRICULTURE NEAR REYNOLDS, ILLINOIS BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE MAJORING IN AGRICULTURAL EDUCATION CREDITS 3½

C. L. Vaughn
In Charge of Thesis

APPROVED G. A. Schmidt
Head of Department

Recommendation concurred in

Committee on Final Examination	Committee on Graduate Work
G. A. Schmidt	Alvin Keyser
Andrew G. Clark	
Gilbert L. Betts	

This thesis, or any part of it, may not be published without the consent of the Committee on Graduate Work of the Colorado State College of Agriculture and Mechanic Arts

ACKNOWLEDGEMENTS

The writer wishes to express his appreciation to the twenty-two teachers of vocational agriculture who furnished the information on the questionnaire used in this study; to Dr. G. A. Schmidt, his major professor, who offered many helpful suggestions and advice; to Dr. Harry E. Bradford, Professor of Vocational Education, University of Nebraska, under whode guidance the problem was selected; to Dr. A. W. Nolan, Professor of Agriculture Education, University of Illinois, who helped in preparing the data gathering device; to Mr. Andrew G. Clark, Associate Professor of Mathematics, Colorado State College, for his kind assistance with the statistical analysis; to Dr. Clifford I. Mondart, Associate Professor of Agricultural Education, Louisiana State University, for his help and assistance in the preparation and writing of this thesis; and to his wife, Grace E. Robinson, for her interest, help and encouragement from the start until the completion of this study.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF MAPS

Chapter I

INTRODUCTION

This study is concerned with supervised home project work conducted by boys enrolled in the all-day vocational agriculture course offered in secondary schools under the provision of the National Vocational Education Act or the Smith-Hughes Act as it is more commonly called.

PROVISIONS FOR SUPERVISED FARMING

The Smith-Hughes Act appropriates funds for teaching vocational trade and industrial subjects; for teaching vocational home economics subjects and for the teaching of vocational agriculture.

In 1917 this Act was passed providing funds for vocational education of less than college grade. Vocational education in agriculture in high schools is any training of less than college grade, the specific purpose of which is to equip persons over fourteen years of age for the effective pursuit of farming.

The Smith-Hughes Act states that schools offering instruction in vocational agriculture, shall provide for directed or supervised practice in agriculture, either on a farm provided for by the school, or on other farms, for at least six months per year.

Supervised farm practice work is an integral part of vocational agriculture, because, in all effective vocational training,

the skills and doing habits needed in the occupation, for which one is being vocationally trained, must be developed. In other words, supervised farm practice pertains essentially to practical work done on the home farms of the boys enrolled in vocational agriculture under the supervision of the teacher of vocational agriculture.

Although the Smith-Hughes Act states that trainees in vocational agriculture must engage in at least six months of supervised farm practice, in reality most boys carry on this supervised farm practice work throughout the entire year and also during the summer months. In most cases it consists of conducting farm enterprises through their complete cycle of production and marketing. For example, if a swine production enterprise is selected by a boy for his supervised practice work, the project begins in the fall, when the gilt is selected, and continues through the breeding season, gestation period, farrowing time, developing the litter, fattening the pigs and marketing the hogs the next fall. Many boys not only carry their projects through one such cycle but continue with them year after year. Usually they carry several projects, some dealing with livestock production and others with crop, vegatable or fruit production.

Although the supervised farm practice work is required by the vocational act, for students enrolled in vocational agriculture, this work should not be regarded as a penalty imposed upon boys enrolling in the course in vocational agriculture. The plans and purposes of the supervised farm practice work should be appreciated by the boys and their parents. They should realize the necessity for

this work; its many advantages, and values. Because of these appreciations a boy enrolled in vocational agriculture should want to engage, each year, in as much supervised farm practice as he has time and energy to carry on successfully and get as much practical experience as is possible.

Many boys enrolled in vocational agriculture, therefore, early in the course, set up a long-time program of supervised farm practice that enables them to get well rounded farm experience. Such programs involve numerous projects,which when once started, continue and gradually enlarge and improve through the training period. This scheme provides for very effective participating experiences in farming that should be valuable in training a boy for the farming occupation he plans to engage in when he is ready.

THE PROBLEM

During his seventeen years of work in helping boys in their supervised farm practice work, the writer has developed a keen interest in determining how this very important phase of vocational agriculture could be conducted most efficiently and most effectively.

This general feeling led the writer to make a study of the supervised farm practice work in twenty-two schools adjacent to Reynolds, Illinois. The specific problem he chose was as follows: To determine the efficiency of the supervised farm practice work conducted by the boys enrolled in twenty-two departments of vocational agriculture in the vicinity of Reynolds, Illinois.

To find a solution to this problem, the writer selected,

what he considered, seven important phases of supervised farm practice work, which he planned to study critically. He was of the opinion that a study of these seven phases would throw considerable light upon the solution of the major problem.

These seven phases are:

1. Preliminary Arrangements.
2. General Planning.
3. Provision for Instruction.
4. Job Planning.
5. Record Keeping.
6. Supervising.
7. Results.

In order to secure an area in which the type of farming is similar throughout, the scope of this study is limited to the twenty-two departments of vocational agriculture located close to Reynolds, Illinois, where the writer is teaching. Reynolds, Illinois, is located in Rock Island County in the west central part of the State.

So far as the writer has been able to observe, in a general way, the work in vocational agriculture in the twenty-two schools located close to Reynolds, Illinois, is much alike. He is of the opinion that the supervised farm practice work engaged in by the boys enrolled in vocational agriculture in these schools could be improved.

Chapter II

REVIEW OF LITERATURE

Numerous studies pertaining to the improvement of supervised farm practice have been made. Because of the fact that very few of these studies were available to the writer, he relied largely upon the Federal Board for Vocational Education Bulletin No. 180. In this chapter the writer gives a synopsis of those studies pertinent to his study.

Four years after vocational education was established by the passage of the Smith-Hughes Act, Colvin (6,2:46) prepared a score card to be used as a means of judging home projects in vocational agriculture. Teachers of vocational agriculture in Illinois are still using this score card to judge the success or failure of the home projects of their students. This score card pertains to:

Preliminary planning, execution of plans and the outcomes.

These items are being used in the present study the writer has undertaken.

Two years later Dorsey (10,2:60-1) made a study to show the relationships between size of project and profits secured. He found that:

> Seventy-five percent of all projects were below standards in scope. Projects which compared favorably with the standards were Irish potatoes, tobacco, wheat, swine and poultry. Livestock projects are usually too small for proper training in skills, management, marketing and feeding. The average time devoted to dairy projects met the standards in this regard.

The use of supervised farm practice in teaching vocational agriculture was studied by Hill (13,2:87) in 1924. He stated:

> The suggestions which should be embodied in a desirable method of teaching vocational agriculture in Illinois are as follows:
>
> 1. The project should be used as a device for teaching, rather than as a means of application of theories.
> 2. Project work should be an integral part of the classroom work and instruction.
> 3. Textbook work and discussion irrelevant to the projects of the students are not vocational instruction.
> 4. Instruction based upon a single project has many limitations in a region of general farming.
> 5. Instruction in vocational agriculture should not be confined to manipulative skill, necessary to perform a certain number of jobs, but should teach a mode of life as well as how to farm.
> 6. It should include instruction concerning the livestock, crops, and farm operations of the community.
> 7. Include instruction in the management and business of a farm.

Daughtridge, (8,2:52-3), in studying home projects in order to realize more of the potential educational values and increase the financial returns, made the following recommendations:

1. Coordination of classroom work.
2. Development of managerial ability.
3. Establishment of ideals and habits of good record keeping.
4. The importance of a good plan.
5. The need for adequate supervision and close cooperation with the parents.
6. Continuity of projects.
7. Utilization of group cooperation in projects.

Project visitation is hampered by many obstacles but Newsom (22,2:133) found that:

> There is a relation between the number of visits and profits of all projects studied. All projects gave a positive correlation between visits and profits, except in corn. Weather conditions caused a loss of many of the corn projects, and thus a negative correlation was obtained. The number of visits that gave the greatest profit was from four to six.

The means of improving project work in Mississippi accord-

ing to McReynolds (20,2:118) are stated as follows:

1. It seems that the main problems in improving project work in Mississippi is to have more boys beginning projects.
2. In having a higher percentage completed.
3. In having more supervision in some schools.
4. In an adjustment of size of projects.
5. Having both major and minor enterprises appear in a boy's project work.
6. Having a larger number of enterprises carried by each boy.

Eldridge (12:49) made the following statement for the improvement of the progress of the supervised practice in vocational agriculture in Colorado high schools:

> In order that the future development of supervised practice in Colorado may be permanent and real rather than temperary and assumed, the following procedures were submitted: adopting efficiency standards in supervised practice, developing more efficient teachers in vocational agriculture, and developing a long-time program in supervised practice with each pupil.

In finding means and methods of securing more supervised home project work than is usually done, Dennison (9,2:57-8) lists these factors:

1. Increasing requirements.
2. Increasing cash income.
3. Creating more interest in learning the vocation.
4. Planning and teaching every job in view of having the students perform it at home.
5. Teaching standard practices for every job taught.
6. Setting up high goals.
7. Planning the supervised practice program carefully.
8. Teaching how to cooperate.
9. Using score cards.
10. Increasing grade or credit.
11. Checking results carefully.
12. Providing time for the work.
13. Allowing in class only boys who have facilities to do the work.

Kiltz (17,2:103-4) made a study of the problem of adapting the instruction to the needs and resources of the boy. In this study he made the following statement:

> The study indicates a need for greater effort in determining what are the boys' training needs, in selecting the proper practice media to meet these needs and more careful and consistent effort in relating the whole program of instruction to these needs. The selection, distribution, and continuity of enterprises are weak.

A study for the improvement of supervised farm practice in Texas made by Tull (31,2:171-2) shows that:

> The supervised practice programs do not reflect the farming situation. The enterprises of individuals were found to decrease in scope with succeeding years. The supervised practice programs varied from the boy's own statement of his primary farming interests in 54.5 percent of the cases. The programs should increase in scope and difficulty, but in many programs there was no evidence of this. The normal situation seemed to be one project in a year's program. There was far less continuity than is desirable with enterprises; e. g., few boys carried a first-year enterprise through the second and third years.

Making the preliminary arrangements for the selection of a student's supervised farm practice program has been spoken of by some workers in the field as a launching program. Some of the difficulties involved in launching vocational pupils into supervised farm practice and suggestions for more effective procedures given in the findings of Adams (1,2:19) are:

1. Motivating the boys.
2. Motivating the parents.
3. Maintaining high standards.
4. Financing the business.
5. Providing adequate facilities.
6. Performing the work required.
7. Selecting farm boys for the course.
8. A number of miscellaneous difficulties.

Ten teaching jobs are recognized by Sanders (25,2:149-50) in Supervised Farm Planning. They are:

1. Surveying the farm home.
2. Selecting the farm type.
3. Setting up the ideal training program.
4. Estimating prospective returns.
5. Financing the supervised practice program.

6. Making the final selection of enterprises and supplementary farm jobs.
7. Setting up standards.
8. Securing the agreement.
9. Analyzing enterprises and evaluating jobs to be planned in detail.
10. Planning farm jobs.

Recently Carroll (5,2:41-2) became interested in the trends in supervised farm practice in agriculture and he made a study to show these trends. He found that:

1. The number of projects in each pupil's supervised farm practice program throughout the state as a whole is increasing.
2. The kind of projects that are increasing in the supervised farm practice programs are those that are a part of the major enterprises on the pupil's home farm.
3. The size of the projects in a supervised farm practice program is increasing.
4. The projects that are increasing in size as a rule are the projects that are a part of the major enterprises on the pupil's home farm.
5. Supervised farm practice programs are more closely related to the farming business than they were in the years of 1928 and 1929.
6. The number of operative projects is increasing more rapidly than managerial projects.
7. The number of projects classified as being both operative and managerial is decreasing rapidly.
8. There are very few record keeping projects in the State.
9. The number of record keeping projects is increasing slowly.

More recently (1938) an analytical study of the supervised home projects made by Dowell (11;71-2ff) showed that:

There was no significant positive proof of obtaining a high quality of project work in relation to the factors studied, which were:

1. Teacher experience.
2. Teaching tenure.
3. Size of class.
4. Percent of farm boys in class.
5. Percent of teacher's time devoted to vocational agriculture.
6. Teacher's concept of project work.

