AN ABSTRACT OF THE THESIS OF

Norman Dale Burgess for the Master's Degree in Agricultural Education

Date thesis is presented: May 14, 1965

Title: Organization of a Land Laboratory Program for Clackamas High School

Abstract approved

Major Professor

Education today must assume an increasingly responsible role in providing work experience for students. Agricultural education in the past has provided these work experiences through the student's supervised farming program. In many areas, such as Clackamas High School, urbanization has removed these opportunities for individual student farming programs.

The problem is to provide students this experience through a land laboratory program. The specific purpose of this study is to develop an organized plan to be used for an agricultural land laboratory which will provide these experiences essential for students in an agricultural education program.

The review of literature revealed that land laboratories are an aid in making agricultural classes practical and can serve as a substitute for the supervised farming programs. Planning is the key word in the development of a land laboratory. Based on the review of literature a plan was developed for the organization of a land laboratory and centered around these four areas.

(1) Goals and purposes. A statement of goals and purposes was developed through a cooperative effort of the agricultural instructor,
principal, curriculum director, superintendent, and school board.

(2) Designing the facilities available into a land laboratory program. Twenty-eight and six-tenths acres were available including a barn and granary. The barn was remodeled to handle sheep and beef animals. The land was divided into six areas, which include four pastures, one grain field and the barn, corrals, holding pens, and swine area.

(3) Establishing policies and procedure for use of the land laboratory. Policies for the following areas have been developed: (a) supervision of the land laboratory and projects; (b) selection of students to use land laboratory facilities, and (c) a land laboratory agreement dealing with the following areas: finance, livestock, crops, equipment, students, agriculture department, school district, and parents.

(4) Preparation of Student-Parent Handbook. A student-parent handbook has been developed to be used as an aid in promoting understanding of the land laboratory program in the community.

Effective education should include the practical application of materials studied in class. The land laboratory provides this opportunity for vocational agriculture. An effective land laboratory program must be managed by an experienced person with time allotted for management and well-planned by all concerned with the program.

To insure the continuing success of the land laboratory it is recommended that an evaluation process be developed. The problem of integrating the classroom curriculum with the land laboratory deserves further study.
ORGANIZATION OF A LAND LABORATORY PROGRAM FOR CLACKAMAS HIGH SCHOOL

by

NORMAN DALE BURGESS

A THESIS

submitted to

OREGON STATE UNIVERSITY

in partial fulfillment of the requirements for the degree of

MASTER OF EDUCATION

June 1965
Redacted for Privacy

Redacted for Privacy

Redacted for Privacy

Date thesis is presented May 14, 1965

Typed by Virginia Burgess
ACKNOWLEDGEMENTS

To my mother for the encouragement and support which has made my education and this thesis possible.

To my family for the time given me for the preparation of this thesis.

And to my wife for her love and encouragement during my undergraduate and graduate studies.
# TABLE OF CONTENTS

I. Introduction

- Introductory Statement  1
- Statement of the Problem  2
- Purpose of the Study  3
- Limitations of the Study  4
- Importance of the Study  5
- Definition of Terms  6
- Initial Assumptions

II. Relationship of Study and Review of Literature

- Relationship of Study to Previous Work  7
- Review of Literature  9

III. Organization of Land Laboratory Program

- Proposed Procedures in Developing This Plan  20
  - Statement of Goals and Purposes  20
  - Inventory of Present Facilities Available  20
  - Policies and Procedures  21
  - Preparation of Student-Parent Handbook  21
  - Resource Materials  21

- A Proposal for the Use of the Land Laboratory at  23
  Glackman High School
  - Goals and Objectives  23
  - Inventory of Facilities Now Available
    - Figure I  23
    - Figure II  23
    - Figure III  23
    - Figure IV  23

- Statements of Policy and Procedure
  - Supervision of the Land Laboratory and Projects  32
  - Selection of Students to Participate in Land
    Laboratory Program as a Substitute for a
    Supervised Farming Program

- Student-Parent Handbook
  - Statement of Goals and Objectives for
    Agricultural Land Laboratory
  - Facilities Available  33
  - Selection of Students and Projects  35
  - Student Responsibilities  36
  - Insurance Rate Schedule  37
  - Responsibilities of School  37
IV. Summary, Conclusions, Recommendations

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>39</td>
</tr>
<tr>
<td>Conclusions</td>
<td>40</td>
</tr>
<tr>
<td>Recommendations</td>
<td>42</td>
</tr>
<tr>
<td>Bibliography</td>
<td>44</td>
</tr>
<tr>
<td>Appendix</td>
<td>46</td>
</tr>
</tbody>
</table>
INTRODUCTION

Introductory Statement

Education today must assume an increasingly responsible role in providing work experiences for students. The report by the Panel of Consultants on Vocational Education included the following statement: "The public schools of the United States now enroll nearly 'all of the children of all of the people', an enviable accomplishment that has taken more than a century to achieve. The American people have created and supported these schools to give their children a better life, and this the schools have done. Parents also expect their children to learn how to make a living, preferably a better living than they have managed to provide." (51, p 3) The last sentence of this quote indicates that parents expect their children to be prepared by public schools for work which will provide them with a living equal to or better than that of the parents.

The Panel also stated: "In a broad sense, all education contributes to vocational competency, but vocational education refers to that part of a student's instruction intended specifically to fit the student for work." (51, p 3)

Agricultural education in the past has provided these work experiences through the student's supervised farming program. In many communities the trend toward urbanization has taken away the existing opportunities students may have had for these supervised farming
programs. If schools and the agricultural education classes are to continue this vital part of their curriculum, these opportunities must be provided for the student at school. To provide these opportunities for students, schools will have to develop practical situations such as farms or land laboratories which will allow the student to experience those skills as essential to the agricultural education program. The land laboratory will provide these conditions whereby this role of the school may be achieved.

Student experiences in agricultural education which are essential may be classified as production, work, agricultural, farm, and non-farm. The land laboratory will provide a basis for teaching these essentials in the classroom and a practical follow-up for students to apply these subjects learned.

Statement of the Problem and Purpose of the Study

"After seventeen years at Milwaukee High School, the vocational agriculture and F. F. A. program has been moved to the new Clackamas High School which serves most of the rural area left in that district." (11, p 6) This statement from the Enterprise Courier in 1958 points out that due to the rapid growth of the community, it was necessary to move the vocational agriculture program to a more rural area where agricultural opportunities existed in order for the program to retain its vocational aspect.

