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To assure a sound and successful agricultural industry for the future we must provide the necessary education, in addition to production agriculture, in the present. The purpose of this study has been to isolate the needs of schools desiring other than production emphasis in their agricultural programs and to make a general proposal to meet these needs.

Related literature and resource materials reviewed in connection with this study revealed a need for evaluating certain practices within present programs and a desire for agricultural offerings in addition to the traditional vocational agricultural courses.

Procedures in this study included a survey by opinionnaire of public secondary school principals or curriculum directors, guidance personnel, and agricultural instructors. After the opinionnaires were returned, nine of the respondents were interviewed for more specific information pertaining to the broad areas included in the opinionnaire. A

questionnaire was sent to agricultural departments to obtain information concerning changes in their present agricultural programs to better meet the needs.

Eleven of the thirty eight schools surveyed had agricultural programs at the time of the survey, but the findings of the study point out a need for agricultural education in all of the secondary schools surveyed. The desired offerings in each school varied, but any agricultural course offering should be elective and not mandatory to the students of the school. Most of the respondents indicated a need for more than just one agricultural course in their school to serve the needs of the students. The non-farm agricultural occupations were an area of concern to most of the respondents.

A suggested course in Horticulture is included in the study based upon several of the disclosed considerations. The proposed course is for one semester and the inductive inquiry approach based on principles is suggested. The interviews revealed some other areas of interest to school personnel as a possible agricultural offering.

The conclusions of the study are: the procedures used in carrying out this study are valuable for the purpose of identifying limited guide lines by which the secondary schools' agricultural education program might be up-dated; the group of non-agriculture teaching school personnel involved in this study were not sufficiently knowledgeable of agricultural programs. This limited the validity of their opinions and recommendations concerning future programs:

and the information obtained through the various procedures used in this study does not have sufficient factual knowledge to enable the drawing of sound conclusions as to what is necessary for meeting the needs of urbanized school districts in agricultural education.

AGRICULTURAL EDUCATION NEEDS AS EXPRESSED BY PUBLIC SECONDARY SCHOOL PERSONNEL

by

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CHAPTER I

BACKGROUND AND INTRODUCTION

Need for the Study

In biblical times agriculture was a very important part of the social, economic, and educational scene. Almost all of the people were needed to produce the food and fiber for life. The pilgrims of the new western world were confronted with the problem of survival, and the Indians helped to educate them in the agriculture of their area. This was the agricultural education of the new nation with the emphasis on production agriculture.

The importance of agriculture has not diminished, but since those early years the number of people needed for the production of food and fiber has become proportionately smaller in the United States. In recent years this change has also entered the field of agricultural education. Today fewer people have found education in agricultural production necessary for survival, therefore the number of students in the public schools aiming toward a career in production agriculture has decreased. However, the word agriculture has developed a broader meaning and thus agricultural education has begun increasing its scope and changing its emphasis.

Agriculture was introduced to the public secondary schools of the United States in an organized manner,

nation-wide through the Smith-Hughes Act of 1917. Since that time vocational agriculture has been the major type of agricultural instruction in our public schools.

The late 1950's or early 1960's brought with them an additional emphasis on science and mathematics instruction in the secondary schools. The inception of the new educational emphasis brought about public and professional evaluation of the school, its offerings, and to some extent, its techniques. Agriculture received its share of attention and criticism. The criticism resulted in constructive steps being taken to correct points of weakness in the programs of Oregon.

The author has isolated a problem area of Oregon agricultural education programs which is in need of study. This problem is that the present agricultural education program of Oregon often lacks the necessary offerings for schools where it is not feasible to offer production agriculture.

This criticism has been expressed, in principle, by school boards, administrators, and agricultural instructors and is evident in the school systems of the larger cities of the state. In these larger city schools it has not been thought feasible or acceptable to have production agriculture offerings, and therefore we find no agricultural courses, or a rather small department in most cases.

It is the purpose of this study, to isolate the needs of these urban schools desiring other than production emphasis

in their agricultural education program. The study also has the purpose of making a general proposal to meet the needs of the larger city schools in agricultural education.

Statement of the Problem

Many communities of Oregon, in which a number of the secondary schools are located, are becoming increasingly urbanized. This urbanization presents the affected schools with new problems. One of the pressing problems is concerned with the adoption of the schools' offerings in agricultural education to meet the demands of the changing community.

The problem investigation consisted of three phases. The first phase was one of determining which practices are currently being used in the agricultural education programs that need revamping or deletion, in Oregon. The second phase called for outlining the expressed needs of the school personnel with regard to agricultural education for the school in which they were presently employed. The third and final phase dealt with accumulating proposed solutions to the problem of meeting the agricultural education needs of the schools in Oregon.

This study is attempting to find the relation, if any, between the desired changes in the current practices of agricultural education, as expressed by the school personnel of the various schools. If the practices do not fulfill

the expressed needs, it is hoped that this study, including the accumulated proposed solutions, will provide some guide lines for changing Oregon's agricultural education program.

Hypotheses

In light of present knowledge of the agricultural education program in Oregon and the information obtained through readings and conversations, the author sets forth the following hypotheses:

1. The perceived needs of school personnel are not coordinated with some of the current practices in agricultural education.

2. The perceived needs of school personnel point out the need for other types of agricultural education in addition to vocational agricultural education with emphasis on production.

3. The schools desiring to serve more students through their agricultural offerings will need specialization in agricultural course offerings at the eleventh and twelfth grade levels.

Assumptions

The following assumptions are set forth as a means of enabling the reader and the researcher to approach the problem on a somewhat common basis.

1. The principals, head counselors, and agricultural

instructors are the school personnel that know of present practices and expressed needs in agricultural education.

2. The principals, head counselors, and agricultural instructors of the schools involved, are sufficiently familiar with agricultural education to give significant opinions on present and suggested future agricultural education offerings.

3. The schools used in this study were representative of the urban and semi-urban schools in Oregon.

4. An agricultural education program could be set up in any school involved in this study.

5. The proposed solutions are valid in that they originate from agricultural instructors facing similar problems who are forced to make changes to meet the needs.

Definitions of Key Terms

For the sake of clarity the following terms as defined will be used in this study:

Agricultural Education Program: The term, as used in this study, has reference to any and all educational activities in which agriculture is the basic subject matter involved.

Off-Farm Agricultural Occupations Program: Reference is made to an educational program, as used in this study, that prepares students to work in occupations related to agricultural production upon the completion of their

education. As defined by Williams (22, p. 8):

> "A common term for those jobs which are not involved in the actual process of producing food and fiber, but are considered essential to the profitable and efficient marketing, storing, processing, and provision of the necessary equipment and raw materials which go into the task of production. The term is in reality a misnomer inasmuch as it more accurately describes 'farm related' occupations since they are all dealing with agricultural supplies and produce."

Agricultural Science Program: An educational program that presents agricultural subject matter as a science. In reality it is the systemized knowledge in the various fields applicable to the field of agriculture such as engineering, entomology, zoology, economics, forestry, animal science, plant science, and sociology.

Future Farmers of America: As defined by Phipps and Cook (19, p. 286):

> "The Future Farmers of America, commonly known as the 'FFA' is the national organization of, by, and for the boys studying vocational agriculture in public secondary schools under the provisions of the National Vocational Acts. It is an integral part of the program of vocational agriculture."

Principle: A fundamental truth, drawn from several instances, which has exceptions, and which serves as a guide for evaluation as well as future action. (2, p. 2)

Plant Science: A broad curriculum area including such subjects as soil science, crop science, plant breeding, horticulture, floriculture, plant pathology, fruit and nut culture, and vegetable culture.

School Personnel: Unless otherwise designated, this study refers to the high school principal, head counselor

or guidance person, and the agricultural instructor. These people are the ones involved most directly with this study.

Smith-Hughes Act: An act passed by the 65th Congress of the United States. The act sets forth provisions for vocational education, and provides annual appropriations to be distributed to the states for vocational educational programs in home economics, trades and industries, and agriculture of less than college grade.

Supervised Agricultural Experience: As described by Phipps (19, p. 201):

> "A program consisting of all the practical agriculture activities of educational value conducted by pupils outside of class for which systematic instruction and supervision are provided by their teachers, parents, employers, or others."

Supervised Farming Program: As used in this study and as Williams states (22, p. 5):

> "The activity required of all vocational agricultural students to carry out on their home farm or another farm, a program consisting of a productive project(s), improvement project(s), and supplementary farm practices. As used in this study the productive project, which continues through one production cycle or six months, whichever is longer, shall be a farming activity entered into for learning and profit."

Vocational Agricultural Program: The entire scope of activities carried out by the vocational agriculture department of a high school. As described by Phipps (19, p. 5):

> "... Systematic instruction in agriculture conducted in public schools for those persons who have entered upon or who are preparing to enter upon the work of the farm or the farm home."