The writer's thinking has been greatly aided and stablized

by his readings from authors of books relative to efficiency in vocational education.

Schmidt (28:57-294) lists and discusses sixteen characteristics which have to do with an efficient plan of vocational education in agriculture. They are:

1. The instruction is given to a selected group.
2. The instructor is occupationally competent in the practices he teaches.
3. The training environment resembles the working environment.
4. The teaching content directly functions in the work for which the pupil is being trained.
5. The content of the training is obtained from reliable sources.
6. The training is given on real jobs.
7. The training jobs are carried on in the same way as in the occupation.
8. The training meets the needs of learners at the time when they need help and in the way that gives most help.
9. The training helps the individual to capitalize his interests and abilities.
10. The learner is trained specifically in the manipulative habits and in the thinking habits required in the occupation.
11. The training is adapted to the particular characteristics of the learners.
12. The training experiences are repeated until right habits are fixed.
13. The training is carried to the point where it gives the trainee a productive ability essential to success in the occupation.
14. The training meets the market demands of the occupation.
15. The funds expended on the training should be sufficient to permit the doing of an efficient job.
16. The administration of the training program is elastic.

The leaders in vocational education after years of continuous experimenting, have set down the policies and procedures which have proved most successful in theory and practice. The relation of these policies as efficiency factors is shown by Prosser and Allen (24:371) in the following quotation from their book.

> Other things being equal any scheme of instruction for any occupation will be more effective in results and costs which selects and trains only those who need the service, want it, are willing to take it and are willing to profit by it. To do this, such a scheme must employ some method or policy of selection that secures such a group for instruction. Other things being equal, that scheme will be more efficient which employs an occupationally trained instructor to give real experience on the jobs in a real occupational environment. Obviously he will succeed in his efforts far better if he uses effective teaching methods and gives all his training in such an instructional order that every step in learning leads naturally and properly to the next. Other things being equal, that scheme will produce the best results which teaches usable information to improve doing ability instead of wasting its efforts in the teaching of non-usable knowledge. This same thing can be said about the plan or scheme that gives individual instruction and recognizes individual as well as group progress in doing ability on the job. It is also true of the plan that trains its students to meet real occupational standards by subjecting their work to real performance, rather than to academic tests, and by giving adequate repetitive training to insure doing ability. Nor is this any the less true of those plans which provide timely help for workers in their difficulties, and ambitions instead of formal stated, "cold storage" knowledge. Other things being equal, any scheme will be better which recognizes and adopts its policies and objectives to the age, abilities and traits of the group it serves. Other things being equal, that scheme will be best which employs every possible labor saving device in teaching, such as job sheets, information sheets, charts, models, diagrams, hand books and reference books and which utilize all the best recognized ways to teach skill, knowledge, and resourceful thinking on the job.

The supervised farm practice program requires careful planning. Wright and Allen (35:270) give a good example of the necessity for careful planning.

> In all affairs of life two types of individuals are recognized. One type plans in advance; the other type is an opportunist. The one who plans in advance may not necessarily adhere to his original plan. He may modify it from time to time, or even abandon it and substitute a new plan; but in general, he always has an idea of where he wants to go, but also as to how he expects to get there or at least hopes to get there. The second type of individual may, of course, know where he wants to go, but he may trust to luck and to opportunity to get there.

Some teachers of agriculture complain that plans in a changing field like agriculture are of little value. True, agriculture is in a state of flux. Therefore, teachers in this field must not hesitate to modify their plans accordingly. The mere attempt at planning, forces a degree of evaluation of one's program and gives the teacher a hitching post for his work.

Chapter III

MATERIALS AND METHODS

To obtain the data needed for making this study, it was necessary to devise a data gathering device for procuring information relative to the degree of participation in the important activities in supervised farming by vocational agriculture students in the twenty-two schools close to Reynolds, Illinois.

FEATURES OF THE QUESTIONNAIRE

The questionnaire method of collecting data was selected to obtain these data from the teachers in these schools. The writer is well acquainted with the teachers of vocational agriculture in these twenty-two schools, and felt that conscientious and reliable replies would be obtained from them.

It is further assumed, that the opinions of these teachers provide a representative sample of qualified judgment on the questions concerned in this study.

The questionnaire was constructed to include the seven phases that were considered most important in supervised farm practice work. The Report of the National Committee on Standards in Vocational Education in Agriculture entitled "Evaluation of Local Programs of Vocational Agriculture in Preliminary Form"--1/ was used

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1/ Mimeograph 67004-Federal Board for Vocational Education.

as a guide in deciding upon the phases of supervised farm practice work to include in the questionnaire.

Under each of the seven phases, pertinent activities were developed, opposite which was provided space for obtaining the degree of participation. The degree of participations were to be expressed as follows:- always, quite generally, rarely, and not at all.

Participations indicated in the "always" category were considered efficiently and effectively conducted. Participations indicated in the "quite generally" category were considered as in need of improvement. Participations indicated in the "rarely" or "not at all" categories were considered being very poorly conducted.

The responses made by the twenty-two teachers in the study were also compared with the expected responses, calculated for the population of agriculture teachers. If the observed responses were greater than the expected frequencies, the supervised farming work was considered, relatively, efficiently and effectively conducted, but the final analysis, as to how efficiently and effectively the supervised farming program is being conducted in the area of this study, was determined by the degree of participation in the activities recommended in the Report of the National Committee in Vocational Education in Agriculture, previously mentioned.

The questionnaire was submitted for criticism to Dr. A. W. Nolan, head of Vocational Agricultural Education, of the University of Illinois; to Dr. G. A. Schmidt, head of Summer Department of Agricultural Education, Professor of Agricultural Education, of the Colorado State College; and then to Dr. Gilbert L. Betts, Supervisor

of Graduate Research in Education, of the Colorado State College, who pronounced it satisfactory for use in collecting the desired data. A copy of the questionnaire that was finally adopted is found in the Appendix of this study.

The writer had several occasions to confer with the teachers of vocational agriculture in his district. With these teachers he discussed his problem and solicited their cooperation in making this study. He mailed the questionnaire to twenty-six teachers that were willing to cooperate with him. Only four failed to reply. The twenty-two who did reply constitute the sample population for the basis of this study. A brief letter of explanation which accompanied the questionnaire is found in the Appendix.

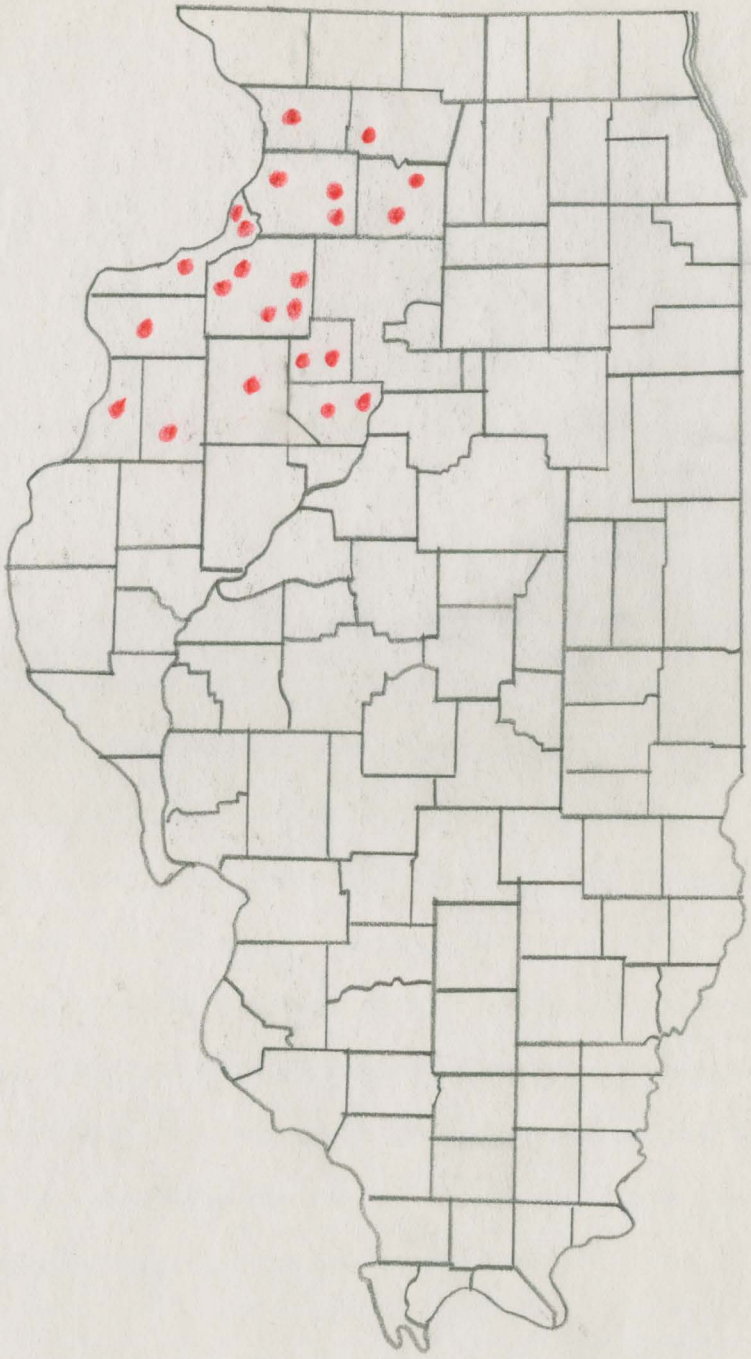
A map of the State of Illinois showing the location of the twenty-two departments used in this study follows on the next page.

CLASSIFICATION OF DATA

The data when obtained from the teachers were tabulated, from which summary tables were prepared, - one for each of the seven phases studied.

These tables exhibit the categorical classification of responses to the questions pertinent to the seven phases of the supervised farm practice program.

Since the teachers providing the responses must necessarily be considered as representative of those in that profession, their responses may be considered as a representative sample of aggregate opinion regarding strengths and weaknesses of the super-



● Indicates one department

1. Map of the State of Illinois showing the location of the twenty-two departments of vocational agriculture in this study.

vised farm practice program in the high schools close to Reynolds, Illinois.

METHODS OF ANALYSIS

In order to draw general well-founded conclusions in a comparative study of the effectiveness of the seven phases of the supervised farm practice program, the distributions of responses relative to questions covering these phases were subjected to statistical analysis.

In order to differentiate between weaker and stronger phases of the supervised farm program and to discern where coordination or lack thereof exists, statistical hypotheses of equal efficiency and effectiveness were constructed. To test these hypotheses, the well known, X^2, Chi Square, test was employed.

Thus, in cases where this test rejects the hypotheses, it may be claimed with reasonable surety, that not only do those teachers providing the data for this study, but qualified opinion in general, would also recognize inequalities or lack of homegeneous effectiveness with, and coordination among, the phases which are considered to constitute the supervised farm practice program in the Illinois high schools, close to Reynolds.

Chapter IV

FINDINGS AND DISCUSSION

In this chapter are presented the organized results of the interviews had with twenty-two teachers and also a tabulation of the degrees of participation of these twenty-two teachers in the seven phases of supervised farm practice work as used in the investigation. A statistical analysis of these data thus permits certain conclusions to be drawn which in turn leads to a general discussion and interpretations.

Preview of data.--Table 1 shows the degree in which there was an early initiation by teacher, student, and parent in making the necessary arrangements and studying the possibilities for supervised farming of each boy becoming enrolled in vocational agriculture. The total obtained responses in this table was 176, which represent the answers of twenty-two teachers to the eight questions in the table. If all of the teachers had answered "always", to all eight questions, there would have been a total of 176 in the "always" column, and as a consequence a conclusion of high efficiency in making preliminary arrangements would have been drawn. But it is observed that the responses are divided among the four categories, 41 being "always", 85 being "quite generally", 28 being "rarely" and 22 being "not at all".