Now, only seven years later, the same problem confronts the Clackamas High School. Dr. Clyde Martin, Curriculum Director of
Union High School District #5 stated, "It (Clackamas High School area) has been a farming region, but is now rapidly becoming both an industrialized district and an area of suburban homes." (24, p 3-4) "With less than ten percent of the vocational agriculture students living on farms and almost fifty percent living on one acre or less" (24, p 5), one can easily see that it is difficult for students to gain actual experience in a farming situation.

The problem is to provide students with this experience through a land laboratory program which is not available in the home situation. The specific purpose of this study is to develop an organized plan to be used for an agricultural land laboratory for Union High School District #5, Clackamas High School, which will provide these experiences essential for students in an agricultural education program.

Limitations of the Study

A study of this nature and design has certain limitations which will influence the summaries, conclusions, and the study itself.

The study will be designed only to meet the needs and situations involved with Union High School District #5 located near Milwaukie, Oregon, specifically, Clackamas High School, 13801 S.E. Webster Road, Milwaukie 22, Oregon.

Clackamas High School is the only high school in this system of three high schools which offers a course in vocational agriculture. Students from the other high schools who desire to take agriculture classes are transported to Clackamas High School by the district. At
the present time no other high school in Oregon offering vocational agriculture is known to have a land laboratory. This will present a handicap in location of information which can be reliably applied to the situation at Clackamas High School.

School District #5 has purchased approximately thirty acres of tillable land for a proposed fourth high school to be built in the next five years. This building site has a barn, storage building, and farm house on the property. This immediate study will be limited to the use of these facilities as they can be remodeled to fit the proposed plan. However, if this study is found to be successful during its operating time before construction of the new high school, plans will be proposed for a more permanent site for the land laboratory.

**Importance of Study**

Providing students with practical situations whereby they may learn to work and apply the knowledge gained in formal classroom instruction is an ever increasing task. Educators must be always striving to integrate the instruction into a working and doing basis.

In agricultural education this has been done by the supervised farming program, but in Union High School District #5, as in many urban communities, this opportunity to put the classroom instruction on a doing basis is rapidly disappearing. As pointed out previously, other states have attempted to adjust to urbanization by providing land laboratories for students of agriculture to practice their classroom instruction. Oregon has only begun to explore this possibility. For these reasons the writer feels it most important to further
investigate the possibilities of land laboratories in Oregon and more specifically in Union High School District #5 in Clackamas County.

**Definition of Terms**

**Vocational Agriculture:** A federally supported educational program in agriculture offered at Clackamas High School as a four-year course. Its purpose is to prepare youth for agriculturally oriented occupations.

**Land Laboratory:** School-financed facilities for students of agriculture classes to maintain properly supervised agricultural projects, which may or may not be owned by the students and which would be used primarily as an educational aid and as financial gain for the individual student himself.

**School Farm:** Facilities operated and financed by the school district, agriculture department, or local chapter of Future Farmers of America, generally used for financial gain first and, second, as an educational aid.

**Future Farmers of America:** A voluntary organization of, by, and for boys studying vocational agriculture. An integral part of the program in which boys gain experience in agricultural leadership, citizenship, and cooperation.

**Teacher's Aid:** A person who may or may not have a degree in Agriculture or Agricultural Education, but who has a basic understanding of agriculture and whose duties will be the supervision of all activities involved in an Agricultural Land Laboratory under the direction of the vocational agriculture instructor.
Vocational Agriculture Instructor: A person with a degree in Agricultural Education under twelve-month contract with a local board of education to teach vocational agriculture classes, act as advisor of the local chapter of Future Farmers of America, and who will act as director of the land laboratory and coordinate the efforts between the laboratory and the agriculture classes.

Intern: A person with a Bachelor of Science degree in agriculture who meets his professional requirements employed by a local school board on a part-time basis. He may be a second vocational agriculture teacher who teaches one-half day of classes and spends the other half day in related work for credit. He is under the supervision of a qualified agriculture teacher.

Initial Assumptions (The following assumptions are made before completing this study.)

1. Twenty-eight and six-tenths acres of land, one barn, one granary, one house, and a concrete block building are available for the development of a land laboratory for Union High School District No.

2. The present teacher of agriculture at Clackamas High School will be responsible for initiating the land laboratory program.

3. Through the actual doing in a land laboratory situation, it is easier for students to learn.

4. Students are interested in the practical application of course instruction.
CHAPTER II

Relationship of Study to Previous Work

Some investigations relative to land laboratories have been made in California, Ohio, Pennsylvania, New Mexico, Michigan, and Texas. The writer found no evidence of any research work done on land laboratories in Oregon. The Ohio State Department of Education has published a short pamphlet (17) outlining what a school land laboratory is, how it can be used, possible activities, major steps in the development of land laboratories, and points for successful operation of a land laboratory. The Ohio publication lists the following four points as a definition of land laboratories (17):

1. It is land controlled by the board of education;
2. It is readily accessible to students;
3. It is used to enrich learning about plant and animal life;
4. It may vary in size from a few to many acres of land.

It also points out that to have a successful land laboratory the following points should be taken into consideration (16):

1. delegation of responsibility,
2. adequate financing,
3. a long-range written plan,
4. accurate record keeping,
5. extensive student participation,
6. routine care and maintenance,
7. methods of continuous evaluation.
Mr. Richard D. Clugston, teacher of vocational agriculture at Bowie High School in El Paso, Texas, has developed "A Guide for Students of Vocational Agriculture and Their Parents" for his high school. (10) This handbook is in three parts, (1) the agriculture classes, (2) the land and livestock laboratory program, and (3) the Future Farmers of America organization. Mr. Clugston states the purpose of the land and livestock program is "... to afford all students of vocational agriculture an opportunity to learn agricultural practices and skills by doing them." (10, p 9)

A special graduate study, Land and Livestock Laboratories in New Mexico and West Texas, has been done by four students in Agricultural Education at New Mexico State University. (21) This study is based on forty-four agricultural departments in west Texas and New Mexico. The main purpose of the study was to gather data relative to the scope and kind of laboratories, livestock and crops, proximity of land and livestock laboratories to schools, types of buildings, and equipment.