Procedures used in Collecting Data

Three types of data gathering devices were utilized in this study. The first device was an opinionnaire with the objective of securing opinions of school personnel for future agricultural education needs in urban schools.

An interview check list was the second device used. This list was developed to provide specific details and to enlarge upon the broad questions included in the opinionnaire.

The third instrument used in collecting data was a questionnaire designed for three areas of consideration. These areas included the community, the agricultural students, and the agricultural program.

Limitations of the Study

The problems of limitations are twofold: A) Artificial limitations set by the writer for the sake of clarity and scope; and B) those inherent within the problem area which are difficult to measure or control.

Of the first the writer submits the following:

1. The study will be limited to data obtained in Clackamas, Multnomah, and Washington Counties of Oregon. Additional information will be limited to related studies from other states and other parts of Oregon; and to the twenty-seven selected schools with agricultural programs and urbanization pressures in Oregon.

2. The study will be limited to the collection of data from the principal, or curriculum director, head counselor, and agricultural instructor only, of the schools involved in this study.

This, then, leads to the limitations of the second type:

1. That the opinionnaire, the questionnaire, and the interview questions designed and prepared by the author may be interpreted differently by the participating school personnel.

2. Honest, frank, and intelligently based opinions from the school personnel will be most difficult to obtain without the influence of past experiences with agricultural programs. It will also be quite difficult to obtain accurate information from those who know comparatively little or nothing about agricultural education.

3. That the principal, head counselor, and agricultural instructor may have no sound opinions on the future needs of the school for which they work.

4. That the present trend for many subject matter areas to be offered in the secondary schools will tend to encourage school personnel to have a negative attitude toward any new course suggested for their school.

5. That in the use of simple percentages in presenting the tabulated data, inferences and conclusions might be drawn that are invalid.

Summary

The problem of preparing for tomorrow lies in the hands of those of today. Many present practices and suggestions for the future have been presented. To the knowledge of the author, no successful attempt has been made thus far to compare present practices with future needs, as seen today, and to develop a plan to guide the course to be taken by agricultural education in the urban schools of Oregon.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

Numerous studies and articles have been published on the present and future programs in agricultural education. A study carried out in 1962 at Oregon State University has a great deal of data on the present agricultural education programs in Oregon.

The future agricultural education programs have been suggested, partially developed, and criticized by almost every leader in the agricultural education field. Because of this large volume of related writings, the author has chosen to review only the most recent articles written, and those articles that express the views of many rather than a few. Many agricultural education conferences are held each year, and from these conferences comes the information as pooled by the many leaders. The author has found this information to summarize much of the individual writings found in various sources.

Present Agricultural Education Programs of Oregon

In a recent study conducted by Williams, (22), the administrators of Oregon High schools having an agricultural education program were asked to complete a questionnaire

regarding their agricultural offering.

One question (22, p. 34-5) concerned the administrators' opinion of the effectiveness of the vocational agriculture program in their school. Of the seventy-eight administrators answering, 38.46 per cent rated the program very satisfactory, 51.28 per cent rated it satisfactory, and 10.26 per cent rated it unsatisfactory.

Table 1

Agricultural Program Objectives

Objective	Number	Per Cent
1. To prepare young men to become farmers.	3	3.75
2. To provide leadership training for farm boys.	11	13.75
3. To prepare young men for an agricultural occupation.	13	16.25
4. To provide training in mechanical skills.	3	3.75
5. To provide a broad program of agricultural education to those who are engaged in, or about to become engaged in farming.	4	5.00
6. To provide a broad program of agricultural education for those who are engaged in, or about to become engaged in an agricultural occupation.	45	56.25
7. Other	1	1.25
	80	100.00

In the opinion of the administrators the major objective of the vocational agriculture program of their respective schools placed leadership training and the preparation for an agricultural occupation high in priority. The previous Table 1 gives the objective breakdown in the opinion of the administrators. (22, p. 26)

The study by Williams (22, p. 29) also disclosed that 35.53 per cent of the high schools allowed school credit in vocational agriculture to students not having a supervised farming program. The remainder of the schools did not allow credit under similar circumstances.

The major weaknesses in the vocational agriculture program of Oregon as compiled by Williams (22, p. 36) were classified into three groups. The major weakness was inherent in the program according to 73.91 per cent of the administrators, responding to the question. The vocational agriculture instructor was listed as the major weakness of the program by 21.75 per cent of the twenty three administrators answering the question. The remaining 4.35 per cent were put in the classification of "other". Additional comments pointed out the need for a program to fit the needs of the semi-urban boy, and that project visitation required too much of the instructor's time.

Needs in Future Programs

It is stressed again that the following material tends

to summarize the many articles that have been written. The conferences and studies have included many of the nation's leaders in agricultural education.

In referring to the future objectives of vocational agriculture education, Thompson (21) states:

> "The fundamental objective -- training only for farming -- may be outdated. Today many businesses that supply goods and services to farmers, as well as those that handle produce from farms, require personnel trained in agriculture."

The 1962 Pacific Regional Conference of Agriculture Educators (4, p. 26-28) encouraged the continuation of the vocational agriculture program. They would maintain the objective of preparing youth for farming, but would add to that instruction in agricultural occupations.

In an address delivered at the American Vocational Association Convention, Howard W. Deems (6, p. 2-10) made the following proposal:

> Discontinue Vo-Ag II, III, and IV as regularly scheduled classes as we have in many schools today. This to be replaced on a twelve-month term by specific units of instruction such as 'tractor maintenance', 'producing Grade A milk', 'raising certified crops', and 'farm accounting'. The hours scheduled for study and instruction might vary from week to week or from month to month. The amount of credit received in agriculture would be determined by the hours of class and individual instruction received during the entire year.
>
> To be most effective this type of vocational training should be preceded by one year of general agriculture and one year of vocational agriculture given in the junior high school or

> in the ninth and tenth grades and paralleled with practical courses in science and mathematics.

According to E. M. Juergenson (11, p. 10-13):

> Teaching ornamental horticulture and related courses is of major concern in large cities, and even important as a part of the rural education program. Home beautification can be a part of each student's improvement program, or used as a project, for this division of agriculture is now as important as traditional enterprise.

Robert E. Lucas, Superintendent of Schools, Princeton Schools, Cincinnati, Ohio suggests that vocational agriculture should revamp its goals and rechart its course in line with a changing world with changing needs. He states (13, p. 247):

> Although the greatest challenge facing education today is to prepare boys and girls for employment at all occupational levels, this does not mean that the aim of our high schools is to produce pre-doctors, pre-lawyers, or pre-nurses or accomplished carpenters, technicians, farmers, or welders. Rather it is to aid in growth of mature, well-rounded, cultural individuals able to sustain themselves in an interdependent society. They do this only if they have acquired basic diversified skills, both intellectual and manual, which will enable them to be flexible and successful in the vocational fields in which they show aptitude.

In relation to the adjustment of an agriculture program to meet the needs of urbanization, Robert Kerwood, Teacher Education, West Virginia University said (12, p.249):

> ... with the present rate of urbanization and the increasing importance of town and country relationships vocational agriculture must stand ready to serve people from both environments. A small home garden or seeding a lawn presents many questions which teachers of vocational agriculture should be able to answer. In some respects the part-time farmer is a city person who prefers to live on a

> farm. Teachers of vocational agriculture must include these people in their programs of instruction for a community.

Coventry High School, Coventry, Rhode Island has expanded its agricultural education program to meet the needs of a greater number of high school students by adding a course in floriculture for girls. According to John H.Ball, teacher of Agriculture in Coventry High School, floriculture is providing girls with some educational experiences not available to them before. These girls find floriculture very helpful to them in many field of endeavor and in already chosen careers. (1, p. 213)

The study by Williams (22, p. 37-39) summarizes the feelings of administrators in Oregon as to the effect of selected proposals upon the agricultural education programs of their schools. It was felt that a program of general agriculture would aid the program slightly, as was the proposal to require the vocational agriculture man to teach on the same certificate as other teachers. Placing an increased emphasis on agricultural occupations other than farming was felt to be a proposal that would aid the program a great deal. To discontinue the supervised farming program, discontinue the FFA, to place the program strictly on an academic school year basis, and to discontinue the program entirely were the proposals that would affect the program negatively.

General Agriculture

In a study reported by Thompson (21), twenty five high schools were involved in experimenting with a general agricultural program. Information obtained indicates that general agriculture may replace vocational agriculture in some schools and complement it in others. Localities becoming urbanized sometimes do not permit the supervised farming programs necessary for vocational agriculture, so the general agriculture is becoming increasingly popular in these areas.