Table 1.--THE DEGREE OF PARTICIPATION IN THE PHASE OF PRELIMINARY ARRANGEMENTS, FOR SUPERVISED FARM PRACTICE, MADE AT OR NEAR THE BEGINNING OF THE SCHOOL YEAR

Phase I: Activities in making preliminary arrangements	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. Teacher informed parents of the purpose of the supervised farm practice before or near the beginning of the school year.	11	10	1	0
2. Teacher conferred with students and parents in regard to the students' supervised farm project work before or near the beginning of the school year.	8	13	1	0
3. Students and teacher made a survey of enterprises on the home farm.	4	8	7	3
4. Students, teacher and parents studied plans for the development of the home farm in relation to the supervised farm project work of the students during the students' first year of vocational agriculture.	2	8	9	3
5. Parent, teacher and student have signed a written agreement for each year's project work.	0	2	5	15
6. Teacher has secured understanding between parent and student on complete responsibility for the project work.	5	14	2	1
7. Teacher has secured the parent's approval of financing the project work.	11	11	0	0
8. Students have started a long-time supervised farm practice program in the first year.	0	19	3	0
Total observed responses	41	85	28	22

Of the twenty-two responses observed in the "not at all" column, 15 or almost two-thirds of them were in answer to one question, - namely; do parents, teachers and students sign a written agreement for each year's project work. Although the use of written agreements between parent, teacher and student is not a new idea in Illinois, the advantages and needs of such an agreement have not been emphasized by the State Office and it seems that some teachers have failed to see the advantages of such an arrangement. However, a new style of project record book has just been printed for Illinois which does present the idea of parent, teacher and student agreement in a useful and purposeful manner. With this new record book being used it is believed that the answer to the parent, teacher and student agreement question will be more favorable in the future.

Nearly all authorities in vocational agriculture are of the belief that the students' supervised farm practice work should be in the form of a training program for the satisfactory establishment of the boy in farming in the community.

Table 2.--THE DEGREE OF PARTICIPATION IN MAKING GENERAL PLANS FOR SUPERVISED FARM PRACTICE

Phase II: Activities of general planning	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. The farm enterprises included in the supervised project work of the students are those in which he expects to engage as a farmer.	3	19	0	0
2. The farm enterprises included in the students supervised projects are adapted to the home farm.	13	9	0	0
3. The supervised farm project work provides for managerial experiences as shown by ownership, or part owner or, rental arrangements.	13	8	1	0
4. The supervised project work includes improved practices in addition to those ordinarily used on the home farm.	9	10	3	0
5. Students set up definite goals or objectives for each enterprise in their supervised farm project work.	9	10	3	0
6. Students have made a budget for each project.	3	10	9	0
Total observed responses.	50	68	14	0

Table 2 records the responses of twenty-two teachers to the six questions in this table, making 132 responses on the phase of General Planning for the supervised farming program. That nine teachers do not have their students make a budget for each project is noticeable. This condition will likely be changed in Illinois as the use of the new record book becomes more prevalent, because it

provides definitely for budget estimates.

Table 3.--THE DEGREE OF PARTICIPATION IN PROVIDING INSTRUCTION TO MEET THE STUDENT SUPERVISED FARMING NEEDS

Phase III: Activities in provision for instruction	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. Important farm enterprises represented in individual supervised farm project programs are included in the course of study.	16	6	0	0
2. Instruction is given on the important farm jobs and problems represented in individual supervised farm projects.	15	7	0	0
3. Each job or problem is taught at such a time as to give greatest assistance to the student in carrying out his supervised farm projects.	5	17	0	0
4. The instruction aims at helping boys to make job plans for their project.	9	8	4	1
5. Class time is given to helping the boys keep accurate records on their projects.	15	6	1	0
Total observed responses	60	44	5	1

Table 3 has to do with provisions for instruction. It is believed that in making the course of study for vocational agriculture, the supervised farm practice work of the boys should constitute the basis for instruction in each class. The noticeable thing in Table 3, with 110 responses, is that more than half of them are in the "always" column.

Table 4.--THE DEGREE OF PARTICIPATION IN MAKING JOB PLANS FOR THE IMPORTANT JOBS AND IMPROVED PRACTICES OF THE SUPERVISED FARM PRACTICE WORK

Phase IV: Activities of job planning	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. The plans for jobs or problems consist of written statements of what the student intends to do.	8	9	5	0
2. The job plans embody improved practices which are appropriated to the students farming situation.	9	11	2	0
3. The job plans are made as a result of the instruction given in the class.	6	14	2	0
4. If conditions arise so that plans could not be followed, such plans are changed and a record made of the changes.	14	7	1	0
Total observed responses	37	41	10	0

In the activities of Job Planning as shown in Table 4, the answer to question three, indicates that all teachers do not follow up their instruction relative to the boys supervised farm practice work by having them actually make job plans.

Table 5.--THE DEGREE OF PARTICIPATION IN KEEPING RECORDS IN SUPERVISED FARM PRACTICE WORK

Phase V: Activities of record keeping	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. The students use an approved record book for their projects.	21	1	0	0
2. The students are given instruction and practice in keeping project records.	20	2	0	0
3. The teacher sets aside regular school periods for project record keeping.	14	4	4	0
4. The financial records are neatly kept in ink.	8	10	3	1
Total observed responses	63	17	7	1

In Illinois, the State Office, previous to last year, has furnished the supervised farm practice record book free to each student. And the fact that inspection of the record books by the State Supervisor has tended to develop record keeping to an outstanding degree, is shown by 63 responses in the "always" column out of a total of 88, in Table 5.

Although the actual supervision of the farm practice program of the boys enrolled in vocational agriculture is felt to be one of the most needed phases of supervised farming discussed in this study, it is considered one of the most difficult to do properly. A number of factors combine to cause this difficulty. In some depart-

ments, the territory is so vast that the salary of the teacher is inadequate to cover the costs of required travel. Some teachers also are probably neglectful of this duty.

Table 6.--THE DEGREE OF PARTICIPATION IN PROJECT SUPERVISION OF SUPERVISED FARM PRACTICE WORK.

Phase VI: Activities of Supervising	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. Teacher visits students' supervised farm projects at all critical periods	10	12	0	0
2. The teacher has a definite purpose for each project visit.	8	12	2	0
3. Teachers keep a definite record of each project visit.	12	9	1	0
4. Boys are given specific instruction on management of projects during visits.	13	9	0	0
5. The instructor examines the project records during visits.	2	7	9	4
Total observed responses	45	49	12	4

The question number five in Table 6, concerning examination of the project records during project visits, shows that 13 out of twenty-two teachers rarely or never examine the records during visits. This may be explained by an old practice in Illinois, - that of always having the record books on file in the classroom of the department.

It is felt that since the new record books are not being furnished free by the State Office and since the State Supervisor

does very little visiting of departments during the summer months, there will be a greater tendency to allow the boys to take the record book to their home. Obviously, since the boy had no opportunity to make records in his project record book, there was no occasion for the teacher to examine it during visits.

Table 7.--THE DEGREE OF PARTICIPATION IN THE RESULTS OF SUPERVISED FARM PRACTICE WORK

Phase VII: Activities concerning results	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. Students analyze the records of their completed projects.	9	13	0	0
2. The students determine how to improve their projects.	8	14	0	0
3. The capital and income of supervised farm project work is retained by the student.	2	20	0	0
4. The student's project work is on progressive basis,-each year's work becoming larger and better.	3	17	2	0
5. The students have used improved practices in their project work.	4	18	0	0
Total observed responses	26	82	2	0

The ultimate purposes of supervised farm practice is to help the boy become established in farming. A study of the responses to the questions concerning this phase of supervised farm practice entitled Results as tabulated in Table 7, shows that 108 out of 110 responses made by the twenty-two teachers are found in the two

columns "always" and "quite generally". However, the fact that out of the 108 responses only 26 were in the "always" category, indicates that further analysis of this phase is necessary.

The results of a program in vocational agriculture hinge upon all of its phases.

Table 8.--THE DEGREE OF PARTICIPATION OF 22 SCHOOLS IN PHASES OF SUPERVISED FARM PRACTICE WORK, SHOWING PHASE TOTAL OF PARTICIPATION AND THE TOTAL OBSERVED RESPONSES FOR ALL PHASES ACCORDING TO DEGREE OF PARTICIPATION

Phases of supervised farm practice work	Total responses for each phase according to the degree of participation in each phase				Phase totals of participation
	Always	Quite Generally	Rarely	Not at all	
1. Preliminary Arrangements	41	85	28	22	176
2. General Planning	50	68	14	0	132
3. Provision for Instruction	60	44	5	1	110
4. Job Planning	37	41	10	0	88
5. Record Keeping	63	17	7	1	88
6. Supervision	45	49	12	4	110
7. Results	26	82	2	0	110
Total observed responses	322	386	78	28	814

A summary of the seven phases included in this study, of determining the efficiency of supervised farm practice work, in the twenty-two departments of vocational agriculture in Illinois close to Reynolds, is shown in Table 8. This table records a grand total of 814 responses with the largest number of all, 386 in the "quite generally" column. There seems to be some indication that in quite a few cases there exists an attitude of, "that will do" or that an accomplishment short of the best is, "good enough".

Points of apparent strength and also some general weaknesses seem to be outstanding in the supervised farming program. In order to prove the reliability of these observations, the data was further analyzed statistically.

Explanation of statistical analysis. The data obtained in this study will be subjected to statistical treatment and interpretation because it is believed that careful study of the supervised farm practice program, based upon the responses from a sample of twenty-two teachers in a given locality, not only justifies conclusions as to the effectiveness of the program in that locality, but may also serve to point out the strengths and weaknesses of the program as conducted over a wider area also; since both are under the administration of one central office.

The guiding principle underlying the statistical analysis is simply the determination of such characteristics of the program as are so markedly evidenced, in the twenty-two schools studied, that they may be regarded as generally inherent in the supervised farm practice program.

Any attempt to presume that findings afforded by a limited study possess a general import must have the theory of probability as its basis.

In dealing with probabilities the concept of a "Set of Objects" is employed. In this study the aggregate of responses tabulated from the questionnaire replies constitute the "Set of Objects". These responses are classified under four categories, - "always", "quite generally", "rarely" and "not at all". The aggregate of the responses for the several questions of each phase is termed a "Fundamental Probability Set".

The probability of a response having the property of falling in one of the four categories may be defined as:

$$P = \frac{\text{Number of responses within a certain category}}{\text{Number of responses in all four categories}} .$$

Hence, it is clear that the sum of the probabilities for all four categories is equal to unity. For example, the responses in phase I, Preliminary Arrangements, are:

Phase	Always	Quite Generally	Rarely	Not at all	F.P.S.
I	41	85	28	22	176

Whence, the probabilities are: $\frac{41}{176}$, $\frac{85}{176}$, $\frac{28}{176}$, and $\frac{22}{176}$ which total to unity. For convenience these known probabilities will be designated,- p_1, p_2, p_3, and p_4. (On the other hand) the unknown proportions of responses to the questions of phase I, Preliminary Arrangements, were it possible to obtain the opinions of the entire

population of agriculture teachers, falling within the four categories, "always", "quite generally", "rarely" and "not at all", respectively, will be designated by P_1, P_2, P_3 and P_4 which, although unknown, must sum to unity.

Likewise for Phase II: known probabilities, or proportions which are obtained from the data of the study might be denoted, - q_1, q_2, q_3 and q_4; the unknown population proportions by Q_1, Q_2, Q_3 and Q_4.

As illustrative of the type of questions to which the answer is desired, consider phases I, Preliminary Arrangements, and Phase II, General Planning, of this program. A cursory examination of the data might lead to conclusions regarding which phase is being more effectively conducted, by twenty-two teachers participating in the study, but we are interested in discovering if the differences are sufficiently wide as to indicate more general conclusions.

To effect an answer to this question, a hypothesis of no difference in the efficiency of the conduct of these phases is constructed and this hypothesis will be subjected to the well known X^2, chi square, test to determine if it may be rejected. If this turns out to be the case, then it will be presumed that there exists an inherent difference in the effectiveness of the two phases of the program which is not merely incident, to the teachers and schools incorporated in this study, but is a characteristic of the program quite generally.

The statistical formulation of this hypothesis may be given by the following three equations:

$P_1 = Q_1$

$P_2 = Q_2$

$P_3 = Q_3$ with $P_4 = Q_4$ following as an evident consequence.