The Pennsylvania State University published a "Suggested Course of Study for Vocational Agriculture in a Suburban Community" (24) in which they suggest the use of a greenhouse as a necessary facility within their course of study.

The Los Angeles City Schools have published a "Senior High School Agricultural Instructional Guide." (6) This guide also provides a typical agricultural plot plan which illustrates the facilities used with the course of instruction. This plan shows a greenhouse, shade house, landscaped area, and garden plots for the students to use during the course of instruction. These facilities are integrated
into the course of instruction to provide the practical application of classroom instruction.

The Ohio State Board of Education has also published "An Example of a Course of Study for Vocational Horticulture." (23) They suggest that the comprehensive horticultural program include a school land laboratory with the following facilities:

a. greenhouse (10 square feet per student enrolled),
b. lath house (20' x 40'),
c. nursery plot,
d. vegetable plot,
e. small fruit plot,
f. turf plot,
g. arboretum.

The Michigan Department of Public Instruction published a pamphlet entitled "Agricultural Land Laboratories", in which Mr. Lynn Bartlett, State Superintendent of Public Instruction, states: "Land laboratories or school farms are becoming increasingly important as a means of providing practical learning experiences to students enrolled in vocational agriculture. They are particularly important in providing instruction on the "doing" level for students who come from situations with limited opportunities for farm experience." (2)

Review of Literature

Bruner states: (4, p 92) "... the teacher's task as communicator, model, and identification figure can be supported by a wise use of a variety of devices that expand experience, clarify it, and give
it personal significance." According to Bruner, teachers have used conventional teaching aids such as books, films, film strips, chalkboards, tape recorders, etc. "A second type of teaching aid has the function of helping the student to grasp the structure of a phenomenon . . ." (4, p 51) To the writer the last statement directly suggests that students should participate in activities which demonstrate the structure and principles of a phenomenon. In the field of agriculture, what better way could agriculture teachers give structure to their curriculum than by the use of an agricultural land laboratory?

Agricultural education at the high school level has included the supervised farming project as a strong point of its program. This phase of the program has allowed students to practice skills learned in the classroom. Many agricultural areas are becoming part of cities, and students in such areas thereby lose this practical opportunity that once existed. To remain a practical science, agricultural education must find another means of allowing students to test these theories to which they have been exposed during classroom activities.

Bruner also points out (4, p 9), "Good teaching that emphasizes the structure of a subject is probably even more valuable for the less able student than for the gifted one." The writer has found in high school and in agriculture classes that the less able students outnumber the gifted ones.

"Classroom instruction should be based on broad, supervised farming programs." (18, p 27) This has been the focal point of the agricultural curriculum. It has been pointed out in Chapter I that the Clackamas area is not a farming area, therefore, "broad, supervised
farming programs" are difficult to establish.

"As rural areas become urban or semi-urban in some sections of our country . . . the problem of developing satisfactory supervised farming programs for boys in (vo ag) classes becomes more difficult." (12, p 14) To the author, teaching agriculture has been based upon learning by doing through the supervised farming program. This has been a focal point of the program.

Phipps states (26, p 229), "A supervised farming program is an integral and very essential part of vocational agriculture, not an appendage." " . . . in order for instruction to be vocational in nature, it must be carried to the doing stage. Pupils need to conduct supervised farming programs in order to apply knowledge and skills they learn in the classroom." (26, p 230)

Hamlin points out (16, p 77), "It should be assumed that everything taught in the classroom is worthy of application in practice; classroom teaching should have as one of its first aims the securing of application outside the class and school."

McLearnen states (20, p 67), "The supervised farming program has been and is the life blood of vocational agriculture and will continue to be the foundation for much of our program. Frankly, we need to take the wraps off of some of the things we have been doing in the area of supervised practice, and let the public know that we do train for more than production agriculture. The fact that some students do not have facilities for proper supervised farming programs has been recognized by the author. Instructors in other areas have attempted to substitute the school farm."
McLearen (20, p 67) suggests that we broaden the supervised farming program to a supervised practice program to include not only the present supervised farming program but five (5) other areas. These areas would include (1) placement for agriculture experience, (2) establishing school land for experience, (3) agricultural work experience other than farming, (4) a cooperative program with distributive education and vocational agriculture, and (5) a combination of any of the five phases.

Baight feels that (19, p 275), "The basic concept of vocational education, 'Learning while doing,' is ideally accomplished on the school farm as it provides a laboratory for teaching the relation between theory and practice." He also states, "Many exponents of the 'school farm' believe that it provides a more desirable motivating force for the learner."

Grendall states (8, p 89), "The school farm has provided an excellent means of bringing about learning through doing."

Booika (3, p 78) states, "We must, in many areas and communities, face the fact that our departments cannot survive on just farm youth." Booika feels that a school farm or land laboratory has the potential of providing a background of farming experience for agriculture students from non-agricultural areas.

"The utilization of land and livestock laboratories in providing supplementary educational experiences in vocational agriculture is not new. However, in recent years such facilities have received new emphasis in providing learning experiences . . ." (19, p 1a)
Smith states the following advantages of a school farm (29, p 63): "Errors and mistakes are bound to occur when young boys are acquiring new skills. It is better that they happen on the school farm. By having a farm just outside of the classroom door, the instructor will make greater use of it than if he had to make previous arrangements . . ."

Quarles lists this advantage: (27, p 165): "In teaching all vocational subjects good laboratories are needed to put into practice those things that are discussed in the classroom."

Before establishment of a land laboratory is considered, careful planning by the administration and agricultural teacher should determine the primary purpose of such a venture.

George Dewey, an early prominent writer in agriculture education, suggests advantages to group projects and the use of a school land situation: (9, p 69 and p 322)

1. "They provide true-to-life problems for effective group instruction.

2. Observation, demonstration, and various other activities involved in a group project can readily be arranged for class instruction.

3. Certain group projects may lead to improved individual programs of supervised farming.

4. Group projects often furnish a means whereby the people in a community become familiar with vocational agriculture.
5. A source of problems is provided for effective study and application in situations common to all members . . .
6. A laboratory is provided for students to learn certain skills and improve their proficiency in other ways.
7. Experiences arise which a student would not normally have with his own supervised farming program.
8. Experiences are provided for students in planning and working together."