California (14) lists the following objectives in their general agriculture program:

1. General understanding of agriculture and its place in the economy of the nation.

2. General understanding of the importance of agriculture to each individual in the nation.

3. General understanding of how plants and animals grow and reproduce.

4. General knowledge of where plants are grown and why they have developed in these areas.

5. Understanding of the processes involved in movement of agricultural products from producer to consumer.

6. Knowledge of the basic skills in reading and mathematics, capitalizing on interest in agriculture.

7. The development of favorable attitudes toward work and the development of acceptable work habits. This objective includes emphasis, through specially designed class activities, on the ability to work together harmoniously.

8. Knowledge of the many opportunities in

agriculture and the qualifications for entrance into various fields.

The General Agriculture Committee of the 1962 Oregon Vocational Agriculture Teachers Conference (17), chaired by Mr. A. K. Pfahl of West Linn High School, recommended a careful study of the program of general agriculture for Oregon high schools, before adopting any such plan. This committee stated the primary purpose of the program would be "to develop in youth as future citizens and agricultural product consumers, an appreciation of modern agriculture."

According to Horner, (10), it is the responsibility of agricultural instructors to help prepare the youth entering the non-farm agricultural occupations. Horner assisted in completing a study of 800 employers of some 22,000 employees working in off-farm agricultural jobs in sixty-two towns throughout Nebraska.

The jobs available to new employees were proportionately greater in the lower skilled areas. Therefore, individuals wishing to secure employment in higher paying jobs, which are the higher skilled jobs, need some sort of training such as might be provided through agricultural education in the secondary schools. A majority of the employers expressed a desire to have employees with a general knowledge background in agriculture.

About half of the employers suggested that schools should equip the workers with general occupational education and the company should provide specific job training.

About half suggested that an arrangement whereby students would work in the firm part-time during the school year would be most effective in preparing workers. Some also specified that school and company personnel should cooperatively plan and conduct training programs for employees in agricultural business and industry.

In addition to vocational agriculture, the 1962 Pacific Regional Conference listed the following types of programs offered in public schools to meet the needs of education in agriculture (4, p. 26-28):

1. Exploratory agriculture, which is to develop appreciations and understandings of agriculture through introductory type courses at the elementary, junior high, and high school level.

2. General agriculture would encompass the study of agriculture as general education for those boys and girls in high school who have an interest in and can profit from a knowledge of agriculture.

3. Agricultural Service Occupations would be a program set up to educate those students expressing a desire to enter one of the many agricultural service occupations. Where possible this would be worked out jointly with the agricultural services.

4. Farm Employment will encourage emphasis on educating on the farm and focuses on high school drop-outs and/or migrant farm workers.

In the 1961 North Atlantic Regional Research Meeting for Agricultural Education, D. R. McClay served as chairman for the committee that revised the Vocational Division Monograph No. 21, bulletin. One of the revisions stemming from this committee meeting was the addition of the new objectives of the vocational agriculture program serving the North Atlantic Region:

> 1. Provide basic education in the agricultural sciences for youth planning careers in farming.
>
> 2. Provide basic education in the agricultural sciences for youth preparing for careers in off-farm agricultural occupations in which a knowledge of modern farming is useful in the performance of the occupation.
>
> 3. Provide basic education in the agricultural sciences for high school youth who plan careers in the field of agriculture requiring post high school or college training.
>
> 4. Provide occupational and educational guidance in agriculture for high school youth. (15, p. 21-22)

The Los Angeles City School Districts (14) have adjusted their agricultural education program to meet the rapid population change to metropolitan ways of life. They point out that an ever increasing number of agriculture majors in todays colleges come from metropolitan areas, therefore some type of high school program should be made available to these students. Agriculture has been shifted entirely to training programs in Agricultural Sciences.

The curriculum designed for the agricultural education program in the Los Angeles City School Districts should result in:

1. Orientation in the broad subject matter of agriculture, including economic considerations, trends in modern agriculture, social significance, relation of sciences to agriculture, consumer education and job opportunities in general agriculture, agricultural sciences, and agricultural engineering.

2. Laboratory experiences in plant and animal sciences and related fields.

3. Experiences in fundamental skills for as many phases of agriculture as practicable.

4. Interesting and useful experiences for boys and girls of all ability levels.

5. Vocational guidance to those who indicate interests in exploring the opportunities in agriculture.

Curriculum Approaches

One of the principle purposes of this present paper is to develop a course in agriculture for urban schools. To assist in this purpose, some literature related to principles basic to agriculture and the teaching therein were reviewed.

The California State Department of Education's publication "Biological Principles in Agriculture" states (2, preface):

> It has been long accepted that 'principles should be taught with applications', that teaching is most effective when these two important kinds of content are presented in the closest association with each other.

According to L. F. Michelson, (16, p. 225) the basic principles should be the end result of education. The educated person should have the ability to recognize these

basic principles and transfer them to useful situations. Too many times these principles are never reached, or the principles are learned but never transfered. He goes on to say:

> "That person who learns the simple what and how of a skill situation without the basic principle of why is extremely limited educationally and that person who knows few unrelated whys and can't relate them to what and how is equally deficient."

In a Master's Thesis, Dunham (8, p. 24-43) developed twenty one subject matter principles basic to organizing and teaching fundamentals of plant science. These principles are basic to and essential in a course on plant science.

At an Oregon Program Workshop, J. Richard Suchman said (18, p. 38):

> ... what the scholars are saying is that concepts are the most meaningful, are retained the longest, and are most available for future thinking when the learner actively gathers and processes data from which the concepts emerge.

Suchman points out three significant facts emerging from the research on the process of discovery (18, p. 39):

> 1. Exploration, manipulation, and mastery are intrinsically motivating.
>
> 2. A reinforcing sense of power and self-confidence comes from successful autonomous discovery.
>
> 3. The strategy of data intake and processing has an important effect on the productivity and depth of discovery.

Summary

According to Williams (22), it is apparent that present programs in agricultural education are satisfactorily meeting the qualifications set forth by the majority of secondary school administrators having agricultural programs in their schools in the state of Oregon. Future programs tend to fall under four main divisions. The first division is vocational agriculture with its present objectives, as well as new, broader objectives. The second is a general agricultural program with a science approach to be offered to all students as a general information course. The third is a program in agricultural occupations for off-farm agricultural type occupations. The last is an exploratory agricultural course to give a brief view of the many aspects of agriculture, and would serve as a guidance course for those wishing to become familiar with this field.

In developing new curricula the principle approach is stressed by leaders in education. Emphasis on the learning by doing or practical application of the principles learned is deemed important by many educators.

CHAPTER III

FINDINGS

Opinionnaire Distribution and Returns

The opinionnaire revealed responses grouped according to principals, counselors and agricultural instructors. The distribution was limited to these personnel in the secondary schools of Clackamas, Multnomah, and Washington counties of Oregon.

Table 2 summarizes the number of opinionnaires sent and returned.

Table 2

Opinionnaire Returns

	Schools	School Personnel	Principals	Guidance Directors	Agriculture Instructors
Total of all three counties					
No. opinionnaires sent to	38	86	38	35	13
No. opinionnaires returned	37	77	36	29	12
Per cent opinionnaires received	97.4%	89.5%	94.7%	82.9%	92.3%

A list of all the schools included in this study is in Appendix D.

Findings from Opinionnaire

The number of years of experience of the individual respondents in the school from which the opinionnaire was returned is summarized in Table 3.

Table 3

Experience of Respondents

All Secondary Schools

School Personnel	Number	Max. Yrs. Experience	Min. Yrs. Experience	Average Yrs. Experience
Clackamas County				
Principals	10	21	1	6.7
Counselors	8	33	1	8.4
Agriculture Instr.	7	15	1	5.9
All Personnel	25	33	1	7.0
Multnomah County				
Principals	18	35	1	8.9
Counselors	16	34	1	10.6
Agriculture Instr.	1	3	3	3.0
All Personnel	35	35	1	9.5
Washington County				
Principals	8	12	1	7.2
Counselors	5	13	1	5.4
Agriculture Instr.	4	22	5	12.3
All Personnel	17	22	1	7.8
All Counties				
Principals	36	35	1	7.9
Counselors	29	34	1	9.1
Agriculture Instr.	12	22	1	7.8
All Personnel	77	35	1	8.3

The average of eight and three tenths years experience of all personnel indicates this group is stable and experienced in their respective schools.

The county breakdown of schools with agricultural

programs is shown in Table 4.