The proper test of this hypothesis consists in constructing chi square, $X^2 = \sum \frac{(O - T)^2}{T}$ and then to reject the hypothesis if X^2, chi square, so computed is in excess of a critical value, $X^2_{.05}$.

It will be necessary to define the symbolism employed above. In the formula for X^2, chi square, O represents the observed number of responses to the questions of a certain phase of the program which fall into a given category or, in other words, an observed frequency of responses. The symbol T denoting theoretical frequency, indicates the number of responses to the questions of the same phase of the program which might be expected to fall in the given category were the constructed hypothesis true. T must be computed on the basis of the theory of probability.

Thus, the expected frequency of responses, T, for category "always" of phase I, in a comparative analysis of phases I and II, would be :

$$T = (N_1 + N_2) \left(\frac{N_1}{N_1 + N_2} \right) \frac{(n_1 p_1 + n_2 q_1)}{N_1 + N_2} = \frac{N_1 (n_1 p_1 + n_2 q_1)}{N_1 + N_2},$$

or the total number of responses to the questions of both phases of the program multiplied by the probability that a single response answers both a question of phase I and also falls in the category "always".

The other expected response frequencies are calculated similarly.

Table 9.--EXPLANATION OF THE DEVELOPMENT OF THE FORMULA FOR CALCULATING THE THEORTICAL OR EXPECTED RESPONSE "T"

Phase	Always	Quite Generally	Rarely	Not at all	Phase Total
I	$O = n_1p_1 = 41$	$O = n_1p_2 = 85$	$O = n_1p_3 = 28$	$O = n_1p_1 = 22$	$N_1 = 176$
	$T = 69.6$	$T = 83.4$	$T = 17$	$T = 61$	
II	$O = n_2q_1 = 50$	$O = n_2q_2 = 68$	$O = n_2q_3 = 14$	$O = n_2q_4 = 0$	$N_2 = 132$
	$T = 52.3$	$T = 62.6$	$T = 12.7$	$T = 4.4$	
Response	$n_1p_1+n_2q_1$ $O = 91$	$n_1p_2+n_2q_2$ $O = 153$	$n_1p_1+n_2q_2$ $O = 42$	$n_1p_4+n_1q_4$ $O = 22$	$N = 308$

Evidently, if the discrepancies between the observed frequencies, O, and those expected, T, are large, the statistic X^2, chi square, will be large and if greater than $X^2_{.05}$, the critical value, it will be termed significant and the rejection of the hypothesis follows as an immediate consequence.

The critical value, $X^2_{.05}$, is based upon considerations of probability and may be read from an appropriate table--1/ in accordance with a certain number of "degree of freedom" which is the number of equations by which the hypothesis being tested is expressed, this being three in the above illustration.

1/ Page 119. Statistical Methods for Research Workers - Fisher, R. A.

Application of statistical analysis. With this concise explanation of how the hypothesis is tested, the writer desired to apply the test to the entire program, first, in a statistical comparative analysis of the seven phases of the supervised farm practice program. This he did; the results of which are shown in Table 10. The "O" values in this table were supplied from Table 8 and are the aggregate observed responses in answer to pertinent questions for each phase of the program. The "T" values are the theoretical expected response frequencies, calculated from the probability theory, previously explained.

If the calculated, chi square, $X^2 = \sum \frac{(O - T)^2}{T}$ is greater than the critical value, $X^2_{.05}$, the hypothesis which was assumed, will be rejected, while if it is less than the critical value, $X^2_{.05}$, the writer will fail to reject the hypothesis.

Both the observed, known responses, O, and theoretically expected responses, T, (calculated) are shown in Table 10, which is a general comparative analysis, of the seven phases of the entire supervised farm practice program.

Table 10.--A STATISTICAL COMPARATIVE ANALYSIS OF SEVEN PHASES OF THE SUPERVISED FARM PRACTICE PROGRAM

Phases	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
I	41	69.6	85	83.4	28	17.0	22	6.1	176
II	50	52.3	68	62.6	14	12.7	0	4.4	132
III	60	43.5	44	52.2	5	10.5	1	3.8	110
IV	37	34.8	41	41.7	10	8.2	0	3.0	88
V	63	34.8	17	41.7	7	8.2	1	3.0	88
VI	45	43.5	49	52.2	12	10.6	4	3.8	110
VII	26	43.5	82	52.2	2	10.6	0	3.8	110
Response Totals	322		386		78		28		814

* Observed response frequencies from Table 8.

\# Theoretical responses expected (calculated)

Chi square, $X^2 = \sum \frac{(O - T)^2}{T} = 131.6$

Critical value of chi square, degree of freedom 18, is $X^2_{.05} = 28.869$ 2/.

The calculation of chi square, $X^2 = \sum \frac{(O - T)^2}{T} = 131.6$, the

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2/ Page 119. Statistical Methods for Research Workers - Fisher, R. A.

discrepancy, between the observed and expected responses in this general comparative analysis, Table 10, exceeds the critical value, $X^2_{.05} = 28.869$, --3/ in accordance with a certain number of "degrees of freedom", 18 in this case. The discrepancies producing a value of 131.6 for X^2, chi square, are certainly too great to be considered due to luck or chance. Hence, the hypothesis, that all phases of the supervised farming program are being conducted with no difference, must be rejected.

Because of these wide deviations between the observed and expected frequencies of response to questions covering the conduct of the entire supervised farm practice program, the following questions naturally arise: Which phases of the program are being conducted with greater effectiveness; and what are the relative strengths and weaknesses of the several phases?

Analysis of making preliminary arrangements. In order to answer these questions 21 simple comparative analyses were made in which each phase was compared with each other phase of the program. Phase with phase comparisons are shown in Tables 11 to 31 inclusive, with pertinent discussion following each.

For critical value, $X^2_{.05} = 7.815$,--4/ is the same for each of these tables. As pointed out previously, chi square, X^2, values which are greater than the critical value, $X^2_{.05}$, are regarded

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3/ Page 119. Statistical Methods for Research Workers - Fisher, R. A.

4/ Page 119. Statistical Methods for Research Workers - Fisher, R. A.

significant. In those comparisons which produce significant results, great difference will frequently be noticed between the observed responses and the corresponding expected responses. In those cases which are non-significant, more or less agreement between the observed and expected responses will be noted, and the numerical value will be less than the critical value, $X^2_{.05}$.

Table 11.--A COMPARATIVE ANALYSIS OF MAKING PRELIMINARY ARRANGEMENTS AND GENERAL PLANNING

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
I	41	52.0	85	87.4	28	24	22	12.6	176
II	50	39.0	68	65.6	14	18	0	9.4	132
Response Totals	91		153		42		22		308

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O-T)^2}{T} = 22.6$$

In Table 11, the discrepancy between Making Preliminary Arrangements and General Planning is fairly large. The widest deviations occur in the "not at all" category. In Making Preliminary Arrangements, the observed frequency is 22, while the expected frequency is only 12.6. In General Planning, the observed frequency is zero, but an expected response of 9.4 is noted. There is, however, in both phases a small deviation in the "always" category. However,

in each category in Making Preliminary Arrangements, the deviation is adverse, while in General Planning it is desirable, because the observed responses are greater than the expected responses, in all of these categories which indicate a higher degree of efficiency.

Table 12.--A COMPARATIVE ANALYSIS OF MAKING PRELIMINARY ARRANGEMENTS AND PROVISION FOR INSTRUCTION

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
I	41	62.2	85	79.4	28	20.3	22	14.1	176
III	60	38.8	44	49.6	5	12.7	1	8.9	110
Response Totals	101		129		33		23		286

* Observed responses

\# Theoretical responses expected (calculated)

$$x^2 = \sum \frac{(O - T)^2}{T} = 45.6$$

The discrepancy between Making Preliminary Arrangements and Provision for Instruction is even greater than it was between Making Preliminary Arrangements and General Planning. The differences occur for these phases in all categories except, "quite generally". This deviation is shown in Table 12. It is also observed that the deviations in Making Preliminary Arrangements in this comparison are all unfavorable; while in the Provision for Instruction all deviations are favorable. As these deviations for the Provision for Instruction are very large, this phase is considered more favorably

conducted than Making Preliminary Arrangements.

Table 13.--A COMPARATIVE ANALYSIS OF MAKING PRELIMINARY ARRANGEMENTS AND MAKING JOB PLANS

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
I	41	52.6	85	83.8	28	25.1	22	14.5	176
IV	37	25.4	41	42.2	10	12.9	0	7.5	88
Response Totals	78		126		38		22		264

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 25.3$$

There is a discrepancy between Making Preliminary Arrangements and Making Job Plans which is too large to be due to chance. A consideration of Table 13 shows that both phases deviate greatly in the "always" and the "not at all" categories. This comparison shows Making Job Plans being more effectively conducted than Making Preliminary Arrangements.

Table 14.--A COMPARATIVE ANALYSIS OF MAKING PRELIMINARY ARRANGEMENTS AND KEEPING RECORDS

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
I	41	69.4	85	68	28	23.2	22	14.9	176
V	63	34.6	17	34	7	11.7	1	8.1	88
Response Totals	104		102		35		23		264

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 52.8$$

Table 14 shows a discrepancy of 52.8 between Making Preliminary Arrangements and Keeping Records. The amount of this difference can be accounted for largely in the "always", category. There are smaller, yet definite, differences in the other categories also. Keeping Records is being more effectively conducted than Making Preliminary Arrangements.

Table 15.--A COMPARATIVE ANALYSIS OF MAKING PRELIMINARY ARRANGEMENTS AND SUPERVISING THE PROGRAM

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
I	41	53	85	82.5	28	24.6	22	15.9	176
VI	45	33	49	51.5	12	15.4	4	10.1	110
Response Totals	86		134		40		26		286

* Observed responses

\# Theoretical responses expected (calculated)

$$x^2 = \sum \frac{(O - T)^2}{T} = 14.4$$

In the comparisons of Making Preliminary Arrangements and Supervising the Program, Table 15, a significant discrepancy occurs. Although the greatest differences occur in the "always" category, there are small differences in the other categories also. Supervising the Program is being conducted more effectively than Making Preliminary Arrangements.

Table 16.--A COMPARATIVE ANALYSIS OF MAKING PRELIMINARY ARRANGEMENTS AND RESULTS OF THE PROGRAM

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
I	41	41.2	85	102.8	28	18.8	22	13.2	176
VII	26	25.8	82	64.2	2	11.2	0	8.8	110
Response Totals	67		167		30		22		286

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 36.4$$

As shown in Table 16, there is a discrepancy between Making Preliminary Arrangements and Results of the Program. Both phases are about equally well or poorly conducted as the case may be, as shown by the response frequencies in the "always" category. In the "quite generally" category Making Preliminary Arrangements is is more efficiently conducted than the Results of the Program, yet in Preliminary Arrangements is not very efficiently conducted.

Efficiency of Making Preliminary Arrangements. After this very thorough statistical comparative analysis of Making Preliminary Arrangements and the other phases of the program, in which Making Preliminary Arrangements is found to be less effectively conducted than any of the other phases, it is desired to ascertain the causes

for the weakness in Making Preliminary Arrangements of the supervised farming program.

It is felt that the supervised farm project work should be initiated before or near the beginning of the first year of instruction and the teacher should develop and continue a cooperative relationship between the school and the home.

Complete plans for developing the project program are given in Government Bulletins (19) and (33). Also Schmidt (26 and 27) has written definitely and explicitly how to get boys established in farming.

For the convenience of the reader Table 1, showing the degree of participation, of the twenty-two teachers, in making preliminary arrangements, for the supervised farm practice program, is reproduced, from page 26.