Phipps (26, p 858) lists the following purposes for school land:
1. "To provide worthwhile experience for students;
2. to conduct experiments;
3. to provide experiences in working together;
4. to provide a laboratory for teaching the relationship between theory and practice;
5. to provide opportunities for farming programs for students with inadequate facilities."

The objectives for the land and livestock laboratory at Bowie High School, El Paso, Texas are summed up in this statement (10, p i):
"The land and livestock laboratory is provided as an educational opportunity for all students enrolled in vocational agriculture. It is especially designed to provide desirable learning experiences for students who do not live on farms or ranches, but who have an active interest in the field of agriculture. In addition to providing opportunities for individual projects, the land and livestock
laboratory provides an area for additional learning through providing for actual experience of those things taught in the classroom."

Ballard (1, p 66) makes the following statement in summarizing the purpose of a school farm: "The school farm serves as a laboratory for the teaching of farm enterprises that can be taught by providing students with opportunities to learn by doing."

Nicklas offers the following advantages of a school farm situation (22, p 187):

1. "Management solved between teacher and student;
2. boys without home facilities get actual experience;
3. requires students to work together on problems in class and share equipment;
4. the animals of the student are readily available for class use, demonstrations, and new skills.

For actual learning, the school farm provides a wonderful opportunity for students interested in farming. It fulfills our F. F. A. motto, 'Learning by doing', more completely than it could possibly be done without the convenience of the farm."

Bryant states (5, p 166): "Considerable interest has been given to school farms in the last few years as an important step in the instruction of vocational agriculture. I think that it helps me to make my program more practical and should help all teachers to keep up with the changing agriculture."

After the purposes of a land laboratory have been established, the next logical step is the development of an organized plan for the establishment of the land laboratory program.
The State Department of Education of Ohio suggests the following points in development of school land laboratories (16): approval of the local Board of Education; planning for student involvement; development of a master plan; enlisting community support; establishment of an advisory committee, involvement of teaching staff; obtaining technical assistance from other agencies and organizations. The author feels that for a land laboratory program to be successful it must be properly planned, managed, and supervised.

Cochran states (7, p 110), "... for a land laboratory to be successful it takes a lot of planning before and after school, several days a week."

Swell points out (30, p 198): "The teacher and student should never be expected by such means to acquire essential facilities, equipment, or supplies for which the school department normally appropriates such funds."

Ricklas offers the following suggestion in references to management of a school farm (22, p 187): "The school farm is under the direction of a farm manager who is an instructor in the school ... The continuous management is by an instructor hired for that purpose and who carries on the farm operations with hired labor; the teacher does not find he has to neglect his duties of teaching and supervised farm visitations to get a needed job done on the farm."

Hagenbuck and Brannaka report the following conditions on their school farm in relation to management (14, p 132): "A farmer lives on the farm and does the regular work of caring for livestock and crops. Two teachers of agriculture jointly manage the farm -- one
of them living on the farm. The boys do not do farm chores beyond the learning stage, and jobs are rotated from day to day. A bus is provided by the school district to transport boys to and from the farm.

Smith points out (29, p 65): "Where a farm contains livestock and poultry, there must be reliable hired labor. Much routine daily work has to be done before the school bus arrives in the morning, and again in late afternoon. . . After a certain amount of routine work has been done by the student, its educational value ceases and becomes exploitation. Hired labor is required especially over the weekends and during vacation periods."

Schmidt makes the following suggestion in relation to work on the laboratory (28, p 109): "All such activities as laboratory and field work should be undertaken only when they become devices in the instruction of some job."

The material reviewed by the author was centered at the high school level as this is the area in which the main subject of this work is directed. This material was generally referred to as school farms, but could have been referred to as land laboratories as defined in this paper.

The material reviewed ranged in years from 1924 to 1964. A majority of the material was taken from the Agricultural Education Magazine. Most of the articles in this magazine were written by teachers of vocational agriculture. The writer assumes that since this material reviewed was written by people close to the subject, it would tend to be more on the practical side as opposed to theoretical.
From the materials reviewed the following points are made in summary:

1. Land laboratories or school farms are an aid in making vocational agricultural class practical by providing a situation whereby the student may apply what has been discussed in the classroom.

2. Land laboratories can provide a substitute for the supervised farming program for an urban area or student who does not have facilities for a supervised farming program.

3. An effective land laboratory program should have a person whose responsibility is the management of the program.

4. Care must be taken to determine when learning ceases and routine labor begins — routine labor should be done by someone hired for that purpose.

5. The land laboratory could provide a motivational force for the students.

6. Planning is the key word in development of a land laboratory. To the writer, the review of literature seems to suggest the following points in the development of such a laboratory:

   A. determine the objectives for the land laboratory program;

   B. determine the facilities available for use as a land laboratory;
C. develop specific policies in connection with the stated objectives;

D. prepare a handbook explaining the land laboratory for the student, parent, and community.
CHAPTER III

Based on the findings in the review of literature, the writer proposes the following points in the development of a plan for the utilization of a land laboratory at Clackamas High School:

1. formulate a statement of goals and purposes;
2. take an inventory of present facilities available and design these facilities for use as an agricultural land laboratory;
3. form statements of policies and procedures in using the land laboratory;
4. prepare a student-parent handbook.

Proposed Procedures in Developing This Plan

Statement of Goals and Purposes.

A statement of goals and purposes will be developed through a cooperative effort of the agriculture instructor, principal, curriculum director, superintendent, and the school board. The initial statement will be proposed by the agriculture instructor. After the initial statement is formed, copies will be given to the principal, curriculum director, and superintendent. From their suggestions a revised copy will be made and submitted to the school board for approval.

Inventory of Present Facilities Available

An inventory of all the facilities available which can be used in the proposed agricultural land laboratory will be conducted by the
agriculture instructor. This inventory will give the basis for completing steps number two and three. Based on the inventory, a design for the land laboratory will be developed to utilize the present facilities. The plan will also include new facilities needed for the completion of the land laboratory. The design will also be limited because these facilities will be available for only three years.