Table 4

Schools With Agriculture Programs

County	Total Number of Schools	Schools With Agriculture Program	% of Schools With Agriculture Program
Clackamas	11	6	54.5%
Multnomah	19	1	5.3%
Washington	8	4	50.0%

In response to, is there a need for major changes in their agricultural programs, ten of the twelve instructors returning an opinionnaire answered affirmatively. Such changes were to meet needs within their school in the foreseeable future. The major changes mentioned on their returned opinionnaires were broader curriculum, length and level of classes, and more supervised out-of-school educational activities.

The two instructors indicating no need for major change emphasized that should their communities become more densely populated in the near future, there could be a demand for change.

The counselors from schools with agricultural programs were equally divided on their opinions as to the need for change. Four counselors said major changes were not necessary. Those four favoring changes indicated a broader offering to serve more students would be desirable.

Of the ten principals responding, seven suggested a need for major changes. Again the most frequently mentioned need was for a broader scope to include more students. Two of the three principals expressing no major change needed were from the same schools as the two instructors expressing the same view.

The suggested deletion or revamping of general practices within present agricultural programs, as expressed by school personnel, is summarized in Table 5.

Table 5

Present Practices Needing Changes

Practice	Delete	Revamp
Requiring Supervised Project	7	12
Having a 4 year Sequence of Agriculture Classes	2	9
The Scope of the Curriculum	0	8
Number of Field Trips	0	3
Livestock Judging	1	0
The F.F.A. Organization	0	3

The requirement of a supervised project drew the most criticism from the respondents. Yet this same requirement is considered to be the strength of the program in many schools.

The second major section of the opinionnaire was to be answered in light of how the respondents conceived future programs of vocational offerings in agriculture. The questions and the compiled results are summarized in Table 6.

Table 6

Vocational Agriculture Programs

Question (1)	Strongly Favor				Slightly Favor				Slightly Against				Strongly Against			
	A	G	P	T	A	G	P	T	A	G	P	T	A	G	P	T
A	11	11	11	33	0	5	3	8	0	3	1	4	0	6	7	13
B	5	3	6	14	4	4	4	12	2	5	3	10	0	13	10	23
C	11	19	20	50	1	4	0	5	0	2	0	2	0	1	4	5

Note: A - Agriculture Instructors
G - Guidance Personnel
P - Principals
T - Total of all school personnel

[1]Question A - Is there a need for continued vocational training or the adoption of a vocational program if you don't already have one?

Question B - Vocational training in agriculture should be the major type of agriculture instruction offered the students of your school.

Question C - The vocational training should have other occupations, as well as farming, as one of its goals for the students.

It should be noted that the total number of responses for each question do not equal the seventy seven persons reporting. For reasons unknown, many of the respondents chose to leave some of the questions unanswered.

Table 7 summarizes the responses to the three questions concerning agricultural science or general agricultural course offerings.

Table 7

Responses to Agricultural Science or General Agriculture

Question (1)	Strongly Favor				Slightly Favor				Slightly Against				Strongly Against			
	A	G	P	T	A	G	P	T	A	G	P	T	A	G	P	T
A	2	0	0	2	4	1	0	5	2	2	3	7	4	21	15	40
B	3	1	1	5	5	4	3	12	2	5	4	11	1	15	13	29
C	4	6	4	14	3	8	7	18	3	5	4	12	2	6	8	16

Note: A - Agriculture Instructors
G - Guidance Personnel
P - Principals
T - Total of all school personnel

[1]Question A - Large percentage (70% or more) of students in your school take Agriculture Science or General Agriculture.

Question B - Agriculture Science or General Agriculture needed by all present and future consumers of agricultural products.

Question C - Agriculture Science or General Agriculture be an integral part of the science program of your school.

In Table 8 it is evident that a large majority of the respondents see a need for "Off-Farm Agricultural Occupation" training. The assistance of various industries in training students in off-farm agricultural occupations meets with the approval of a large portion of the respondents.

In response to the question concerning the number of students to take an agricultural course, a majority of the non-instructors opposed a mandatory class. Table 9 summarizes the response to this question.

Table 8

Responses to Questions About
Off-Farm Agricultural Occupations Training

Question (1)	Strongly Favor				Slightly Favor				Slightly Against				Strongly Against			
	A	G	P	T	A	G	P	T	A	G	P	T	A	G	P	T
A	11	8	10	29	1	11	7	19	0	2	4	6	0	3	2	5
B	5	8	10	23	4	10	10	24	1	2	4	7	1	2	2	5
C	5	13	9	27	6	10	8	24	1	0	1	2	0	1	2	3

Note: A - Agriculture Instructor
G - Guidance Personnel
P - Principal
T - Total of all School Personnel

[1]Question A - Non-Farm Agricultural Occupations course be added or enlarged to meet demand for trained personnel.

Question B - Non-Farm Agricultural Occupations course be of a vocational nature.

Question C - Non-Farm Agricultural Occupations course be offered with assistance of industry in training these students.

Table 9

Responses to Questions About
Students Taking Agriculture Classes

Personnel Position	Yes*	No*
Principal	2	16
Guidance Personnel	5	21
Agriculture Instructor	10	1

*Yes - 70% or more of high school students should have some type of agriculture instruction before graduating.

*No - Opposed to above statement.

Some added comments were felt to be of enough significance to be included in this study at this point. These comments will be listed in no particular order.

There were thirty one personnel not responding to one or more of the questions and the usual comment was that, "Agricultural Education has no place in our school." The urban location, the ability of science classes to fulfill teaching in agriculture, high percent of graduates go to college and need no agriculture, and the need for new goals were the reasons for Agricultural Education not having a place in their respective schools.

Food buying and preparation, not of the Home Economics type, was being requested at one school. Another school indicated a need for "instruction and experience in the care of flowers, shrubs, landscaping, family orchards, etc." Agricultural courses of a general education nature would be valuable, as expressed by one school.

Several schools indicated continued pressure to include additional course offerings in various areas. These schools indicated that it would be unlikely that agriculture could be included in already crowded conditions occuring in the total program, personnel, and facilities.

The Interview Check Lists Information

The interview check list was used in interviews with nine of the school personnel returning opinionnaires.

Because of the background of the school personnel, two separate check lists were used. Four of those interviewed favored and five were against an agricultural program in their school, according to their responses on the opinionnaire.

The two agriculture instructors interviewed required supervised farming projects, however limited instruction in off-farm agricultural occupations was being offered.

Neither of the two instructors were limiting the scope of offerings due to the Smith-Hughes Act. Both indicated that an exploratory class in agriculture would be desirable, especially in attracting more students to the program.

Broader objectives with off-farm agricultural training should be included in future planning, according to the instructors. The leadership training should be continued with the program, and the Future Farmers of America organization be updated. Student interest in the vocational agricultural program indicates a desire for the program in the future.

The two instructors said a course in Agricultural Science or General Agriculture would be desirable as a part of the general education for urban students. Present interests of students as future consumers of agricultural products indicates a need for training in agriculture according to the instructors.

A pre-high school exploratory course would be desirable. Each instructor said such a course is necessary for a well balanced program.

The off-farm agricultural occupation training should be offered to interested students not likely to extend their education beyond high school. This training could be partially accomplished through cooperative efforts with local industry.

A basic agriculture course at the ninth grade was thought to be very desirable. Such a course could offer principles basic to agriculture.

Additional comments from the instructors were centered toward specific subject matter offerings. Both instructors indicated a need for nursery management and wildlife subject matter to be offered, perhaps on a semester unit basis. One instructor included in his recommendation forestry, animal science, plant science, bookkeeping, and mechanics.

The four principals and three guidance personnel interviewed in this study included five people initially against agricultural offerings in their schools, according to the opinionnaires. All seven people indicated positive need for some type of agricultural training in their schools, during the interview.

The strengths of the present programs were pointed out by the counselors and principals interviewed. The program offers actual practice or student involvement, an interesting area of study for many students, training with a future, good farm mechanics training, and a strong dairy production program. Two of the interviewed placed the present goals as

needing up-dating. New ideas and approaches to the project requirement are necessary.

The counselors and principals indicated public acceptance of the program would be difficult in their respective school districts not presently offering agriculture. These same schools suggested the project requirement would need changing to enable many students of their school to participate in the program.

Five of seven interviewed felt an exploratory course in agriculture would be beneficial. Three of these preferred this to be an elective pre-high school course. Four respondents indicated that this course might well be a semester in length.

Agriculture as an applied science would benefit a large group of students in five of the respondent's respective schools. The other two persons favored the traditional Agriculture I, II, III, IV approach with no specialization until the senior year at least, and then on a very limited basis.

Five of the seven school personnel indicated some desire for agricultural industries to aid the school in training high school students. All five pointed out that presently the opportunity for such an approach is very limited. Local nurseries and food distribution establishments were the main types of industry offering any possibility for such cooperation.