Table 1.--THE DEGREE OF PARTICIPATION IN THE PHASE OF PRELIMINARY ARRANGEMENTS, FOR SUPERVISED FARM PRACTICE, MADE AT OR NEAR THE BEGINNING OF THE SCHOOL YEAR

Phase I: Activities in making preliminary arrangements	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. Teacher informed parents of the purpose of the supervised farm practice before or near the beginning of the school year.	11	10	1	0
2. Teacher conferred with students and parents in regard to the students' supervised farm project work before or near the beginning of the school year.	8	13	1	0
3. Students and teacher made a survey of enterprises on the home farm.	4	8	7	3
4. Students, teacher and parents studied plans for the development of the home farm in relation to the supervised farm project work of the students during the students' first year of vocational agriculture.	2	8	9	3
5. Parent, teacher and student have signed a written agreement for each year's project work.	0	2	5	15
6. Teacher has secured understanding between parent and student on complete responsibility for the project work.	5	14	2	1
7. Teacher has secured the parent's approval of financing the project work.	11	11	0	0
8. Students have started a long-time supervised farm practice program in the first year.	0	19	3	0
Total observed responses	41	85	28	22

This table shows that only one half of the teachers studied are making the proper arrangements with the parents of their prospective students. This visiting of the home and planning four years of education to fit a boy for his life occupation before he starts to high school, by the agriculture teacher has placed heavy demands on the agriculture teacher, which teachers in other departments do not usually assume. The principles of the Smith-Hughes Act provides that agriculture teachers keep a helpful, wholesome relation between the home, the school, and of the boys conducting supervised farming in vocational agriculture.

Only half of the teachers in this study have even "quite generally" surveyed the home farms with the boys and attempted to set up programs with them that will tend to improve and develope the home farm.

An extensive program of work, as suggested and provided for, requires a great deal of cooperation between the parent, student and teacher. If satisfactory workable schemes are to be carried out they need to be carefully planned and agreed upon by parent, student and teacher. If this working agreement is written out it can be referred to as needed and revised when necessary. It is not intended to be a legal contract to be made or broken by court proceedings; but a definite arrangement to provide adequate finances, equipment, feed, land and all necessary facilities required to launch the boy in his farming program. Unless this agreement is made between the parent, student and teacher, it might be assumed that the school intends to provide farming facilities for the boy's supervised farming project while he is studying vocational agriculture.

Another very important arrangement of supervised farming,

the ownership of the project, is being neglected by most teachers in this study. Why not include plans for this in the written agreement plan also?

To sum up briefly then, a consideration of the responses made in making the Preliminary Arrangements of supervised farming shows that there is a need for a clearer understanding between the teacher and the parents. There should be more explanation of the purpose, of supervised farm practice, to the parents. There should be more effort aimed at improving the home farm through the supervised farm practice. If this wholehearted counseling between teacher, parent and student is done during the summer months,--before school opens in the fall, it is felt that most of the boys will begin a purposeful long-time supervised farm practice program at the beginning of their first year in high school. Every teacher of vocational agriculture, with experience, probably has one or more "black marks" on his record for having failed to do all that he could, in making the necessary preliminary arrangements, for each prospective student in his vocational agriculture classes.

Analysis of General Planning.-- The next question to be answered is; how does General Planning compare with other phases of the supervised farming program? This will necessitate a statistical comparative analysis of General Planning with each phase. As this comparison has already been made for Phase I and II, Table 17 is a comparison of General Planning and Provisions for Instruction.

Table 17.--A COMPARATIVE ANALYSIS OF GENERAL PLANNING AND PROVISIONS FOR INSTRUCTION

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
II	50	60	68	61.1	14	10.4	0	0.5	132
III	60 60	50	44	50.9	5	8.6	1	0.5	110
Response Totals	110		112		19		1		242

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 14.9$$

The deviation between General Planning and Provisions for Instruction of 14.9 is due mostly to differences in the "always" category. The observed value for General Planning is 50 as compared to an expected response of 60, while the exact opposite is true of Provisions for Instruction. Therefore, Provisions for Instruction is being more efficiently conducted than General Planning.

General Planning and Job Planning when compared, Table 18, show the small discrepancy of only 0.5.

Table 18.--A COMPARATIVE ANALYSIS OF GENERAL PLANNING AND JOB PLANNING

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
II	50	52.2	68	65.4	14	62.2	0	0	132
IV	37	34.8	41	43.6	10	9.6	0	0	88
Response Totals	87		109		24		0		220

* Observed responses

\# Theoretical Responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 0.5$$

Difference between the observed and expected responses are very small, in fact too small to permit conclusions that could be known to be authentic.

The comparison of General Planning and Record Keeping, Table 19, shows a discrepancy of 25.2.

Table 19.--A COMPARATIVE ANALYSIS OF GENERAL PLANNING AND RECORD KEEPING

Phase	Always		Quite Generally		Rarely		Not at all		Phase Total
	O*	T#	O	T	O	T	O	T	
II	50	67.8	68	51	14	13.1	0	.1	132
V	63	45.2	17	34	7	7.9	0	.9	88
Response Totals	113		85		21		1		220

* Observed responses

\# Theoretical Responses expected (calculated)

$$x^2 = \sum \frac{(O - T)^2}{T} = 25.2$$

The great differences occur in the "always" and the "quite generally" categories. General planning is being less desirably conducted than Record Keeping because General Planning has 50 observed to 67.8 expected responses and Record Keeping has 63 observed to 45.2 expected responses.

The comparison of General Planning and the work of Supervising show a small, non-significant discrepancy of 5.7, Table 20.

Table 20.-- A COMPARATIVE ANALYSIS OF GENERAL PLANNING AND WORK OF SUPERVISORS

Phase	Always		Quite Generally		Rarely		Not at all		Phase Total
	O*	T#	O	T	O	T	O	T	
II	50	51.8	68	63.8	14	14.2	0	2.2	132
VI	45	43.2	49	53.2	12	11.8	4	1.8	110
Response Totals	95		11.7		26		4		242

* Observed responses $X^2 = \sum \frac{(O-T)^2}{T} = 5.7$

\# Theoretical responses expected (calculated)

The small differences which do occur are too small to discuss with certainty.

When the comparison is made between the General Planning and the Results, a discrepancy of 15.3 is found, Table 21

Table 21.--A COMPARATIVE ANALYSIS OF GENERAL PLANNING AND RESULTS OF THE PROGRAM

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
II	50	41.5	68	81.8	14	8.7	0	0	132
VII	26	34.5	82	68.2	2	7.3	0	0	110
Response Totals	76		150		16		0		242

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 15.3$$

The differences occur in both phases in the first three categories, "always", "quite generally" and "rarely". There are no observed responses and no expected responses for these two phases in the "not at all" category.

To summarize the comparisons made with General Planning, it is found that this phase of the supervised farm practice work is being conducted more effectively than making Preliminary Arrangements and Results of the Program the same as Provisions for Instruction, Job Planning, and Supervision of Project Work, while it is surpassed by Record Keeping. These facts need to be explained.

Efficiency of General Planning.--It is felt that in making General Plans, the students supervised farm project work should be considered a training program for the satisfactory establishment in the type of farming found in his community.

(For convenience Table 2 from page 28 is reproduced here:)

Table 2.--THE DEGREE OF PARTICIPATION IN MAKING GENERAL PLANS FOR SUPERVISED FARM PRACTICE.

Phase II: Activities of General Planning	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. The farm enterprises included in the supervised project work of the students are those in which he expects to engage as a farmer.	3	19	0	0
2. The farm enterprises included in the students supervised projects are adapted to the home farm.	13	9	0	0
3. The supervised farm project work provides for managerial experiences as shown by ownership, or part owner or rental arrangements.	13	8	1	0
4. The supervised project work includes improved practices in addition to those ordinarily used on the home farm.	9	10	3	0
5. Students set up definite goals or objectives for each enterprise in their supervised farm project work.	9	12	1	0
6. Students have made a budget for each project.	3	10	9	0

Contrary to this premise only three of the teachers of this study, as shown in Table 2, indicate that they "always" include the enterprises, in the boys supervised farming work that are like those in which he expects to engage as a farmer. Throughout this phase, General Planning, at least half of the teachers appear highly negligent. This attitude would naturally follow from having made

inadequate preliminary arrangements. If a teacher is not thoroughly familiar with the boy's home conditions, how can he be very helpful to the boy in planning his supervised farm practice program in accordance with enterprises adapted to the home farm? Or, how can the proper managerial procedures be promoted, as to ownership, part owner, or rental arrangements without thorough knowledge of the home conditions?

Every teacher of vocational agriculture is obliged to keep himself well informed. It must lower the worth of a teacher in the estimation of the student a great deal for the teacher to insist on the boy studying and acquiring "new" improved practices with which he is already familiar and which are being done quite well on the home farm. A teacher needing assistance in making General Plans for the supervised farm practice program of their students in vocational agriculture is referred to Lattig (19), Schmidt (26) and Williams (33). Having students make budgets is also explained by Williams (33) with examples. It is felt that the prevention of poor projects, even though they were started with good intentions but could not be completed well because "it costs more" than the student thought it would, should be sufficient reason for having every student make careful budget estimates before starting a new project. It is believed that with the limited participation indicated in this activity, item six, Table 2, that there must be many projects being poorly completed or dropped in the area of this study.

The value of a plan is well expressed by Wright and Allen, (35) and reviewed in the literature, page 8 of this study.

Analysis of Provisions for Instruction.-- The next question to be answered is how does the Provision for Instruction compare in ef-

ficiency of conduction with other phases? To answer this question, a statistical comparative analysis is shown by tables, with brief comments, followed by a detailed discussion of the effectiveness of the conduction of Provision for Instruction with the other phases.

As comparisons of Provision for Instruction have been made with Making Preliminary Arrangements and General Planning, the next comparison made is Provision for Instruction and Job Planning.

In this comparison there is a small discrepancy of 5.4, shown by Table 22.

Table 22.--A COMPARATIVE ANALYSIS OF PROVISION FOR INSTRUCTION AND JOB PLANNING

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
III	60	53.9	44	47.2	5	8.3	1	.6	110
IV	37	43.1	41	37.8	10	6.7	0	.4	88
Response Totals	97		85		15		1		198

* Observed responses

\# Theoretical responses expected (calculated)

$$x^2 = \sum \frac{(O - T)^2}{T} = 5.4$$

This discrepancy is non-significant and does not permit making comparisons between these two phases. The reason for this small difference is due to the fact that the differences between the observed and the expected response frequencies are small. In these

analyses, the small differences tend to be suppressed while the large differences tend to be amplified. Because of this fact, the deviations occuring in the comparisons are easily discerned and evaluated.

Table 23.--A COMPARATIVE ANALYSIS OF PROVISION FOR INSTRUCTION AND RECORD KEEPING

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
III	60	68.3	44	33.9	5	6.7	1	1.1	110
V	63	54.7	17	27.1	7	5.3	1	0.9	88
Response Totals	123		61		12		2		198

* Observed responses

\# Theoretical responses expected (calculated)

$$x^2 = \sum \frac{(O - T)^2}{T} = 12$$

The discrepancy, 12, in the comparison of Provision for Instruction and Record Keeping, in Table 23, is scattered throughout all categories, with the inference that the Provision for Instruction is being less effectively conducted than Record Keeping.

The comparative analysis of the Provision for Instruction and Supervising the work shows a small discrepancy of seven, which is non-significant.

Table 24.--A COMPARATIVE ANALYSIS OF THE PROVISION FOR INSTRUCTION AND SUPERVISING THE WORK

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
III	60	52.5	44	46.5	5	8.5	1	2.5	110
VI	45	52.5	49	46.5	12	8.5	4	2.5	110
Response Totals	105		93		17		5		220

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 7$$

However, according to the observed, as compared to the expected, response frequencies, the supervised farm program is being conducted more effectively in the Provision for Instruction phase than in Supervising the work.

Table 25.--A COMPARATIVE ANALYSIS OF THE PROVISION FOR INSTRUCTION AND RESULTS OF THE PROGRAM

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
III	60	43	44	63	5	3.5	1	0.5	110
VII	26	43	82	63	2	3.5	0	0.5	110
Response Totals	86		126		7		1		220

* Observed responses

\# Theoretical responses expected (calculated)

$$x^2 = \sum \frac{(O - T)^2}{T} = 27$$

When the Provision for Instruction, Phase III, is compared with Results of the Program, Phase VII, there is a discrepancy of 27, as shown in Table 25. Most of this difference is found in the two categories, "always", and "quite generally". A consideration of the observed as compared to the expected responses would indicate that the Provision for Instruction is being more efficiently conducted than the Results of the Program.

Summing up the effectiveness of Provision for Instruction with other phases shows Provision for Instruction to be more favorably conducted than Making Preliminary Arrangements, Supervising the work and Results of the Program, about the same as General Planning, and Job Planning, and less favorably than Record Keeping.

Efficiency of the Provision for Instruction. For convenience, to show the degree of participation in the activities of making Provisions for Instruction, Table 3, from page 29, is reproduced.