**Policies and Procedures**

A statement of policy and procedure will be developed for each of the following areas:

1. supervision of the land laboratory and projects,
2. selection of students to participate in the land laboratory program,
3. land laboratory agreement containing the following items:
   a. finance,
   b. livestock,
   c. crops,
   d. equipment,
   e. students,
   f. agricultural department,
   g. school district,
   h. parents.

**Preparation of Student-Parent Handbook**

From the data gathered in the other divisions of this study the writer will compile a student-parent handbook as an aid in explaining
and promoting the agricultural land laboratory program in the community.

**Resource Materials**

Land laboratories as defined by the writer are not in existence in the State of Oregon as of this writing, and this study has been limited to the specific situation in Union High School District #5 and Clackamas High School. This has limited the use of resource materials as they are available only from other states which carry on such programs in agricultural land laboratories. The author feels that any information from these sources can only be used as a very broad guideline in the planning for a laboratory applicable to the situation at Clackamas High School. Principles and philosophy used in the development of other laboratories may be of use in developing the basic agricultural land laboratory plan, but specific operational plans must be suited to the particular needs of this situation.

States in the Midwest and in the eastern part of the United States appear to have more available information on this subject. California schools in the Los Angeles area are working with land laboratories in agriculture; however, most of these are in the field of plant science rather than animal science.

Professional magazines concerned with agricultural education have been used extensively, as they contain a broad scope of information from instructors in the field who have experience in this area of land laboratories. The professional books published in the field of agricultural education have also been used mainly in the
development of a solid philosophy for this program.

Resource data available to the author has been reviewed, and information pertinent to the defined problem has been used as it fits the specific needs of this paper.

A Proposal for the Use of the Land Laboratory at Clackamas High School

Goals and Objectives

Recognizing that agriculture is the largest single industry in the United States and that the production of food is basic to our way of life, Union High School District #5 believes that as future home owners and home makers, students should be provided with the opportunity to discover how plants are grown, how animals are raised, and how to enjoy the healthful activities and relaxation agriculture provides.

The agricultural land laboratory is provided for students to use as part of their education in agriculture in order that they may apply the practices and principles studied in the classroom.

The following is a list of the specific objectives of the laboratory:

1. to provide desirable supervised learning experiences for students who do not have proper facilities available at home for such activities;

2. to give all agriculture students an opportunity to learn agricultural practices and skills by doing;

3. to develop skill in the use of agricultural tools;
4. to develop an understanding and appreciation of plant and animal life;
5. to provide a basic background of knowledge and experience in agriculture that would be useful in a career in agriculture and future life;
6. to provide an interesting insight into the profitable use of leisure time;
7. to develop an appreciation for the types, scope, and importance of agriculture in our community, state, and country;
8. to allow students of all abilities creative expression through their work in the laboratory program;
9. to develop an awareness and appreciation for the beauty of animal and plant life in the home and environment;
10. to help strengthen character through the acceptance of responsibilities in the care of living things and cooperative efforts with other students, the development of good student work habits, and self-reliance.

Inventory of Facilities Now Available

The land laboratory will be planned for the facilities now available. This will limit the scope of the program to crops, livestock, and nursery. Facilities available include the following:

1. One 1964 Model 1010 John Deere Utility Tractor,
2. One No. 9 6' John Deere Mower,
3. One 6' John Deere Disc Harrow,
4. One John Deere Two-bottom Plow,
5. One Hog Scales,
6. One Barn, 44' x 60',
7. One Granary and Storage Building 18' x 26',
8. One Concrete Block Building with concrete floor 21' x 50',
9. 15 tons grass and clover hay,
10. 28.6 acres of land,
11. Three Hereford cows,
12. 17 bred Hampshire ewes,
13. Greenhouse 18' x 26',
14. 54 nursery foundation plants,
15. Eight acres cropland,
16. Eight acres of hay,
17. 11 acres of pasture,
18. 1.6 acres for grounds and buildings,
19. One purebred Holstein cow,
20. Five registered cows,

Because these facilities will be available for a maximum period of five years, the design of the laboratory will be limited in order that it will be financially practical.Temporary or moveable facilities will be used as much as possible so they will be of value in the future on another possibly permanent land laboratory.

Because a livestock program would lend itself more to a temporary situation, the laboratory will be designed primarily for this.

Twenty-eight and six-tenths acres of level land are available. The entire property will be fenced with three-foot woven wire, with
three strands of barbed wire at the top. Steel posts will be used, as they can be moved when the land is no longer available. The land will be subdivided as follows: eight acres of grain, eight acres of hay, 11 acres pasture, 1.6 acre buildings and grounds.

Figure 1 shows the boundary lines of the present property and the existing fences and buildings. Figure 2 represents the proposed fencing plan to be followed for the land laboratory. The land will be divided into six fields and the barn and loafing area. Field 1 will be planted in a legume and grass mix and then used for a swine pasture.

The barn and loafing areas are so divided that the sheep will have access to one-half of the barn and can go to fields 2, 3, 4, and 6 without going through any of the beef area. The beef and dairy animals have access to the other half of the barn and can also go to fields 2, 3, 4, and 6 without passing through any of the sheep area. Fields 2, 3, 4, and 6 will be pasture. Field 5 will be fall grain.

Figure 3 illustrates the present barn and the existing areas. Figure 4 shows the barn as it will be remodeled to accommodate the livestock to be present on the land laboratory. The original horse stalls will be removed and hay and grain feeders built to feed the sheep. A movable partition will be built to section off the end for a lamb creep feeder.

Three gates will be installed to (1) divide the barn, (2) to lock the animals in their areas, and (3) to confine the animals to a small area. Portable lambing pens, made on 4' x 4' panels, will be installed in the sheep loafing area during the lambing season. A feeder for grain for the beef animals will be constructed in the beef loafing
area with one corner sectioned off for a calf creep feeder. The hay storage area remains the same, as this area has a floor and is located on the southwest side. The only change to this area is the addition of a hay feeder for the beef animals and a small storage room for grains and miscellaneous livestock supplies.
FIGURE 2.
Figure 3.
Figure 4.
Supervision of the Land Laboratory and Projects

Supervisory duties will be divided into two categories: (1) direct supervision of students while working on the laboratory (to be performed by a teacher's aid), and (2) overall supervision of the laboratory program and students. To carry out these two forms of supervision, two different types of supervisors will be used. The teacher's aid will be responsible for direct supervision and will be a college graduate in the field of agriculture who would be interested in the field of education and in the possibility of becoming qualified to teach after participating in this program for two years. This person will be responsible for the instruction of students while working on the agriculture laboratory. He will also be responsible for the general management and operation of the laboratory in cooperation with the regular agriculture instructor. The overall supervision of the laboratory and students will be the responsibility of the regular agriculture instructor. His duties will consist of (1) selection of students for individual projects, (2) evaluation of the students' work through the teacher aid, (3) cooperate with the direct supervisor in overall management of the laboratory, (4) classroom instruction applicable to the students and their projects.