The reasons for not favoring industrial-school cooperation for training agricultural students were stated by the two opposing the idea. One person indicated this was taken care of through distributive education in his school. The other respondent said very few parents in the school district would favor their children working in such establishments.

More than one type of agricultural course would be necessary to serve the needs of the students in six of the seven schools represented through the school personnel other than agricultural instructors. The one person answering no to this question said there wasn't room for more than one type.

Under additional suggestions, it was pointed out by four of the seven respondents that the course name was very critical in selling the course to the students and particularly to their parents. All school personnel indicated some need for agricultural subject matter to be offered to their students, but four of the respondents said the title of the course offerings should not contain the word "Agriculture". Courses in Economics, Science, or Mechanics could be offered with emphasis toward agricultural appreciation.

Findings from Questionnaire

Twenty seven questionnaires were sent to agricultural instructors in Oregon thought to be in communities where

urbanization was taking place. Twenty one of the questionnaires were returned. All but one of the returned questionnaires indicated the majority of the people in the community were not farmers as they lived on less than five acres of land. The largest portion of the communities were located within three miles of the center of town.

Population increase from 1960 to 1965 varied between communities. Table 10 summarizes the population increase of the communities as reported by the instructors returning questionnaires.

Table 10

Population Increases

Population Increase	Number of Communities
0 - 5%	2
6 - 10%	3
11 - 15%	4
16 - 20%	4
Over 20%	5
No Response	3
Total	21

In some communities, over fifty percent of the agricultural enrolment came from homes with less than five acres of land and within three miles of town. The programs in these schools had been up-dated or would be very shortly. The three programs already changed had moved into more specialized courses.

The remaining fifteen schools had thirty five percent

or less of their agricultural students coming from homes of five acres or less and within three miles radius of town. Twelve of these fifteen indicated plans were being made to make needed changes in the agricultural program. Two of the programs with fifteen and twenty five percent of their students coming from the living conditions described had already changed their offerings to more specialized courses.

The fourteen agricultural programs keeping records on graduates listed the ten occupations in order of frequency according to their graduates' job entry. These occupations were placed in categories as shown in Table 11. It should be noted that some questionnaires did not list ten occupations.

Table 11

Occupation Choice
High School Agriculture Graduates

Occupational Area	Number of Occupations Listed in the Occupational Area by Respondents
Military	13
College	10
Farming	14
Mechanical	12
Forestry and Forest Products	11
Agricultural Sales	7
Agricultural Services	6
Other Agricultural	15
Other Non-Agricultural	21

The five schools keeping records on all graduates indicated twenty to seventy percent of their graduates entered occupations requiring basic knowledge about agriculture.

Sixteen of the twenty one agricultural programs are still using the traditional Agriculture I, II, III, and IV offerings. All but one of the sixteen had preliminary plans to change the offerings.

The five agricultural programs differing from the traditional class offerings can be placed in one category, that of specialization. These programs offer specialized courses such as Horticulture, Forestry and similar courses, on a semester basis. Three of the five report a much larger group of students being served. The other two indicated the new program had not yet had time to prove itself.

The class name for an agricultural course was felt to have an effect on class enrollment by nineteen of the twenty-one respondents. Three respondents stated they didn't feel this would be true if the students understood what the word agriculture means.

Twelve of the schools anticipating a change had plans developed well enough to describe. All twelve indicated they were going to offer semester courses specializing in specific areas from the sophomore or junior level through the senior level. These same twelve planned some type of basic introductory course at the eighth or ninth grade level.

The reasons for program changes were very similar. Nine of the respondents planning a change were doing so to reach more students' interests and better prepare them for

eventual employment in a changing agricultural field. Three gave reasons of better utilization of the teaching staff and the facilities. The remaining four gave no reason for their anticipated change.

Eighteen of the respondents favored exploratory offerings at the ninth and tenth grade levels and specialization the last two years. One third of the respondents were opposed to agricultural instruction below the ninth grade.

One added comment explained that the agricultural program was serving many more students through specialized offerings and through flexibility of students entering and leaving the program. Another comment indicated that for their city schools more students should be gaining basic knowledge of agriculture.

Summary

The needs in schools surveyed in this study show a desire for agricultural education to broaden its scope and its offerings. Present agricultural programs seem to be relatively popular in the schools offering such, but the foresight of school personnel indicates changes will be demanded in the near future.

The agricultural programs will include introductory or exploratory courses, basic courses teaching the fundamentals or basic principles of agriculture, and specialization courses preparing students for occupations in agriculture; and

for their roles as a consumer of agricultural products.

Specific course offerings were suggested by the school personnel interviewed, with emphasis placed on attaching titles to the courses that are appealing to the students, their parents, and the public. All of the school personnel interviewed indicated some need for agricultural subject matter offerings in their school.

Changes have or are in the process of being made to better serve the student and to provide for a more realistic occupational preparation. Schools providing education to students who live on limited acreage and in close proximity to town are faced with the problem of providing these same students with an agricultural program they will accept and need.

Instructors see a need for agriculture to be offered at the pre-high school level and finally working into specialized courses of semester length in the final years of high school. Attention needs to be given to better utilization of teaching staff with facilities becoming a major consideration as new programs are planned.

School personnel are beginning to pinpoint some of the needs that agricultural education will be expected to provide. A broadened scope and new goals are being asked by the school personnel as they take a serious look into the future of agricultural education.

CHAPTER IV

PROPOSAL

Introduction

There are five factors fundamental to the organization of this proposal. The first factor is the inconsistancy of data collected from the opinionnaire and that received through the interview check lists. School personnel responding negatively to an agriculture program in their school, through the opinionnaire, responded positively to such a program when interviewed. This change in response leaves some questions as to the desire for an agricultural offering in these schools.

The agricultural program of the Los Angeles City Schools and its objectives is the second factor fundamental to the proposal. The program in Los Angeles is based upon a need for agricultural knowledge for all people whether rural or urban dwellers.

The need for change as recognized by respondents is a third factor. These instructors based the proposed changes on the need created through urbanization within the community. Such community needs might also apply to other areas of urbanization.

A fourth factor is the author's personal teaching experience in urbanized areas. There is a place for agricultural offerings in urban schools of Oregon. Experience also

suggests that an offering dealing with plant life might be one of the better ways to initiate such a program in urban schools.

The enthusiastic response of students where such offerings exist constitute the fifth factor. As an example, thousands of school children of the Portland school system have attended the Pacific International Livestock Exposition through group tours conducted by the Oregon Association of the Future Farmers of America. The response to agricultural exhibits at the Oregon Museum of Science and Industry is tremendous, and plans for expansion of these exhibits is under way. Many of the science exhibits found in science fairs are based upon agriculture.

Basic Principles

Urban schools should consider the following principles as a start with an agricultural program. These principles are derived from studies in the California State Department of Education (2), and the subject matter principles basic to organizing and teaching fundamentals of plant science as developed in this state by Dunham (8, p. 24-43).

1. MATTER AND ENERGY: All things living and non-living are either matter, energy, or a combination of matter and energy.
2. LIVING VERSUS NON-LIVING: All living things are composed of protoplasm and carry on the life processes of

reproduction, nutrition and response to environment.

3. ANIMAL VERSUS PLANT LIFE: The simpler the cellular structure and function of living organisms, the more difficult it is to distinguish between them as plants or animals.
4. CLASSIFICATION: The basis of classification of living organisms is the similarity of structure.
5. REPRODUCTION: Living things, in order to survive, possess the ability to perpetuate their own kind from a part of themselves.
6. GENETICS: All organisms resemble and differ from their parents with a degree of variation dependent upon the interaction and/or segregation of genes, environmental factors, and the occurrence of mutations.
7. PHOTOSYNTHESIS: All life on earth, both plant and animal depends upon photosynthesis, the process by which plants transform radiant energy from the sun to chemical energy in food.
8. SOILS: Soil is the only important medium in and upon which agricultural plants grow. It is a dynamic physical and biological system teeming with life and ever changing.
9. PLANT NUTRITION: A plant's ability to attain maximum growth, development, and maintenance is directly related to the availability of all the essential nutrients, provided other environmental factors are favorable.

10. ORGANIC CYCLES: All plant and animal life is dependent upon cycles in which quantities of certain essential food elements are kept in constant circulation (between plants, animals, soil, and air) and are used over and over. Some of the important cycles are carbon, nitrogen, oxygen, phosphorous, and hydrogen.
11. TRANSPIRATION: The aerial surfaces of all plants tend to lose water in the form of vapor (transpiration). Whenever the uptake of water by the roots is lower than the rate of transpiration, wilting will be initiated and the severity of damage, if any, will be dependent upon the kind of plant, the stage of growth, and the duration of time that the condition exists.
12. RESPIRATION: All organisms derive the energy for the activities from the oxidation of simple foods within their protoplasm. The rate of energy release is dependent upon many internal and external factors.
13. DIFFUSION: All living organisms are dependent on the fact that, in general, materials tend to move from areas of high concentration to an area of low concentration.
14. GERMINATION OF SEEDS: Viable seeds will germinate when environmental conditions are favorable and the conditions of dormancy are satisfied.
15. GROWTH REGULATORS: All living things require specialized chemical substances (growth regulators, enzymes,

vitamins) to regulate the life processes necessary for growth and development.

