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This study is concerned with the development of a general shop course outline for use especially by vocational agriculture instructors. In small high schools, particularly those with an enrollment of fewer than 300 students, a problem often exists in the development or offering of a class in industrial arts. These schools are not of sufficient size to hire a full-time industrial arts instructor, so usually the vocational agriculture instructor, with his training and background, is called upon to organize and teach such a class.

The problem is what to teach. At present no guides exist that utilize the vocational agriculture teacher's training, facilities, and equipment. The general shop type of organization was selected in developing this course of study because it provided the broadest industrial arts program possible in only one or two periods per day.

A pilot and two follow-up studies were conducted to determine how many vocational agriculture teachers are involved in teaching

industrial arts subjects in addition to their regular agriculture classes. A questionnaire was then developed and sent to all of the vocational agriculture instructors in Oregon to determine what subject areas were being taught in these industrial arts classes. A course outline is developed for general shop and is primarily aimed for use at the sophomore level. The recommendations include a community survey and inquiry into the recent vocational acts and programs.

A GENERAL SHOP COURSE OF STUDY  
FOR OREGON HIGH SCHOOLS

by

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## A GENERAL SHOP COURSE OF STUDY FOR OREGON HIGH SCHOOLS

### INTRODUCTION

Effective educational programs usually require a minimum of students for efficient operation. An enrollment of near 300 pupils appears to be that point at which educational programs can function efficiently. Of the 218 public high schools operating in Oregon during the 1963-64 school year, 111 had fewer than 300 pupils (23). One of the problems peculiar to schools of this size is that the teachers usually teach more than one subject area.

In the smaller high schools of Oregon, especially those with an enrollment of fewer than 300 students, some attention should be given to industrial arts in the area of general shop. Many of these small schools are in rural areas and often have a program of vocational agriculture. These schools are large enough to warrant limited offerings in the industrial arts. Therefore, the vocational agriculture instructor, who has some shop training, is usually called upon to teach one or two shop-type classes. These various shop-type classes are often called "general shop". The general shop class is best adapted to this type of situation because it provides the small high school with the broadest industrial arts program possible in only one or two periods per day. It is also the most economical way

of providing student experiences in the several areas necessary for breadth in industrial arts (29, p. 25).

### Statement of Problem

Vocational agriculture teachers who are also teaching general shop classes have no course outline to follow which is standard throughout the state. These instructors often teach or emphasize only the areas in which they have considerable knowledge, experience, or interest, rather than those which best fill the needs of the students. This creates a lack of uniformity in the general shop classes throughout Oregon. These teachers must also devote considerable effort to teaching in their major area, agriculture, which leaves little time to thoroughly study what areas should be taught in a general shop class. The problem is centered, therefore, on the necessity for a guide to follow in teaching general shop.

### Purpose of Study

The purpose of this study is to develop a course outline in general shop for instructors to use as a guide in developing and organizing their individual programs. Use of this course of study would lend some degree of standardization to general shop classes taught in Oregon.



### Limitations

The main limitation of this study is the scope. Ideally, all sizes of schools and general shop programs should be included, but the overwhelming size of such a study was prohibitive due to the time available. This study is limited to the 91 public secondary schools containing a program of vocational agriculture in 1963 as recognized by the State Department of Vocational Education (21). These schools were sent a questionnaire because 44 vocational agriculture instructors were found to be teaching a shop class in addition to their agriculture classes during the 1962-63 school year.<sup>1</sup> Regular industrial arts teachers were not sent a questionnaire because they were not considered a part of the problem stated above. It was noted that only a very few instructors in the small high schools (300 or less) had a beginning and advanced shop class, therefore, this study is limited to the development of a course of study for a one year, beginning general shop. Another limitation is the use of the questionnaire to obtain information in this study. Personal interviews would have yielded much more accurate data and would have eliminated doubts as to intent or meaning of the questions. Written questions are sometimes asked that can lead to unwarranted assumptions.

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<sup>1</sup> This information was obtained by the individual examination of the 1962 preliminary reports of secondary schools in Oregon.