Selection of Students to Participate in Land Laboratory Program as a Substitute for a Supervised Farming Program

All students enrolled in agriculture at Clackamas High School are eligible to participate in the agriculture laboratory program.
The selection of individual students will be made on the following basis:

1. **Interest**
   A. in classroom work,
   B. in the laboratory as demonstrated in activities conducted on the laboratory as part of the regular class,
   C. in F. F. A. activities;

2. Facilities available to student at home for a project of his interest;

3. **Instructor's opinions based on**
   A. attitude in class,
   B. discussion of laboratory handbook with parents,
   C. students' rapport with classmates.

Final selections will be made by the agriculture instructor supervising the agriculture laboratory. All students will periodically participate in the agricultural land laboratory program as a regular part of their vocational agriculture classes. Those students who wish to conduct supervised farming programs as an extra activity may do so by meeting the above qualifications.

**Student-Parent Handbook**

**Statement of Goals and Objectives for Agricultural Land Laboratory**

Recognizing that agriculture is the largest single industry in the United States and that the production of food is basic to our way of life, Union High School District #5 believes that as future home owners and home makers, students should be provided with the
opportunity to discover how plants are grown, how animals are raised, and how to enjoy the healthful activities and relaxation that agriculture provides.

The land and livestock laboratory is provided for students to use as part of their education in agriculture in order that they may actually apply the practices and principles studied in the classroom. We list the following as specific objectives of the laboratory:

1. To provide desirable supervised learning experiences for students who do not have proper facilities available at home for such activities;
2. To give all agriculture students an opportunity to learn agricultural practices and skills by doing;
3. To develop skill in the use of agricultural tools;
4. To develop an understanding and appreciation of plant and animal life;
5. To provide a basic background of knowledge and experience in agriculture that would be useful in a career in agriculture and future life;
6. To provide an interesting insight into the profitable use of leisure time;
7. To develop an appreciation for the types, scope, and importance of agriculture in our community, state, and country.
8. To allow students of all abilities creative expression of themselves through their work on the laboratory;
9. To develop an awareness and appreciation for the beauty of animal and plant life in the home and environment;
10. To help strengthen character through acceptance of responsibilities in the care of living things and cooperative efforts with other students and to encourage good work habits and self-reliance.

Facilities Available

The school provides many facilities in the land laboratory program which the student may use. The land laboratory has 28.6 acres of land of which eight acres are cropped, eight acres used for hay, 11 acres for pasture, and 1.6 acres for grounds and buildings. Buildings on the land laboratory include a 44' x 60' barn divided for sheep and cattle, a central farrowing house 21' x 30', and a granary and storage building 18' x 28'.

Livestock available to the students are all of high quality and all registered except the purebred Holstein cow. Registered livestock include 17 Hampshire sheep, three polled Hereford cows, two Yorkshire sows, three Spotted Poland China sows.

Equipment includes a 1964 John Deere 1010 tractor, six-foot mower, six-foot disc harrow, and 2-16 plow. Other equipment includes a 1957 Chevrolet pickup, a grain drill, and a portable hog scale.

A greenhouse 18' x 28' is also used by students in starting nursery projects. Fifty-four different kinds of plants are available to the students for foundation plants.

Selection of Students and Projects

Any student enrolled in agriculture may take advantage of the
agriculture laboratory facilities to conduct projects if he desires
to do so. Students will be selected to participate in this program
on the basis of the interest and enthusiasm they have demonstrated in
the classroom and in Future Farmers of America activities. Students
must be able to care for their projects on weekends, holidays, and
during the summer months. The student will be provided transportation
to and from the laboratory during regular school hours of 8:00 A.M. to
4:00 P.M.

The project a student selects should be one in which he is inter-
ested. Students will be encouraged to carry on a variety of projects
during their four years of high school in order that they may gain a
number of worthwhile experiences.

**Student Responsibilities**

All students will be governed by the rules and regulations of
the school while they are at the laboratory. They will conduct them-
selves under the same standards they would use if in the school. The
students are expected to use management practices that are approved
or recommended by their agriculture instructor or the agriculture
laboratory manager. The student will care for his project as outlined
by the agriculture instructor, and he will be responsible to keep the
facilities and equipment clean and in good repair at all times. Any
irregularities or abnormal conditions in any of the livestock, crops,
equipment, and buildings observed by the student should be reported
immediately by the student to the laboratory manager or to his in-
structor. Students cannot bring projects to the laboratory without
the consent or approval of the agriculture instructor.

Students are encouraged to provide livestock insurance on animals which they put on the laboratory. Rates for such insurance are listed.

**Insurance Rate Schedule**

<table>
<thead>
<tr>
<th></th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Beef Animals on feed for market</td>
<td>$1.70/$100.00 of actual purchase price per month</td>
</tr>
<tr>
<td>B. Dairy and Beef Calves for breeding purpose 30 days to 1 yr.</td>
<td>$6.00/$100.00 of value per year</td>
</tr>
<tr>
<td>C. Dairy and Beef Breeding Animals for 1-7 years old</td>
<td>$4.75/$100.00 value 7-9 years old $5.50/$100.00 value 7-9 years old</td>
</tr>
<tr>
<td>D. Breeding Sheep</td>
<td>$6.00/$100.00 value per one year</td>
</tr>
<tr>
<td>E. Breeding Swine</td>
<td>$6.00/$100.00 for one year</td>
</tr>
</tbody>
</table>

Should the student at any time neglect his project in any way, his parents will be notified and the student will be subject to suspension from the agriculture laboratory program. If suspended, the student automatically returns all livestock to the laboratory; field crops will be assumed by the laboratory and assigned to another student. If practical, greenhouse projects can be removed; if not practical, they become the property of the laboratory. Any debts the student may have incurred during the duration of the contract are his responsibility and will be treated as any other school debt.