16. GROWTH: Growth takes place over extended periods of time only when the rate of synthesis of protoplasm exceeds the rate of protoplasmic degradation.
17. RESPONSE TO STIMULI: All living organisms respond in some fashion to stimuli. This is an interaction of genetic material with environment.
18. PLANT DISEASES: All living organisms are subject to malfunction due to exterior or interior causes. If the malfunction is within the homeostatic limits of the organism, it maintains life in the diseased condition or recovers. If the malfunction is beyond these limits, death occurs. (All living organisms have parasites that are capable of affecting their life processes to a degree which is dependent upon the susceptibility of the host, the environment, and the nature of the parasite.)

Proposed Outline

The suggested outline is now in use in an urban area. It contains many of the considerations expressed as important by guest respondents of this study. The outline is for an eighteen week course in horticulture.

I. Course Objectives:

A. To develop and accept responsibility and to cooperate

with others.

B. To learn and use basic skills in horticulture.

C. To establish desirable work habits.

D. To become aware of basic management practices.

E. To develop an appreciation for plants and their uses as they apply to everyday living and the development of a home.

F. To apply the interest in horticulture in improving other educational skills and to develop vocational and/or avocational interests.

G. To develop a process of inquiry that will lead to the answers as to 'why' and 'how'.

H. To learn that change is inevitable.

I. To apply the knowledge gained in horticulture to actual problems and situations.

II. Personnel (Instructor)

A. Instructor with a minimum B. S. Degree

B. Plant Science Background

C. Horticultural experience and/or training

III. Materials and Facilities

A. Physical facilities (refer to Appendix H)

B. Greenhouse supplies (Suggested list in Appendix H)

C. Reference books (Suggested list in Appendix H)

D. Magazines

1. Organic Gardening

2. The Horticulture Magazine

3. Other selected magazines

E. Bulletins

All bulletins available on horticulture from Oregon State University Extension Service and from the United States Department of Agriculture. A copy of commercial laws for nursery business from the Oregon State Department of Agriculture.

F. Other pamphlets available

IV. Methods

A. Classroom discussion

B. Laboratory experiments

C. Greenhouse work

D. Nursery work

E. Field trips

F. Reading and reports

V. Course Outline

Week 1

Orientation

Living versus non-living things

Origin and formation of soils

Week 2

Physical properties of soils

Chemicalpproperties of soils

Animal versus plant life

Week 3

Basic necessities for plant life -

(water, minerals, air, light - heat)

Plant Nutrition - 16 essential nutrients

Week 4

Organic cycles - Nitrogen

Hydroponics (soil - less culture of plants)

Plant cell structure and division

Diffusion within the cells

Week 5

Plant physiology and processes

(the roots, stem, leaf, and flower)

Plant respiration

Plant growth

Week 6

Photosynthesis

Classification - plant identification

Week 7

Reproduction

Asexual reproduction - Propogation

(types of cuttings)

Week 8

Asexual reproduction - Propogation

(layering, bulbs, corms, tubers, rhizomes)

Asexual reproduction - grafting and budding

Week 9

Genetics

Sexual reproduction

The seed and its formation

Week 10

Germination of seeds

Greenhouse plantings

Week 11

Growth from seed

Transpiration of the plants

Growth regulators

Week 12

Transplanting plants

Adjusting plants to environment

Week 13

Vegetable growing

Gardens for home use

Commercial production

Week 14

Fruit and nut production

For home use

Commercial production

Week 15

Growing transplants

Ornamental house plants

Flower production

Week 16

Response to stimuli

Floriculture - Flower arranging

Growth regulators

Week 17

Landscaping the home grounds

Plant insects, weeds, and diseases

Week 18

Role of Horticulture in the field of Agriculture

Occupational opportunity

VI. Evaluation

A. Written and/or oral exams

B. Students interest beyond assigned class work

C. Plants produced by student

D. Work habits developed by the student

Considerations from Interviews

The interviews disclosed interest by the respondents in the following agricultural subjects:

1. Economics (Agricultural)
2. What is Agriculture? (General knowledge)
3. Interest and motivation of animal science
4. Shop aptitudes and abilities (Agricultural Mechanics)

Basically the respondents raised questions of the feasibility of the principle, inductive inquiry approach to these areas.

The writer believes there is much evidence to support such areas with the suggested approach. The questions of facilities and staff are paramount.

Summary

The unit in Horticulture is a suggested beginning because of interest, available staff, and facilities. Other areas of interest should be considered, substituted, or added as staff and money are available.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Agriculture, the industry providing us with essential food and fiber, has been and is continuing to be one of the most important industries in America. To assure a sound and successful agricultural industry for the future we must provide the necessary education at the present. The purpose of this study has been to isolate the needs of schools desiring other than production emphasis in their agricultural programs and to make a general proposal to meet these needs.

Review of related literature and resource materials revealed a limited number of attempts to up-date the agricultural education through the direct suggestions of school personnel. The studies that have been made support, in part, the first two hypotheses made by the investigator.

Procedures involved in carrying out the purposes of the study included the survey by opinionnaire of public secondary school principals or curriculum directors, guidance personnel, and agriculture instructors which was followed up with an interview of nine of the respondents in the three counties involved in the study. A questionnaire was used to obtain a basis upon which to make recommendations as to programs that might meet these needs.

The opinionnaires returned and the interviews indicated satisfaction with present agricultural programs, but three main practices need adjustment to meet future needs. A majority of the respondents were in favor of some type of agricultural class offering in their respective schools, but they varied as to the type of offering they favored.

A mandatory class for students, in agriculture, was opposed by almost all respondents, as they felt an elective course was much more desirable. Many personnel indicated the science program was the place for agricultural offerings, but most of them indicated a doubt that one course was sufficient to offer the students interested in agriculture. Non-farm agricultural occupation training was desired by the respondents, in addition to the present emphasis of the agricultural programs.

The respondents interviewed saw a need for agricultural training in their respective schools, even though a majority of them opposed it according to their opinionnaire responses. Those interviewed indicated such agricultural training might start before the high school level.

The questionnaires returned indicated new programs are being sought to better meet the needs and desires of the majority of the students in the schools. In those schools located in communities with population increases it seems the traditional Agriculture I, II, III, and IV program is not meeting the needs and desires of the students.

The respondents to the questionnaire favored a program of exploratory, general offerings in agriculture at the ninth and tenth grade levels. Specialization tends to be the trend in eleventh and twelfth grades. Those presently involved in a similar program have favorable comments concerning meeting the students needs.

Conclusions

The following conclusions are made by the investigator based on the results of this study:

1. The procedures used in carrying out this study are valuable for the purpose of identifying limited guide lines by which the secondary schools' agriculture education programs might be up-dated.

2. The group of non-agriculture teaching school personnel involved in this study were not sufficiently knowledgable of agriculture programs. This limited the validity of their opinions and recommendations concerning future programs.

3. The information obtained through the various procedures used in this study is not based on enough factual knowledge to draw sound conclusions as to what is necessary for meeting the needs of urbanized school districts in agricultural education.

Recommendations

The following recommendations based on the results of this study are:

1. An attempt should be made to find more factual resources upon which sound conclusions to up-date agricultural education for the urban schools can be drawn.

2. The off-farm agricultural occupations be identified and research be initiated to point out knowledge and skills which these occupations require.

3. A study be carried out to determine the significance of course titles for agricultural classes, and the findings be applied in the updating of the agricultural programs.

4. An attempt be made to organize an appropriate agricultural program for the public schools of Oregon, particularly the schools within urbanized communities.

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APPENDICES

APPENDIX A

Opinionnaire Cover Letter

To: Principal, Guidance Personnel, & Agriculture Instructor, if one, in Clackamas, Multnomah, and Washington Counties.

From: Experimental Project
Agricultural Education Department
Ronald Daugherty
Oregon State University

Subject: Responses to opinionnaire concerning instructional needs in Agriculture.

Dear _____,

Your opinion is needed and significant to those planning future instructional programs in agriculture. Through the efforts of those of you who have been selected to participate in this experimental program, the State of Oregon can count on a more up-to-date agricultural education program in the future.