Table 3.--THE DEGREE OF PARTICIPATION IN PROVIDING INSTRUCTION TO MEET THE STUDENT SUPERVISED FARMING NEEDS

Phase III: Activities in provision for instruction	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. Important farm enterprises represented in individual supervised farm project programs are included in the course of study.	16	6	0	0
2. Instruction is given on the important farm jobs and problems represented in individual supervised farm project.	15	7	0	0
3. Each job or problem is taught at such a time as to give greatest assistance to the student in carrying out his supervised farm projects.	5	17	0	0
4. The instruction aims at helping boys to make job plans for their project.	9	8	4	1
5. Class time is given to helping the boys keep accurate records on their projects.	15	6	1	0
Total observed responses	60	44	5	1

The criterion which the writer proposes for instruction in vocational agriculture is that the supervised farm project programs of the boys, in each class, constitute the primary basis for the instruction. As is noticed from the responses recorded in Table 3, the most seriously neglected factor is that many teachers fail to

give the instruction on each job or problem at such a time as to give greatest assistance to the student in carrying out his supervised farm projects. Every effort should be put forth to make the instruction timely, - not too long before the job is done and certainly not delayed until after disaster occurs because the problem was not anticipated by the student.

There is nothing that will aid in the selection as much as going back to the information one gets in studying the conditions and problems on the boys' home farm. Then every teacher will of necessity build his own course of study according to the conditions in his community. It is admitted that there are a great many similar communities in which the instruction could be similar, but the writer feels that the provisions for instruction must be considered from a local standpoint. There are, however, many good references to aid teachers in acquiring superior methods to use in presenting the instruction. Two considered in this study are Lattig (18) and Schmidt (26).

Analysis of making Job Plans. The next question to which an answer is desired is how favorably does Job Planning compare with other phases? To answer this question a statistical comparative analysis is constructed. This comparison has already been made with Making Preliminary Arrangements, General Planning and Provision for Instruction. In the comparison of Job Planning and Record Keeping, Table 26, a discrepancy of 18 occurs.

Table 26.--A COMPARATIVE ANALYSIS OF JOB PLANNING AND RECORD KEEPING

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
IV	37	50	41	29	10	8.5	0	0.5	88
V	63	50	17	29	7	8.5	1	0.5	88
Response Totals	100		58		17		1		176

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 18$$

This discrepancy is scattered throughout all four categories, "always", "quite generally", "rarely" and "not at all". However, the important differences in category "always" indicates that Job Planning is being less effectively conducted than Record Keeping.

Table 27.--A COMPARATIVE ANALYSIS OF JOB PLANNING AND SUPERVISING THE WORK

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
IV	37	36.4	41	40	10	9.8	0	1.8	88
VI	45	45.6	49	50	12	12.2	4	2.2	110
Response Totals	82		90		22		4		198

* Observed responses

\# Theoretical responses expected (calculated)

$$x^2 = \sum \frac{(O - T)^2}{T} = 3.2$$

A non-significant discrepancy, 3.2, is shown in Table 27, between Job Planning and Supervising the work. It would not be wise to draw conclusions relative to the degree of effectiveness between these two phases.

Table 28.--A COMPARATIVE ANALYSIS OF JOB PLANNING AND RESULTS OF THE PROGRAM

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
IV	37	2 8	41	54.7	10	5.3	0	0	88
VII	26	35	82	68.3	2	6.7	0	0	110
Response Totals	63		123		12		0		198

* Observed responses

\# Theoretical responses expected (calculated)

$$x^2 = \sum \frac{(O - T)^2}{T} = 22$$

A general scattering of small deviations in the "always", "quite generally" and the "rarely" categories makes up a discrepancy of 22 for the comparative analysis of Job Planning and Results of the program as shown in Table 28. Although neither phase appears to be conducted very efficiently. Job Planning according to the differences between observed and expected responses is being more effectively conducted than Results of the Program.

In concluding, the effectiveness of phase IV in comparison with each of the other phases, Job Planning is being conducted more effectively than Making Preliminary Arrangements and Results of the Program, less effectively than General Planning, Provision for Instruction and Record Keeping, and about the same as Supervising the work.

Efficiency of Job Planning. It seems that a detailed discussion of degree of participation in the activities of phase IV, Job Planning, is appropriate. For convenience, Table 4, showing this participation is reproduced from page 30.

Table 4.--THE DEGREE OF PARTICIPATION IN MAKING JOB PLANS FOR THE IMPORTANT JOBS AND IMPROVED PRACTICES OF THE SUPERVISED FARM PRACTICE WORK

Phase IV: Activities of job planning	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. The plans for jobs or problems consist of written statements of what the student intends to do.	8	9	5	0
2. The job plans embody improved practices which are appropriated to the students farming situation.	9	11	2	0
3. The job plans are made as a result of the instruction given in the class.	6	14	1	0
4. If conditions arise so that plans could not be followed, such plans are changed and a record made of the changes.	14	7	1	0
Total observed responses	37	41	10	0

For the most effective development of the boy and his farming program, it is felt that he should make job plans for the important jobs in his project and that these job plans should incorporate improved practices.

Table 4, records the fact that 14 out of the twenty-two teachers do not, "always", have their students make written state-

ments of what they intend to do, in regards to each job plan. There would evidently be an increase in efficiency by having the student write out his intentions in his record book for carrying out the job. Previous to the time of this study the project record books used in Illinois have not included space for job plans. However, some of the Illinois teachers, eight in this study, are apparently using job plans effectively. (See Table 4) If the other 14, in this study, will be induced, by using the new project record books, to have their students, not only make job plans for the supervised farming projects, but will also have the boys make written records of their plans, the relationship between the phases of Job Planning and Record Keeping will undoubtedly be improved.

Analysis of Record Keeping. How does Phase V, Record Keeping compare in efficiency of conduction with the other phases? To answer this question a statistical analysis of Record Keeping is made with the other phases. As comparison of Record Keeping with Making Preliminary Arrangements, General Planning, Provision for Instruction and Job Planning have already been made, Record Keeping and Supervising the work follows:

Table 29.--A COMPARATIVE ANALYSIS OF RECORD KEEPING AND SUPERVISING THE WORK

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
V	63	48	17	29.4	7	8.4	1	2.2	88
VI	45	60	49	36.6	12	10.6	4	2.8	110
Response Totals	108		66		19		5		198

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 19.4$$

In this comparative analysis of Record Keeping and Supervising the work, Table 29, there is a discrepancy of 19.4. The differences lie mostly in the "always" and the "quite generally" categories. Comparing the observed to the expected response frequencies, shows Record Keeping is being more effectively conducted than Supervising the work. Thus, Record Keeping of the supervised farming program is being conducted quite efficiently while Supervision is not nearly as efficiently conducted.

Table 30.--A COMPARATIVE ANALYSIS OF RECORD KEEPING AND RESULTS OF THE PROGRAM

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
V	63	39.5	17	44	7	4	1	0.5	88
VII	26	49.5	82	55	2	5	0	0.5	110
Response Totals	89		99		9		1		198

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 64.5$$

The greatest discrepancy occurring between any two phases of the entire program is found in Table 30, a comparative analysis of Record Keeping and Results of the program. This is due without a doubt to the fact that the observed as compared to the expected response frequencies are greater for Record Keeping than for Results of the program. The greatest difference for each phase occurs in the "always" and the "quite generally" categories.

It is significant to note that Phase V, Record Keeping, is being conducted the most efficiently of all phases of the supervised farming program.

Efficiency of Record Keeping. The fact that Record Keeping, Phase V, is being the most efficiently conducted of all phases of the supervised farming program is shown by Table 5, which is being presented here from page 31, for convenience.

Table 5.--THE DEGREE OF PARTICIPATION IN KEEPING RECORDS IN SUPERVISED FARM PRACTICE WORK

Phase V: Activities of record keeping	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. The students use an approved record book for their projects.	21	1	0	0
2. The students are given instruction and practice in keeping project records.	20	2	0	0
3. The teacher sets aside regular school periods for project record keeping.	14	4	4	0
4. The financial records are neatly kept in ink.	8	10	3	1
Total observed responses	63	17	7	1

Obviously, record keeping is being efficiently handled by the sample of teachers in this study. The writer feels that this phase is being efficiently handled throughout the State of Illinois, as record keeping has been strongly stressed by the State Supervisor. However, there seems to be a need to strive for greater neatness in the records kept. The writer believes that record keeping is an important phase of the boys supervised farming program; that it is

important enough to have some classtime instruction given to insure that the work is properly done. Cook (7) agrees with this and gives suggestions for more accurate records.

It also seems that well kept, accurate records are a requisite if students are going to be able to draw proper conclusions and accurately evaluate the previous years work. The writer also is of the opinion that the greatest constructive progress can be made by following the trends which a critical analysis of previous efforts presents.

Although some authorities discount the value of project records, the majority feel that students should keep accurate, complete records of their project enterprises. The newer and more up-to-date records are set up in a form that offers much aid in presenting lessons in keeping records.

The Illinois project record book previous to the time of this study has been rather simple as compared to those used in some States. As a special feature, however, the score card prepared by Colvin (6) for "Judging the Success or Failure of the Home Project" has been included in the Illinois record book. Presently, Illinois is adopting a more complete record book designed after the farm account book being used by many of the boys' fathers. This new book may even increase the high efficiency of record keeping already acquired by Illinois teachers as shown in this sample study, which compares well with the expected responses of the entire population of Illinois agriculture teachers.

Analysis of Supervising the work. To conclude the statistical comparative analysis of phase with phase, Table 31, presents the comparison between Phases VI, on Supervising the work, and Phase VII, the Results of the Program. All the other analyses have been made of Supervising the work.

Table 31.--A COMPARATIVE ANALYSIS OF SUPERVISING THE WORK AND RESULTS OF THE PROGRAM

Phase	Always		Quite Generally		Rarely		Not at all		Phase Totals
	O*	T#	O	T	O	T	O	T	
VI	45	35.5	49	65.5	12	7	4	2	110
VII	26	35.5	82	65.5	2	7	0	2	110
Response Totals	71		131		14		4		220

* Observed responses

\# Theoretical responses expected (calculated)

$$X^2 = \sum \frac{(O - T)^2}{T} = 24.6$$

In this comparison, Table 31, Supervising the work and Results of the program, the discrepancy of 24.6 is fairly evenly scattered through all four categories, Supervising being conducted more effectively than Results of the program.

In the relative effectiveness of the conduction of the program, Supervising the work is being conducted more effectively than Making Preliminary Arrangements, Job Planning and Results of

the program, but less effectively than General Planning, Provision for Instruction and Record Keeping.

Efficiency of Supervising the work. The smooth running effectiveness of the supervised farm practice work of boys enrolled in vocational agriculture prevails if the teacher adequately supervises the project work in which he has launched the boys after having carefully made proper preliminary arrangements and general plans, and after having properly instructed the boys in the solution of the problems of their project jobs.

In order to study the response to the degree of participation in supervising the project work, Table 6, is presented from page 32.

Table 6.--THE DEGREE OF PARTICIPATION IN PROJECT SUPERVISION OF SUPERVISED FARM PRACTICE WORK.

Phase VI: Activities of Supervising	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. Teacher visits students' supervised farm projects at all critical periods	10	12	0	0
2. The teacher has a definite purpose for each project visit.	8	12	2	0
3. Teachers keep a definite record of each project visit.	12	9	1	0
4. Boys are given specific instruction on management of projects during visits.	13	9	0	0
5. The instructor examines the project records during visits.	2	7	9	4
Total observed responses	45	49	12	4

Apparently only about one half of the teachers in this study are giving proper attention to the supervision of the work.

There is a noticeable lack of visiting projects at all critical times. Many teachers apparently just "travel around" without a purpose for each visit. There is a lack of keeping records of project visits. This negligence might account for failure to make project visits purposeful by giving instruction on management of the project during visits. Experience has enabled the writer to know that critical periods in some project work may occasionally occur at very inconvenient times for the teacher to make a visit. Whether a teacher of vocational agriculture can afford to fail to

visit projects at critical periods depends largely on the local situation. Sometimes the economic cost of the visit might be greater than the economic gain made by the visit. Often in the experience of the writer this is true, but there are certain unmeasurable, intrinsic values, which accrue in project visitation, that cause the best supervising teachers to make extra visits to projects. Many of these are difficult to classify, as absolutely necessary, having a definite purpose, or because the project is in a critical period.