Students are encouraged to bring their parents and other interested adults to the agriculture laboratory facilities for visits during the year.

**Responsibilities of School**

Livestock owned by the school will be insured against death from
disease or injury, or any condition that is not the direct result of negligence on the part of the student. The school district will provide transportation during regular school hours (8:00 A.M. - 4:00 P.M.) to and from the laboratory.

Each student participating in the agricultural land laboratory program will be required to complete a land laboratory contract.  
(See Figure 1, Appendix)
CHAPTER IV

Summary

Education has the responsibility of providing students with learning situations which enable the student to gain the fullest benefit of his educational opportunity. Agricultural education has in the past given this opportunity to students through the supervised farming program, but in many geographical areas of agricultural education, the opportunities for actual farming experiences are diminishing rapidly; such is the case at Clackamas High School.

If agricultural education at the high school level is to remain effective, it must provide some other means whereby students have an opportunity to make practical application of skills learned in the classroom. Because of this problem, the object of this study has been the development and utilization of a facility, termed an agricultural land laboratory, which would enable students in the Clackamas High School agriculture classes to practice those skills learned in the classroom.

The review of literature has pointed to the agricultural land laboratory as a substitute for the supervised farming program in allowing the students to apply those skills learned in the classroom. Some authors felt that the laboratory provided a better learning situation than did the supervised farming program because of better supervision and facilities.

Supervision of these land laboratory facilities should be done by a person who is given adequate time to manage the laboratory. If
this person should be a teacher of vocational agriculture, then he should be given time from his regular teaching duties to perform his managerial duties on the land laboratory.

A distinction must be made between routine labor and a learning situation. When learning stops and routine work begins, a separate person should be hired to supervise the routine tasks.

The review of literature also suggested that students might become more motivated in classroom work when given an opportunity to participate in a land laboratory program. It was brought out that sufficient time must be given in the planning of a land laboratory program and in the establishment of goals, objectives, policies, and procedures.

Based on the review of literature, the following four steps were developed to organize a land laboratory at Clackamas High School:

1. determine the goals and objectives for a land laboratory;
2. determine the facilities available and design them for use as an agricultural land laboratory;
3. formulate the policies and procedures for use by the laboratory;
4. prepare a student-parent handbook.

Conclusion

Following are the conclusions the writer has arrived at based on this study:

1. The land laboratory will provide agricultural experience for students at Clackamas High School.
2. Effective education should include the practical application of those subjects studied in the classroom. A land laboratory program provides this practical application.

In support of the first two concluding statements, the writer offers the following:

A greenhouse and nursery program was established last school year (1963-64) as one phase of the land laboratory program. Fifty-three students have been exposed to this phase of the land laboratory program through classroom instruction in asexual and sexual propagation, greenhouse construction, landscaping, and general management practices.

Six of these fifty-three students (11.3%) had previous greenhouse experience through commercial greenhouses in the area. The remaining forty-seven students had no experience in a greenhouse.

Student response to the greenhouse and nursery program has been very encouraging as shown by the following results since the establishment of this program.

1. Eight students have constructed greenhouses for their own use. (Previously there were no students with greenhouse projects.)

2. Four students have used the school greenhouse facilities to establish their own nursery projects.
   a. One student has propagated over 4,000 cuttings of azaleas and rhododendrons.
   b. One student has started 150 cuttings of rhododendrons.
   c. One student has started 300 cuttings of evergreen junipers.
   d. One student has established a project of 250 cuttings of rhododendrons.

3. Through the students' work in this area our chapter of F. F. A. won the award for the outstanding exhibit in nursery work at the Oregon State Fair in 1964.

4. An arboretum containing 54 different species of common landscape material was designed and established by eighteen of these agricultural students.
5. Sixteen home gardens were established with plants students have raised in the school greenhouse.

3. A well-planned agricultural land laboratory program can be a good substitute for the supervised farming program.

4. Some person must be assigned the responsibility of managing the agricultural land laboratory and be given time during the regular school day to perform this assignment.

5. Proper planning with the school administration concerning goals, objectives, and procedures must precede any action.

6. An organized plan used in the development of a land laboratory is essential.

Recommendations

1. Based on the success of the greenhouse and nursery programs and the plan that has been developed, the author recommends that the proposed land laboratory program be put into operation.

2. A means for continuous evaluation of the land laboratory program should be developed and practiced.

3. The possibility of initiating similar programs in other schools in Oregon should be explored.

4. Investigation into the many possibilities in which the curriculum and the land laboratory can be integrated would be of great value; the possibilities appear to be infinite as indicated by the nursery programs' results achieved during the past year.
5. The land laboratory should also be used by other classes in high school and possibly by the grade school. This is an area which requires further investigation.

6. The land laboratory should provide a year-round work experience center for students not in agriculture. Much of the labor could be accomplished through a work experience program operated by the school district.
BIBLIOGRAPHY


23. Ohio. Department of Education. An example of a course of study for vocational horticulture. Columbus, Ohio, no date. 12 p.


AGRICULTURE LABORATORY CONTRACT

Effective through 19

The following agreement is between Union High School District No. 5, The Clackamas High School Agriculture Department and student enrolled in agriculture at Clackamas High School, and his parents

The agreement concerns the use of the Agriculture laboratory facilities located at Sunnyside Road and Clackamas High School. These facilities consist of the following items: Those marked X are the subject of this agreement.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 acres of crop land</td>
<td>1 barn 44' x 60'</td>
</tr>
<tr>
<td>8 acres of hay</td>
<td>1 greenhouse 18' x 26'</td>
</tr>
<tr>
<td>11 acres of pasture</td>
<td>greenhouse and storage building 18' x 26'</td>
</tr>
<tr>
<td>1.6 acres of grounds and buildings</td>
<td>1 concrete block building 21' x 30'</td>
</tr>
<tr>
<td>2 registered polled Hereford cows</td>
<td>1 John Deere 1010 tractor</td>
</tr>
<tr>
<td>17 registered Hampshire ewes</td>
<td>1 John Deere mower 6'</td>
</tr>
<tr>
<td>1 registered Hampshire buck</td>
<td>1 John Deere disc harrow 6'</td>
</tr>
<tr>
<td>1 purebred Holstein cow</td>
<td>1 John Deere plow 2-16</td>
</tr>
<tr>
<td>1 registered sow</td>
<td>1 Hog Scales</td>
</tr>
<tr>
<td>Nursery foundation plants</td>
<td>Others - owned by the student (list below)</td>
</tr>
</tbody>
</table>
This agreement consists of the following 8 items: (1) Finance, (2) Livestock, (3) Crops, (4) Equipment, (5) Student, (6) Agriculture Department, (7) School District, and (8) Parents. Those marked X will be applicable to this agreement.