Will you please respond by filling out the enclosed opinionnaire and returning it in the self-addressed envelope? Last year, school administrators throughout Oregon received a questionnaire concerning present instructional programs on Agriculture. This opinionnaire is the next step to determine what additions or deletions are necessary to improve the present instructional programs in agriculture.

After these opinionnaires are returned, some of you will be interviewed on a sampling basis. The interview has been designed to obtain more detailed opinions on the instructional programs in agriculture.

Kindly return this opinionnaire no later than January 18, 1963. Opinionnaires returned promptly will be assured a significant part in this program.

Thank you for your time and cooperation. Your contribution to this program is greatly appreciated.

Sincerely,

Ronald Daugherty

Sincerely,

Dr. H. A. Tennas
Head Agricultural
Education Department
Oregon State University

APPENDIX B

Opinionnaire

OPINIONNAIRE

The following opinionnaire is to be answered on the basis of your opinion for the future of the school you are presently employed by.

NAME_____ POSITION HELD _____

SCHOOL _____ YEARS AT THIS SCHOOL _____

Please place a check mark in the space most nearly fitting for the question, in your opinion. Please check only one response for each question or sub-question. Additional comments or suggestions are welcomed at the end of each question.

	Yes	No	Undecided
1. Is there an agriculture course being offered to the students of your school at the present time?	___	___	___
2. Are you pleased with the general overall agriculture program in your school at this time?	___	___	___
3. Do you believe the present agriculture program will have to undergo any major changes to best meet the needs of your school in the foreseeable future?	___	___	___

4. What general practices in the present agricultural program do you feel need to be deleted or revamped to meet the needs of the future student in your school?

Additional Comments:

5. As you conceive future programs of vocational offerings in agriculture:	Strongly Favor	Slightly Favor	Slightly Against	Strongly Against
a. Is there a need for continued vocational training, or the adoption of a vocational program if you don't already have one?	___	___	___	___

	Strongly Favor	Slightly Favor	Slightly Against	Strongly Against
b. Vocational training in agriculture should be the major type of agriculture instruction offered the students of your school.	___	___	___	___
c. The vocational training should have other occupations as well as farming, as one of its goals for the students.	___	___	___	___
6. Future programs in an agriculture science, or a general agriculture course should, in your opinion:				
a. Be taken by a large percentage (70% or more) of the high school students in your school.	___	___	___	___
b. Be needed by all present and future consumers of agricultural products.	___	___	___	___
c. Be an integral part of the science program of the school.	___	___	___	___
7. As the future appears, offerings in "Related Agricultural Occupations" should:				
a. Be added or enlarged to provide for the increasing demand of trained personnel in these occupations.	___	___	___	___
b. Be of a vocational nature.	___	___	___	___
c. Be offered with the assistance of various industries in training these students.	___	___	___	___

Additional Comments:

	Yes	No	Undecided
8. Could a year or more of "Basic Agriculture" (a course with most of the basic facts and skills of agriculture) serve as meeting the needs of the agriculture instruction mentioned in questions 5, 6, and 7?	___	___	___
9. Should most students in high school have some type (any type previously mentioned, or any other type) of agriculture instruction before graduating?	___	___	___
10. Are you willing to be interviewed for additional information for this program?	___	___	___

APPENDIX C

Interview Check Lists

INTERVIEW CHECK LIST

(For Agriculture Instructors)

NAME _____

SCHOOL _____

1. Present agricultural education program;	Yes	No
a. Do you require each student to have a supervised farming project?	___	___
b. Are you presently following the objective of presenting Vo-Ag to prepare prospective farmers for farming?	___	___
c. Do you offer any instruction in or training in non-farm agricultural occupations?	___	___
d. Is a minimum of six project visits per student, to be made by the instructor, too many for a years time?	___	___
e. Do you give your students a unit on the whole picture of agriculture (a general look at agriculture)?	___	___
f. Would you broaden the scope of your program if you were not trying to meet the requirements set by the Smith-Hughes Act?	___	___
g. Would an exploratory course in your school bring more students into agriculture?	___	___

Additional Comments:

2. Future Vo-Ag programs:		
a. Should have broader objectives?	___	___
b. Should have non-farm agricultural occupational training as part of the program?	___	___

c. Should deal only with agriculture subject matter, and drop the leadership, public speaking and similar activities that are now an integral part of the program? Yes ___ No ___

d. Are not desirable because of lack of interest shown by the students? ___ ___

Additional Comments:

3. An agricultural science program or general agriculture program is:

a. Presently in effect at this school. ___ ___

b. Likely to be adopted by this school in the near future. ___ ___

c. Most likely to be a science based course that deals with the basic principles of agriculture. ___ ___

d. A good course to offer students of the urban or semi-urban areas. ___ ___

e. A good course to include in the general education of any student. ___ ___

f. Needed to provide future consumers of agricultural products with a basic understanding of the involved necessary steps in getting the products to them. ___ ___

g. Not desirable because of lack of interest shown by students. ___ ___

h. Not desirable because of no Federal reimbursement for the program. ___ ___

i. Not desirable because of the large number of courses already being offered at this school. ___ ___

Additional Comments:

	Yes	No
4. An exploratory type program in agriculture is:		
a. A course that should be offered in grades below the 9th grade.	___	___
b. A guidance course that helps direct students to their particular interest in agriculture.	___	___
c. A course that supplements a good well-balanced agricultural education program.	___	___
d. A course to give students a very general knowledge of what agriculture is about.	___	___

Additional Comments:

INTERVIEW CHECK LIST

(For Principals and Counselors)

NAME _____

SCHOOL _____

1. Was the opinionnaire clear to you?

2. What was your reaction to the opinionnaire?

3. Would you care to enlarge upon or make additional remarks concerning the opinionnaire?

4. Do you have a vocational agriculture program in your school at this time?

   a. What do you feel are the strengths of this program?

   b. What additions and/or adjustments would you make to the present Vo-Ag program?

5. Do you feel there is a place for a vocational agriculture program in your school at this time?

   a. Do you feel the lack of opportunity to have an ag project has caused vo-ag not to be offered in the curriculum?

   b. If yes to number 5, do you plan to develop a vocational agriculture program in your school within the next three years?

6. Would an exploratory course in agriculture be of any benefit to the students of your school?

   a. Do you feel this exploratory course should be offered to all of the students of your school? What level?

   b. Do you accomodate one semester courses in your school? Would it be necessary to make this a two semester course?

   c. Is this possibly a pre-high school course?

7. Do you believe agriculture would meet more student needs if it were taught as an applied science?

   a. Would you care to make any specific area suggestions such as Horticulture, Animal Husbandry, Landscaping, Plant Science, Forestry, Conservation, Etc.?

   b. Is there any possibility that an agricultural science course would serve as meeting a portion of the science requirement to graduate from this school?

8. The opinionnaires returned indicated a high rate of interest in agricultural industries aiding the school in training high school students to work in particular industries upon graduation from high school. (On the job work experience.)

   a. Do you believe there is such a need in your school?

   b. What agricultural industries do you believe would cooperate in your community?

   c. What ability group of students would be encouraged to take this course?

9. Do you feel that more than one type of agricultural course would be necessary to serve the needs of the students of your school?

10. Do you have any additional suggestions for meeting the needs of the students in the field of agriculture?

Thank you for your kind cooperation and for the information you have supplied us with. I sincerely hope that with this information we can better prepare ourselves to meet the needs of the students in agricultural education.

APPENDIX D

School Personnel Surveyed

by Opinionnaire

SCHOOL PERSONNEL RECEIVING OPINIONNAIRES FOR RESEARCH STUDY

Clackamas County, Oregon

Name	School	Position
Charles MacKenzie	Canby Union High	S P
Richard Brown		G
Ray Reif		A
James B. Putman	Colton High	P G
Kenneth B. Brown	Estacada Union High	P
Norman Kuhlman		G
George Gentemann		A
Harold Babcock		A
Owen W. Price	Lake Oswego High	P
Ron Burge		G
Dr. Martin	Milwaukie High	C D
Paul Muno		G
James H. Adamson	Clackamas High	P
William J. Johnson		G
Norman Burgess		A
Leonard Suchland	Rex Putnam High	P
Stanley Whipple	Molalla Union High	P
Pat Lantz (Mrs.)		G
Richard Buckovic		A
William Coats		A
Vernon A. Larson	Oregon City Sr. High	P
Les Adkins		G
David Wenecke	Sandy Union High	S P
Charles Adams		G
Carl Stauffer		A
Charles P. Zacur	West Linn High	P
Gilbert M. Shearer		G
Alvin Pfahl		A