It is a known fact that some of the teachers in this study receive a salary that is inadequate to enable them to properly supervise the project work in the area in which it is located. In some cases the size of the territory requires so much time to make visits that some projects are bound to be slighted. The proper size of territory and salary for most efficient supervision would make an interesting problem to study.

The failure of Illinois teachers to examine the project records during visits, as previously explained, is due to the fact that it has been the custom to keep the record book in the classroom. That the practice is due to change because of the adoption of a new type record book is deemed by the writer a move toward progress.

Analysis of Results of the Program. As Phase VII, the Results, has been comparatively analyzed with the other phases, no further comment will be made relative to the discrepancies found, all of which were significant, except to refer to the ranking of this phase with other phases.

The ranking of Results of the program in the relative

efficiency of the conduction of the supervised farm practice program shows that this phase is being slightly more efficiently conducted than Making Preliminary Arrangements and less efficiently conducted than General Planning, Provision for Instruction, Job Planning, Record Keeping and Supervising the work.

Efficiency of Results of the Program. The results of the supervised farm practice work is a factor in helping the boys to become established in farming.

In order to conveniently observe the degree of participation of the teachers of this study in the pertinent factors of the Results of the program, Table 7, from page 33,is presented again.

Table 7.--THE DEGREE OF PARTICIPATION IN THE RESULTS OF SUPERVISED FARM PRACTICE WORK

Phase VII: Activities concerning results	Degrees of Participation			
	Always	Quite Generally	Rarely	Not at all
1. Students analyze the records of their completed projects.	9	13	0	0
2. The students determine how to improve their projects.	8	14	0	0
3. The capital and income of supervised farm project work is retained by the student.	2	20	0	0
4. The student's project work is on progressive basis,-each year's work becoming larger and better.	3	17	2	0
5. The students have used improved practices in their project work.	4	18	0	0
Total observed responses	26	82	2	0

In the first place, failure of 13 teachers to have their students analyze the records of their completed projects is deemed by the writer as missing the very best possible opportunity to make certain and constructive improvement. In his experience the writer has found students, not only exceedingly interested in this sort of analysis, but found them quite willing to accept these lessons.

In times of low market prices, for example, if Tom can raise hogs for less cost than any of the other members of the class, the rest want to know just how he does it. Analyzing the complete project records is one of the best ways to enable students to improve their projects. These ideas are held by Jeppson (15), one of the best authorities on supervised practice work known to the writer. Meadows (21) also holds similar views on project analysis.

Evidently the sample group of teachers of this study are not much concerned with the financial advancement of the boys in their classes. The experience of the writer is that these young farmers, or prospective farmers, need to have reasonable success if their interest is to be maintained. Taking their gain in "good experience" only is not natural for many of them. Guiding boys to acquire a sound financial plan is likely to be worth as much to them as any part of their training. Adequate preliminary arrangements as previously discussed, make the boys responsible for proper use of both their incomes and investments. This training must not be neglected if an efficient program is to be conducted.

The writer was surprised to find such a poor response from the teachers in this study, in making the students project program

program progressive; that is, not only on a long time basis but increasing in both scope and phase from year to year. This idea is not only incorporated in the Smith-Hughes Act but has been written on extensively. Spidel (30) made a study in which he found that the use of a merit system aided in improving the boys' projects. Wood (34) made a study of the income of projects as a basis for improvement. Orr (23) lists weaknesses in project work and tells how to overcome them. Burd (4) lists procedures for securing successful farm practice work. Anderson (3) developed a score card for project improvement.

A failure to include improved practices in the boys supervised farming work is inexcusable. The teacher must keep up to date and revise his materials and methods according to developments on the farm.

It is felt, the poor effort or lack of effort, in making proper preliminary arrangements, and poor planning, will be reflected through the entire program to the Results of the program. The responses to questions in the Results phase of this study certainly bear out this statement. The greatest need for efficiency in the Result phase of supervised farming seems to be greater effort in making sufficient and satisfactory preliminary arrangements.

The next comparison with the Result phase, which is in need of improvement, is the phase, Provision for Instruction. The supervised farm practice programs of the boys in a class of vocational agriculture should constitute the promary basis for the instruction in each class. In noting the responses, given by the twenty-two

teachers in this study there is a greater need to make the farm project jobs the basis for the instruction, and especially, to teach each job or problem at such a time as to give greatest assistance to the student in carrying out his supervised farm project jobs.

General inefficiency pointed out in the Result phase is due to faulty supervision to a certain extent. Other causes for the lack of efficiency between Supervision and general results could be due to lack of having a definite purpose for each project visit, failure of some teachers to examine the project records during visits, and the failure to give specific instructions on the management of the projects, at the time when the instruction would be most valuable, -namely, during the visit on the farm.

Limitations of the study. The entire population of agriculture teachers would probably yield more reliable data than the sample of twenty-two teachers in the particular area. This sample represents over five percent of the entire population of the agriculture teachers in the State. This percent is much larger than is used in much research work.

The use of the questionnaire in gathering data does not entirely prevent unbiased answers from entering into the data, but lack of time prevented personal interviews with all teachers. Actual observational visits for collecting some of the needed data might have contributed more to the reliability of the data but here again, lack of time prevented this.

There are undoubtedly other means of discovering the degree of participation on part of the teachers in the supervisory activities than that used in this study, - that of getting the teachers' answers to activities of the program. This other means might have

consisted of observing what each teacher actually did. The procedure would have necessitated the presence of the writer in each school at the time an activity was actually taking place. This again was impossible because of the great amount of time such a procedure would have required.

The writer also feels that an efficiency study of supervised farm practice work would have been more worthwhile if it was designed to measure and evaluate the individual project work of each boy. A study of this sort would be very great in time consumption also.

The most serious limitation of the study concerns the basic consideration upon which the effectiveness of the supervisory program is judged. The list of activities depends upon the judgment of leaders in Agriculture Education for their validity. This opinion needs to be experimentally verified. Such experimental verification is a long, laborious process and could not be undertaken by the writer in any comprehensive way. He believes, however, that he made a distinct step in this direction, in that effectiveness was judged in terms of activities.

In using the critical value, $X^2_{.05}$, it is admitted that there is a chance of error five percent of the time, but the limitation is not very serious, when the fact remains that the chances of being always correct is 95 percent.

Related problems. Some problems which occurred to the writer in relation to his study were:

1. What effect does the personality of the agriculture teacher have on the successful conduction of the supervised farming program?

2. Should the State Supervisor attempt to set up minimum requirements for each phase of supervised farm practice?

3. Could a salary schedule per square mile be established to insure adequate funds for proper project supervision?

4. What effect does farm tenancy have on the progressiveness of supervised farming?

Chapter V.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

This study was made for the purpose of finding ways of making the supervised farm work efficient and effective. Statements found in this chapter are made partly through a statistical analysis of the data and partly from observed responses made by twenty-two vocational agriculture teachers to pertinent questions on the questionnaire.

SUMMARY:

The statistical analyses were used to establish reliability. In using this method the writer was aware that the findings were correct in at least 95 percent of the cases. However, final conclusions were drawn from responses found on the questionnaire.

The use of the comparative statistical analyses is summarized and explained further as to what conclusions can be drawn from it.

Table 32.--THE CHI SQUARES OF PHASE WITH PHASE COMPARISON

Phase Comparison	$X^2 = \sum \frac{(O-T)^2}{T}$
I and II	*22.6
III	*45.6
IV	*25.3
V	*52.8
VI	*14.4
VII	*36.4
II and I	*22.6
III	*14.9
IV	0.5
V	*25.2
VI	5.7
VII	*15.3
III and I	*45.6
II	*14.9
IV	5.4
V	*12.0
VI	7.0
VII	*27.0
IV and I	*25.3
II	0.5
III	5.4
V	*18.0
VI	3.2
VII	*22.0
V and I	*52.8
II	*25.2
III	*12.0
IV	*18.0
VI	*19.4
VII	*64.5
VI and I	*14.4
II	5.7
III	7.0
IV	3.2
V	*19.4
VI	*24.6
VII and I	*36.4
II	*15.3
III	*27.0
IV	*22.0
V	*64.5
VI	*24.6

* Significant,--critical value $X^2_{.05} = 7.815$

Table 32 is a summary of tables 11 to 31. The discrepancies shown are merely statistical differences between the observed and the expected response frequencies. Those differences greater than the critical value $X^2_{.05} = 7.815$ are significant; those less than the critical value are non significant. A difference that is significant is one that is large enough that it cannot be due to luck or chance. A non-significant discrepancy is so small that it could be due to luck or chance. These differences are indications of strength or weakness of the conduction of the program, as one phase is compared with another. However, this analysis does not permit conclusions as to which differences indicate strength of conduction or which differences indicate weaknesses.

After noting that discrepancies were present the writer determined which existed, strength or weakness, by consulting the responses on the questionnaire. The causes of the strength or weakness were observed in the degrees of participation on the questionnaire also.

The more detailed findings of this study are as follows:

1. Making the Preliminary Arrangements for supervised farm practice is being conducted with the least efficiency of all the seven phases studied.

2. The inefficiency of conducting the Preliminary Arrangements is reflected throughout the entire program.

3. General Planning is being more efficiently conducted than Preliminary Arrangements.

4. Provisions for Instruction are being more efficiently administered than Job Planning.

5. Making the teaching timely is the most serious fault in the Provisions for Instruction phase.

6. Job Planning is not being conducted very well by most of the teachers in the area of this study.

7. Record Keeping is being the most efficiently conducted of all the seven phases studied.

8. Supervision of the project work is inadequately handled.

9. Lack of efficiency in Supervision is due to lack of purpose for project visits made.

10. Less than half the teachers stated that they visited the boys projects at all critical periods.

11. There is a lack of keeping records of project visits, and a relating of the project record book to the project.

12. There is a lack of having students analyze the records of their completed projects.

13. Students, often, have not determined how to improve their projects.

14. Only two teachers reported that the capital and income from the project work is "always" retained by the student.

15. There is a noticeable lack of the project work becoming larger and better each year.

16. The phase, Results, has suffered from the inefficiency of the other six phases.

17. In the whole supervised farming program there were only three hundred observed responses in the "always" category out of a total of eight hundred fourteen responses made.

CONCLUSIONS

All the evidence assembled pertaining to the efficiency of the supervised farm practice program of the twenty-two Illinois teachers included in this study leads the writer to believe that there is much need for improving the effectiveness of the participation in the activities of the program.

A comparative statistical analysis of one phase with another showed that some phases of the program were being conducted more efficiently than other phases, while in a few comparisons there was very little difference in the deviations between observed and expected responses.

Of the seven phases studied, that of Record Keeping was the only one which definitely showed that it was being conducted quite efficiently.

RECOMMENDATIONS

Some suggestions that seem to evolve from this study for the improvement of the efficiency of the supervised farm practice program in twenty-two departments of vocational agriculture included in this study are:

1. More thoroughness in making Preliminary Plans, especially between teacher and parents, before the student starts to school.

2. Make more use of the written agreement between parent, student and teacher.

3. Establish the boy's ownership or desirable partnership relation always.

4. Make long-time supervised farming programs as a result of previous, carefully, studied, preliminary arrangements.

5. Make the supervised farming program more like that in which the student expects to engage.

6. Include more improved practices.

7. Have students prepare budgets for each project.

8. Give the instruction at such a time so that it will provide the greatest assistance to the student in carrying out his supervised farm projects.

9. Give instructions in and have students make Job Plans for each project job in their supervised farming program.

10. Have students make written statements of what they intend to do about each job plan.

11. Visit the students projects at all critical times.

12. Have a definite purpose for each project visit.

13. Have the students analyze their completed project record books and determine how to improve their projects.

14. Make arrangements whereby the student retains the capital and income from his supervised farm practice work.

These recommendations are necessarily of a general nature and will not apply equally to all teachers in this study. They will not insure one hundred percent efficiency if followed, but it is felt that improvement according to the fourteen recommendations, will increase the efficiency of the supervised farm practice program of the twenty-two departments of vocational agriculture in Illinois, close to Reynolds, Illinois, materially.