**FINANCE**

---

The student is responsible for all financial obligations incurred while using the land laboratory facilities or during the length of this contract. Operating capital may be secured from two sources: 1. A general loan fund established by the school district not to exceed $100.00. Should the student desire this loan, he will make application through the Agriculture instructor. 2. Loans may be secured through local banks cooperating with the Agriculture Laboratory Program.

The student agrees to pay for the use of the facilities that he will need for his project. Below is a rate schedule for the Agriculture laboratory facilities. Those marked X are applicable to this agreement.

**Dairy and Beef animals**

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than one year 50¢ per month</td>
<td></td>
</tr>
<tr>
<td>one year and over $1.00 per month</td>
<td></td>
</tr>
</tbody>
</table>

---

**Tractor and equipment $2.00 per hour, plus the gas**

**Greenhouse 5¢ per square foot of bench space per month**

**Sheep**

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>over two months of age 50¢ per month</td>
<td></td>
</tr>
</tbody>
</table>

---

**Crop land: 1/3 of the harvested crop will be paid to the land laboratory as rent payment. Student furnishes all labor, equipment and other expenses**

**Swine**

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>over two months of age 50¢ per month</td>
<td></td>
</tr>
</tbody>
</table>

---

**Crop land on a cash basis of ______ per acre**

**Hay**

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>25¢ per bale</td>
<td></td>
</tr>
</tbody>
</table>

---

Any expense incurred by the student during the month is due the first of each month, late payments may be assessed a penalty fee. Other arrangements which fit the needs of the student are to be listed below.

---

---

---

---
Any unpaid expense will be treated the same as debts at school.

**LIVESTOCK**

Sheep — The school district will furnish _____ registered ewes and _____ registered ram to the student(s). At the termination of this contract the student(s) agrees to return _____ registered ewes, _____ registered ewe lambs and the original _____ ram(s). The student will assume ownership of the oldest ewe from the original _____ ewes plus all of the offspring except the choice ewe lambs, which will be turned back to the Agriculture Laboratory. The selection of the animals will be made by the agriculture instructor and the student involved. All receipts and expenses incurred by the student from these animals are the responsibility of the student.

Beef — The school district will furnish _____ registered polled Hereford bred cow(s) to the student. The student will return to the Agriculture laboratory the original _____ animal(s), bred to a sire approved by the agriculture instructor, at the termination of this agreement. The student will receive the offspring from these cows. All receipts and expenses incurred by the student from these animals during the duration of the contract are the responsibility of the student.

Swine — The school district will furnish the student with _____ registered sow, bred to an approved sire. At the termination of this agreement the student will return the original sow bred to an approved sire, plus the choice of the litter to the Agriculture Laboratory. The choice of litter will be made by the agriculture instructor at the termination of this contract. All receipts and expenses incurred by the student from these animals during the duration of the contract are the responsibility of the student.

Dairy — The school district will furnish the student with one purebred Holstein cow bred to an approved sire. The student will return this cow to the Agriculture Laboratory, bred to a sire approved by the agriculture instructor, at the termination of this contract. All receipts and expenses incurred by the student from these animals during the duration of the contract are the responsibility of the student.

**CROPS**

Land will be rented to the student on two bases: (1) A cash basis of $20.00 per acre with the student furnishing all labor, equipment and other expenses, or (2) 1/3 of the crop going to the Agriculture Laboratory as payment for rent of the land. The student receives 2/3 as his share and agrees to furnish all labor, equipment, and other expenses.
Nursery Foundation Plants — These plants will be furnished to the student, courtesy of the Milwaukee Kiwanis Club. The student may take as many cuttings as the agriculture instructor deems advisable. The student will be required to label these cuttings properly, and return two potted, rooted cuttings of each variety that he takes cuttings from.

EQUIPMENT

The equipment listed in this agreement is available to the student to use with his project. The student must check this equipment out through the agriculture instructor and after he has satisfactorily passed maintenance and safety tests, the student will be required to maintain the equipment and operate it in a safe manner. Any violation of maintenance and safety procedure will subject the student to suspension of further use of the equipment.

STUDENT

The student agrees to practice management practices recommended or approved by the agriculture instructor or the Agriculture laboratory manager. He will at all times maintain equipment (buildings, fences, tools, and equipment) for which he is responsible and bring to the attention of his agriculture instructor or the Agriculture laboratory manager any other item needing attention. The student is directly responsible for the care and management of this project through the supervision of the agriculture instructor and the laboratory manager. Should the student at any time neglect his project in any way, he will be subject to suspension from using the Agriculture laboratory and its facilities as outlined in this agreement. If suspended, the student will immediately return to the Agriculture laboratory any animals, materials, or equipment that is the property of the land laboratory. He will also remove any animals, materials, or equipment he may own within ten days or it becomes the property of the Agriculture laboratory.

AGRICULTURE DEPARTMENT

The agriculture department will provide the student with instruction that is related to his project and properly supervise in the care and management of his project. The department will also be responsible for a continuous evaluation of the student and his Agriculture laboratory activities.

UNION HIGH SCHOOL DISTRICT NO. 5

Union High School District No. 5 agrees to furnish the student with an opportunity on good facilities with proper supervision
to gain practical experience in agriculture. The district will furnish transportation to and from the Agriculture laboratory during regular school hours. The district will also provide insurance on animals against death and injury for which the student has not been responsible.

PARENTS

The parents agree to support the student in his endeavors and assist in promoting the value of his experiences that he will gain from his activities on the Agriculture laboratory.

Signed this _____ day of __________________ in the year ____

________________________  __________________________
Student                                Parents or Guardian

________________________  __________________________
School District                Agriculture Department