### Definitions of Terms

1. Vocational agriculture program - organized classes of instruction in agriculture which are a part of a regular high school curriculum and are recognized by the State Department of Vocational Education.
2. Vocational agriculture instructor - a teacher hired by a school district for the primary purpose of teaching a vocational agriculture program and certified as such by the State Department of Vocational Education.
3. Industrial arts classes - courses of instruction for the purpose of learning the technical information, activities, and experiences related to the various aspects of industry. The courses include learning in areas such as metals, woods, power mechanics, drawing, leather, plastics, and electricity. Common course titles are: woodshop, metal shop, general shop, drafting, auto mechanics, machine shop, electronics, leathercraft, plastics, etc. . . .
4. General shop - any school shop planned and equipped to teach two or more areas of industrial arts at the same time under the direction of one teacher. The purpose of this type of organization being to provide breadth rather than depth.
5. Multiple-teacher departments - those vocational agriculture departments employing two or more men for the part or full-time instruction of vocational agriculture within the school.

## Procedures

The primary source of data used in this study is from the questionnaire (see appendix) prepared and sent to the 91 vocational agriculture teachers in Oregon (21). This questionnaire was first prepared and sent to five selected vocational agriculture instructors who were currently conducting a class in general shop. These instructors were asked not to answer the questionnaire, but to examine it for clarity of questions and comprehensiveness, and to make any comments they might have. Upon the return of these sample questionnaires, the questionnaire was revised taking into account the comments and criticisms that had been made. The revised questionnaire was then mailed to the 91 vocational agriculture instructors in Oregon. Of the 91 questionnaires sent out, 83 were returned. Four of these were considered invalid for this study due to incompleteness or reference to a shop class taught more than five years ago. The remaining 79 questionnaires were then used in the compilation of the data used herein.

Secondary sources of information were obtained through personal conferences with Leno V. Christensen, teacher trainer in the Agricultural Engineering department at Oregon State University, with Ronald E. Kaiser, supervisor of the Curriculum and Program Division of Community College and Vocational Education in Oregon,

and with Darrell L. Ward, then Consultant in Agriculture Education, State Department of Education. Personal conferences were also had with Dr. Chester Ainsworth, head of the Industrial Arts Department at Oregon State University, and with Dr. Earl Smith who is acting head of the same department since Dr. Ainsworth's resignation in 1964. Other secondary sources of information are the preliminary reports of the secondary schools of Oregon to the State Department of Education, and the numerous reference books and other studies that have been written.

#### History and Background

The problem presented here is nothing new. It would appear that this is a part of a growing stage. As our state grows in population so do the number and size of our schools. Fifty to seventy-five years ago when our state was more sparsely populated our schools were different. If the population were concentrated they would usually have a school large enough to have a separate industrial arts program. Where the population was scattered, there were many small local schools that were not large enough to have broad curriculum offerings. Such subjects as agriculture, shop and home economics were usually taught at home on the farm.

With the growth in population, these schools have grown to a size where they can increase their curriculum offerings. Advances

in technology, communication, and transportation have led to the development of even larger union high schools. Other more populous states have experienced the same thing.

Changes in our population pattern have been contributing factors. The number of farmers and farms have been steadily decreasing and our population has been concentrating in the city areas. There has been a steady decrease in the amount of farm labor needed and an increase in related off-the-farm occupations (33). These changes in population have affected the role of the vocational agriculture instructor. Whereas at one time the primary emphasis of his total program was preparation for farming, now, the main emphasis is on agricultural occupations other as well as farming. Only a small percent of the vocational agriculture students are currently entering farming as a full-time occupation. The U. S. Office of Education reported in 1963 that, (34, p. 8)

More than half the states were engaged in research toward identification and definition of new jobs and "cluster occupations" related to agriculture and to development of appropriate courses and curriculums.

The vocational agriculture instructor is also finding students in his classes that do not live on farms or do not have a farm background. A growing number of these students are often in vocational agriculture classes primarily to obtain the farm mechanics training, as it may be the only type of shop offered at that school. Under

these circumstances, many vocational agriculture instructors have developed or have been asked to develop a class of shop for the aforementioned students. Often this class is called general shop.

The "general shop" class is not new. It had received considerable recognition on a national scale by 1925 when Theodore Struck said, (32, p. 302)

The general shop is particularly well-suited to the smaller schools. . . . to those that have only one teacher on a part-time basis.

The general shop movement and growth as a part of the industrial arts department, was especially of the Junior High level and in the smaller high schools during the 1925-1935 era. But, by 1938 the trend was toward such organization in the larger school systems too (4).

The early beginning and development of general shop in Oregon came primarily through the leadership of George B. Cox. He became head of the Industrial Arts Department at Oregon State College in 1927. As a staunch supporter of the general shop idea, he did much to stimulate the thinking of industrial arts teachers of that time, and especially molded the thinking of the new industrial arts teachers who were being trained at the college (4). In 1940 Cox stated, (5, p. 97)

Only within the past ten years has general shop made any headway. Within the past five years it has gained rapidly.