APPENDIX

Inquiry Blank for Supervised Farm Project Work.

School_____

Teacher_____

Do you participate in the following activities? If so, place a check in the column showing degree.

Items of Supervised Farm Practice.	Always	Quite Generally	Rarely	Not at all
I. Preliminary arrangements. Supervised farm project work should be initiated before or near the beginning of the first year of instruction and the teacher should develop and continue a cooperative relationship between the school and the home.	X	X	X	X
1. Teacher informed parents of the purpose of the supervised farm practice before or near beginning of the school year.				
2. Teacher conferred with students and parents in regard to the students' supervised farm project work before or near the beginning of the school year.				
3. Students and teacher made a survey of enterprises on the home farm.				
4. Students, teacher and parents studied plans for the development of the home farm in relation to the supervised farm project work of the students during the students' first year of vocational agriculture.				
5. Parent, teacher and student have signed a written agreement for each year's project work.				

Items of Supervised Farm Practice	Always	Quite Generally	Rarely	Not at all
6. Teacher has secured understanding between parent and student on complete responsibility for the project work.				
7. Teacher has secured the parent's approval of financing the project work.				
8. Students have started a long-time supervised farm practice program in the first year.				
II. General planning. The students supervised farm project work should be a training program for satisfactory establishment in farming in the community.	X	X	X	X
1. The farm enterprises included in the supervised project work of the students are those in which he expects to engage as a farmer.				
2. The farm enterprises included in the students supervised projects are adapted to the home farm.				
3. The supervised farm project work provides for managerial experiences as shown by ownership, or part owner or rental arrangements.				
4. The supervised project work includes improved practices in addition to those ordinarily used on the home farm.				
5. Students set up definite goals or objectives for each enterprise in their supervised farm farm project work.				
6. Students have made a budget for each project.				

Items of Supervised Farm Practice	Always	Quite Generally	Rarely	Not at all
III. Provision for instruction. The supervised farm project programs of the boys in a class constitute the primary basis for the instruction in each class.	X	X	X	X
1. Important farm enterprises represented in individual supervised farm project programs are included in the course of study.				
2. Instruction is given on the important farm jobs and problems represented in individual supervised farm projects.				
3. Each job or problem is taught at such a time as to give greatest assistance to the student in carrying out his supervised farm projects.				
4. The instruction aims at helping boys to make job plans for their project.				
5. Class time is given to helping the boys keep accurate records on their reports.				
IV. Job Planning. Students should make job plans for the important jobs in their project. The jobs should incorporate improved practices.	X	X	X	X
1. The plans for jobs or problems consist of written statements of what the student intends to do.				
2. The job plans embody improved practices which are appropriated to the students farming situation.				
3. The job plans are made as a result of the instruction given in the class.				

Items of Supervised Farm Practice.	Always	Quite Generally	Rarely	Not at all
4. If conditions arise so that plans could not be followed, such plans are changed and a record made of the changes.				
V. Record Keeping. Students keep accurate and complete record of project enterprises.	X	X	X	X
1. The students use an approved record book for their projects.				
2. The students are given instruction and practice in keeping project records.				
3. The teacher sets aside regular school periods for project record keeping.				
4. The financial records are neatly kept in ink.				
VI. Supervising. The teacher adequately supervises the project work.	X	X	X	X
1. Teacher visits students' supervised farm projects at all critical periods.				
2. The teacher has a definite purpose for each project visit.				
3. Teachers keep a definite record of each project visit.				
4. Boys are given specific instruction on management of projects during visits.				
5. The instructor examines the project records during visits.				

Items of Supervised Farm Practice	Always	Quite Generally	Rarely	Not at all
VI. Results. The supervised farm practice work is a factor in helping the boys to become established in farming.	X	X	X	X
1. Students analyze the records of their completed projects.				
2. The students determine how to improve their projects.				
3. The capital and income of supervised farm project work is retained by the student.				
4. The student's project work is on progressive basis--each year's work becoming larger and better.				
5. The students have used improved practices in their project work.				

Letter of Explanation.--

I am inclosing one of my inquiry blanks for a study which I am making of the Supervised Farming Program of Vocational Agriculture students of our area. I will appreciate it very much if you will place a check mark after each statement in the column which indicates your degree of participation.

I am inclosing a self addressed stamped envelope so that you may return my blank at your earliest convenience. The value of my study will depend upon the conscientious checking of the blanks. My completed study will not show the results of individuals but will use only the totals and summaries. Individual reports will be kept strictly confidential.

Thanking you for this favor, I remain

Departments in Study, Name and Address of Teachers.

Department	Teacher	Address
1. Aledo	Earl E. Lutz	Aledo, Illinois
2. Amboy	O. C. Holt	Amboy, Illinois
3. Annawan	Howard D. Allison	Annawan, Illinois
4. Ashton	Wayne A. Wise	Ashton, Illinois
5. Biggsville	Ray Dunn	Biggsville, Illinois
6. Chillicothe	J. B. Taylor	Chillicothe, Illinois
7. Cordova--Hillsdale	Halsey Miles	Hillsdale, Illinois
8. Dunlap	Eldon E. Houghton	Dunlap, Illinois
9. Galesburg	Ray Peart	Galesburg, Illinois
10. Galva	E. M. Edwards	Galva, Illinois
11. Geneseo	C. R. Lash	Geneseo, Illinois
12. Kewanne (Wethersfield)	Clarence J. Kuster	Kewanee, Illinois
13. Morrison	M.E. Firch	Morrison, Illinois
14. Mt. Carroll	W. G. Warnock	Mt. Carroll, Illinois
15. Orion	Dean K. Finch	Orion, Illinois
16. Polo	Clyde E. Fry	Polo, Illinois
17. Reynolds	R. O. Robinson	Reynolds, Illinois
18. Rock Falls	G. E. Newburn	Rock Falls, Illinois
19. Roseville	E. E. Mayhew	Roseville, Illinois
20. Sterling	J. A. Twardock	Sterling, Illinois
21. Toulon	L. N. Patton	Toulon, Illinois
22. Wyoming	Lester R. Shay	Wyoming, Illinois

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Abstracted in entry no. 2. An analysis of difficulties and suggestions for more effective procedures in launching boys into supervised farm practice.

2. American vocational association. Agriculture section. Research committee. Summaries of studies in agricultural education. Washington, D. C., U. S. Govt. print. off., 1936. 196p. (U. S. Office of education. Vocational education bulletin, no. 180, Agricultural series no. 47.)
Abstracts of 373 studies in agricultural education.

3. Anderson, C. S. A score card for productive projects. Agricultural education, 2:28, February, 1930.
A score card was developed to evaluate projects. It resulted in stimulated project work in Pennsylvania.

4. Burd, F. B. Eliminating failures in farm practice work. Agricultural education, 3:43, September, 1930.
A list of procedures which should aid in securing successful farm practice work.

*5. Carroll, Joseph Allyn. Trends in supervised farm practice in vocational agriculture. Master's thesis, 1934. Purdue University, West Lafayette, Indiana.
Abstracted in entry no. 2. An analytical study was made of farm practice programs of freshmen in 18 vocational agriculture departments for a five year period.

*6. Colvin, Carl. A score card for judging the success or failure of home projects in agriculture. Master's thesis, 1920. University of Illinois, Urbana, Illinois.
Abstracted in entry no. 2. By selecting 128 score cards, noting points of strength and points of weaknesses, a score card was developed to judge home projects.

7. Cook, G. C. Why some project records are poorly kept. Agricultural education, 16:185, June, 1934.
Reasons were given for poor records and suggestions listed for more accurate records.

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*Reviewed in Literature.
Other entries are considered pertinent to the study.

*8. Daughtridge, Stanley Leon. A study of home projects in North Carolina with suggestions for realizing more of the potential educational values and increasing the financial returns. Master's thesis, 1926. North Carolina State College, Raleigh, N. C.
Abstracted in entry no. 2. Project reports were summarized and analyzed for strong essential values in project work and to bring out how the values might be realized.

*9. Dennison, Raymond Lewis. Means and methods of supervision home project work in vocational agriculture in addition to the major project enterprise. Master's thesis, 1930. Ohio State University.
Abstracted in entry no. 2. Developed thirteen methods of securing more supervised home practice work than is usually done.

*10. Dorsey, Ervin. The relationship between scope and size of agriculture projects to profits and other aims. Master's thesis, 1922. George Peabody College for Teachers. Nashville, Tenn.
Abstracted in entry no. 2. Comparisons were made between large and small projects for educational, economic, and other factors, by questionnaires which were sent to both white and colored teachers in several southern states.

*11. Dowell, William Henry. The supervised home projects in vocational agriculture conducted in ten departments in and near Pekin, Illinois. Master's thesis, 1938. Colorado State College. Fort Collins, Colorado. 92 p. ms.

*12. Eldridge, Hubert Daniel. Determining methods of improving the supervised practice program in vocational agriculture in the high schools in Colorado. Master's thesis, 1929. Colorado Agriculture College, Fort Collins, Colorado. 62 p. ms.

*13. Hill, James Edward. The use of supervised farm practice in teaching vocational agriculture. Master's thesis, 1924. University of Illinois, Urbana, Illinois.
Abstracted in entry no. 2. Suggestions of a desirable method of teaching vocational agriculture were recommended.

14. Hulslander, S. C. Raising standards of supervised practice. Agricultural education magazine 10:188-9, April, 1938.
Methods of raising the standards of supervised practice are described. Letters to parents of the boys are emphasized, in order to obtain more efficient project program through greater cooperation from the parents.

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More complete analysis, resulted in stimulating interest in continuation projects.

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*17. Kiltz, Kenneth William. The relation between the farm practice programs and the farm resources of the boys of twelve vocational agriculture departments in western Indiana. Master's thesis, 1930. Cornell University.
Abstracted in entry no. 2. A study was made of the problem of adapting the instruction to the needs and resources of the boys.

18. Lattig, H. E. Practical methods in teaching vocational agriculture. New York, The McGraw Hill co., 1931. 354 p.
A handbook discussing all phases of work in vocational agriculture.

19. Maltby, Robert D. Supervised practice in agriculture including home projects. Washington, Gov. print. off., 1926. 55 p. (U. S. Federal board for vocational education. Bulletin no. 112, Agriculture series 29.)
A publication for teachers of vocational agriculture to guide them in making projects more effective.

*20. McReynolds, Joseph Leland. The relation of certain significant project problems to the effectiveness of the teaching of agriculture, in Mississippi. Master's thesis, 1926. Cornell University, Ithica, N. Y.
Abstracted in entry no. 2. By studying final project reports and records, and responses to questionnaire sent to teachers, an attempt was made to determine the status of home project work and suggestions were made for more effective work.

21. Meadows, Thomas Burton. Status of agriculture projects in the south. Doctor's thesis, 1924. George Peabody College for Teachers. Nashville, Tenn.
Abstracted in entry no. 2. By procuring data from reports of vocational agriculture teachers of southern states a summarization of the returns were made in terms of net profits, hours of labor required, frequency of the different enterprises selected, and the relative ranking of projects in net profit per hour.

*22. Newsom, Rayburn Zackery. Relation between visits and profits in agricultural projects. Master's thesis, 1926. George Peabody College for Teachers, Nashville, Tennessee.
Abstracted in entry no. 2. There was found to be a relation between the number of visits and the profits, made on the projects.

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A list of weaknesses in farm practice work which were discussed by teachers of vocational agriculture in

conference groups; their suggestions on why they exist and what teachers can do to overcome them.

*24. Prosser, Charles A. and Allen, Charles R., Vocational education in democracy. New York, The Century Co., 1925. 551 p.
A very practical book on the philosophy of vocational education, primarily of interest to vocational teachers.

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A comprehensive discussion of all phases of project work.

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A comparison of two boys farm programs of poor and good planning in order to prevent failure in farm training.

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A very useful book to vocational agriculture teachers to use in rating themselves and their departments, in vocational agriculture.

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A merit schedule was developed for the purpose of improving the project programs conducted by the boys.

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discover from experts their solutions to these difficulties. Difficulties are obtained by the questionnaire method, and the major ones were submitted to supervisors and college professors of agriculture.

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A complete book on administering vocational education. The chapters on supervision are of especial interest to vocational agriculture teachers.