Multnomah County, Oregon

Name	School	Position
Arthur A. Hiemstra	Corbett High	S P
Ben Goodling		G
Howard F. Horner	David Douglas High	P
Marvin L. Evans		G
Frank Bartholomew	Gresham High School	P
Harold Weber		G
Frank Surmeyer		A
Wilfred Burgess	Centennial High	P
Keith DeCourcey		G
M. K. Duley	Parkrose Senior High	V P
Marlin Struckman		G
Dean W. Tate	Reynolds High	P
Charles Adams		G
Mrs. Alice Stone	Wynne Watts	P G
George W. Brown	Benson Poly. High	V P
Lee Larson		G
Clifford J. Skinner	Cleveland High	P
Miss Helen M. Bowers		G
Arthur L. Westcott	Franklin High	P
Robert Taylor		G
Miss Ruth E. Dowe	Girls Poly. High	P
Elva Martin		V P
Harold A. Kleiner	Grant High	P
Charles Orr		G
W. A. Knouff	Jefferson High	C D
O. Pat Barney		G
Robert Henderson	Lincoln High	V P
Ruth Arbuckle		G
Walter E. Erickson	Madison High	P
James Blake		G

Name	School	Position
Dr. Gaynor Petrequin	Marshall High	P
Paul Bennett		G
Don W. James	Roosevelt High	P
Theodore Pfahl		G
Harold A. York	Washington High	P
Richard Hildreth		G
Dr. Kenneth A. Erickson	Wilson High	P
Mabel Whitted		G

Washington County, Oregon

Name	School	Position
Frank Smith	Banks High	S P
William Matthews		G
Ken Oldenstedt		A
George E. Erickson	Beaverton High	P
Robert Perry		G
George E. Russell	Sunset High	P
LeRoy Schroeder		G
Leroy T. Gamble	Forest Grove Union High	P
Ken Bond		G
William Ousterhout		A
Lloyd A. Gooding	Gaston Union High	S P
Arthur Gariss		G
W. Ray Carder	Hillsboro Union High	C D
Josephine Culbertson		G
James B. Thomas		A
Emmett MacKay	Sherwood Union High	S P
Wendell Bates		G
Earl Knight		A
Alfred E. Pietila	Tigard Union High	P
Chester Gillihan		G

Position - Letter Code

P - Principal
G - Guidance Person
A - Agriculture Instructor
S P - Superintendent Principal
V P - Vice Principal
C D - Curriculum Director
P G - Principal Guidance

SCHOOL PERSONNEL INTERVIEWED FOR RESEARCH STUDY

Name	School
Agriculture Instructors	
Norman Burgess	Clackamas High
Alvin Pfahl	West Linn High
Guidance Personnel	
O. Pat Barney	Jefferson High
Helen M. Bowers	Cleveland High
Gilbert M. Shearer	West Linn High
Principals or Curriculum Directors	
W. Ray Carder	Hillsboro Union High
Vernon A. Larson	Oregon City Senior High
Dr. Clyde Martin	Milwaukie High
George E. Russell	Sunset High

APPENDIX E

Questionnaire Cover Letter

MARSHFIELD SENIOR HIGH SCHOOL
COOS BAY, OREGON

September 28, 1965

Dear ,

We at Marshfield Senior High School are in the process of taking a critical look at our entire vocational program. As for our agriculture department at Marshfield, we are taking a critical look through the information provided from the twenty-one selected agriculture departments, of which your department is one.

The enclosed questionnaire will provide us with valuable information, if you would be kind enough to take time out of your busy schedule to complete it. We suggest that the local Chamber of Commerce, or your Superintendent's office might be helpful concerning community population increases. Your guidance people could offer aid concerning all school follow-up data.

As a secondary reason for this survey, this information will be utilized in a research paper. We hope you will lend us your aid with this survey, and return the completed questionnaire by October 6, 1965, in the enclosed self-addressed envelope.

We are sorry to add to your already over-crowded schedule and never ending paper work, but this seems to be the most practical approach at this time. Thank you for your kind help. Remember, by October 6, 1965 if at all possible.

Sincerely,

Ron Daugherty

P. S. If you need additional space for any question, please use the back of the page.

APPENDIX F

Questionnaire

Agricultural Program Survey

Name_____ Position_____ School_____

Community

1. Is the majority of the population of your community settling in homes containing 5 acres or less of land? Yes____ No____

2. Is the majority of the population of your community settling in homes within 3 miles radius of the center of town? Yes___ No___

3. What is the approximate population increase of your community since 1960? _____%

Agriculture Students

1. Students in your agricultural classes coming from homes of 5 acres or less of land and living within 3 miles radius of the center of town amount to approximately what percentage of your total agriculture student enrollment?
   0%__ 10%__ 15%__ 25%__ 35%__ 50%__ 75%__ 100%__

2. Do you keep follow up records on the graduates from your agricultural classes? Yes___ No___

   a. If yes, please list the 10 most popular occupations as chosen by your graduates.

   1. 6.
   2. 7.
   3. 8.
   4. 9.
   5 10.

3. Does your school keep a record on the occupations that all graduates enter after leaving your school? Yes__ No_

   a. About what percentage of the graduates enter an occupation requiring basic knowledge about agriculture? _____%

Agriculture Program

1. Please list the agricultural class offerings presently

available in your school.

2. Do you feel the class name for an agricultural course has any effect on class enrollment? Yes___ No___

3. Are you planning any significant changes in the agricultural class offerings in your school within the next two years? Yes___ No___

   a. If yes, please outline briefly your agricultural program as it will be with changes in effect.

   b. If yes, please explain briefly your reason(s) for this change.

4. Do you feel your agricultural program would better serve the students of your school by being exploratory and general in scope and nature at the 9th and 10th grade level and more specific course offerings (Horticulture, Forestry, Animal Science, etc.) available at the 11th and 12th grade level? Yes___ No___

5. Should agriculture be available to students below the 9th grade level in your school? Yes___ No___

Comments

Additional comments welcomed at this point.

APPENDIX G

Agricultural Departments Surveyed by Questionnaire

Agricultural Departments Receiving Questionnaires

Department	Town
Albany Union High School	Albany
Bend High School	Bend
Central High School	Independence
Clackamas High School	Milwaukie
Corvallis High School	Corvallis
Cottage Grove High School	Cottage Grove
Crater High School	Central Point
Dalles High School	Dalles
Fleming Junior High School	Grants Pass
Grants Pass High School	Grants Pass
Gresham Union High School	Gresham
Junction City High School	Junction City
Lincoln Savage Junior High School	Grants Pass
Marshfield High School	Coos Bay
McMinnville High School	McMinnville
Newberg High School	Newberg
North Salem High School	Salem
Ontario High School	Ontario
Phoenix High School	Phoenix
Roseburg High School	Roseburg
Sherwood Union High School	Sherwood
South Eugene High School	Eugene
The Dalles High School	The Dalles

Department	Town
Thurston High School	Springfield
Tillamook High School	Tillamook
West Linn High School	West Linn
Woodburn High School	Woodburn
Wy'east High School	Hood River

APPENDIX H

Horticulture Materials and Facilities

HORTICULTURE MATERIALS AND FACILITIES

Physical Facilities

To teach Horticulture, certain minimum facilities will be necessary.

A. A classroom approximately 20' x 40' with a minimum of lab space for the instructor.

B. A supply room approximately 10' x 15'

C. A greenhouse - minimum 20' x 15' with automatic heat and temperature control.

D. A nursery plot - minimum 20' x 20' and/or the flower beds around the school building.

Tools and Equipment

Certain tools and equipment are necessary to effectively teach horticulture.

A. Benches for the greenhouse

B. Work bench in greenhouse

C. Wheelbarrow

D. Five containers for holding soil supply

E. Six hand spading shovels

F. Six hand spading forks

G. Six grafting knives

H. Six budding knives

I. Six anvil hand pruners

J. Two standard shovels

K. A soil screen

L. Flats for planting (optional)

M. 200 plastic or clay 2 inch pots

N. 100 plastic or clay 4 inch pots

O. 150 plastic or clay 6 inch pots

P. 25 plastic or clay 10 inch pots

Q. 1000 wooden stick labels

R. Hand pump sprayer - 2½ gal. cap.

S. One or two microscopes

T. Two hand magnifying glasses

U. Garden hose and rose nozzle

V. Garden sprinkling can

Supplies and Materials for greenhouse

A. Soil sterilizing chemical

B. Greenhouse shade compound

C. Clean sand

D. Perlite or vermiculite

E. Loam soil

F. A water soluble fertilizer

G. Assorted potted plants for cuttings

H. Assorted bulbs, corms, and rootstocks

I. Assorted seeds - vegetables and flowers

J. Microscope slides

K. Soil ph test kits

L. Grafting wax

M. Bale of peat moss

N. A number of growth regulators

Reference Books

A. Plant Propogation

B. Landscaping the Home Grounds

C. Profitable Soil Management

D. Other selected books