There are no exact figures on general shop growth in Oregon before 1948 because the State Department of Education did not break down industrial arts into specific areas.

It is through such circumstances as these that many general shop classes have been created in the small high schools. This is not to say that the vocational agriculture instructors haven't been doing a good job of teaching general shop, because many have and still are doing an excellent job. But, because these are individual people and because they each have different strengths, weaknesses, and interests, a guide in the general shop area is needed if a better job is to be accomplished.

## REVIEW OF RELATED LITERATURE

The review of literature in this section provides a background of information on the development, growth, and present status of general shop in Oregon. No studies were found which pertained directly to a general shop course of study for vocational agriculture instructors. The latter part of the chapter deals with literature for developing a course of study.

The general shop phase of industrial arts experienced considerable emphasis in past years through the efforts of George Cox, former head of the industrial arts department at Oregon State University. Very little has occurred in recent years to change professor Cox's basic program. Unfortunately, it appears that once the newness of such a different type of shop program wore off, many instructors returned to the old standby courses in one area such as woodworking, machine shop, metal shop, etc. . . . Of course, many instructors continued to teach a few general shop classes too. As the emphasis disappeared, so did any standardization that may have existed, until now the term general shop has come to be a vague all-inclusive term which can embrace any facet or facets of shop work. Callender, in his study in 1961, also pointed out that the term general shop was very confusing and meant many things to many people. This he contributed to the large variety of facilities that were classified



as general shop (4, p. 4-5).

To establish a clearer picture of what is meant by general shop, an examination of the thinking of some of the more recognized writers in this field is in order. Louis V. Newkirk, who is recognized as the "Father of general shop" by many industrial arts education leaders, defines general shop as, (17, p. 15).

Shops that are planned and organized to teach two or more distinct types of shop work at the same time under one teacher are general shops.

Silvius and Curry see general shop as being, (29, p. 31)

A room that has been so equipped and organized that students may participate in various activities and have experience with a variety of tools, equipment and materials.

Using the latter definition, a home economics room or a chemistry laboratory could be classified as a general shop. This would be ridiculous of course, but it is not much more so than the confusion which exists in defining general shop.

To further compound this confusion from a curriculum standpoint, there are different types of general shops. Newkirk lists these as: (17, p. 42)

1. General industrial arts-includes four or five of the following areas: wood, metal, drafting, graphic arts, ceramics, electricity, transportation, textiles, and plastics.
2. Home and practical mechanics-includes auto mechanics and/or "handy-man" knowledge.
3. Arts and crafts

4. General woodworking
5. General metalworking
6. Farm mechanics (part of the vocational agriculture program)

The terms associated with general shop were too numerous and too general for at least one individual, Jack W. Morgan. In 1954 he wrote an article proposing a solution to the confusion in terminology in which he said, (16, p. 48)

Why not call all multiple area shops "general shop" and general shops in one area by the name of the area--i. e. general wood, general metal, general drafting, etc. . . .

Silvius and Curry may have read his article, for in their text in 1956, they listed only two types of general shop: (29, p. 47-48)

1. Limited - activities centered around one type of material or occupation (i. e. general woodworking, general metalworking)
2. Comprehensive - includes several different areas (i. e. wood, metal, electricity, plastics, etc. . . .)

General shop has been chosen in this study rather than some other type of shop class because, first of all, it is very similar to the type of shop work taught by the vocational agriculture instructor in his farm mechanics program. Secondly, the type of equipment found in a vocational agriculture shop lends itself to this type of organization. And last, a general shop provides the small high school with the broadest industrial arts program possible in only one or two periods per day. Newkirk cites some advantages of general shop

as, (17, p. 19).

1. It permits students to be treated as individuals with due respect for their differences in interest and capacity.
2. It enables a student to discover his abilities and aptitudes through manipulation of a wide range of materials, tools and the processes that go with them.

Silvius and Curry list two other advantages in their text, (29, p. 25)

1. It's the only means of adequately providing for industrial arts in the small city or rural school.
2. It provides an economical plan for student experiences in the several mediums necessary for breadth in industrial arts.

In 1937, a committee was formed in the State Department of Education which developed a handbook called "Industrial Arts for Secondary Schools of Oregon". In this handbook, even though it was only 1937, they recognized the trend of the "multiple-unit" or "general shop" in the small high schools (19). A similar committee was formed in 1950 and they published a second handbook named "Industrial Arts Handbook for Oregon's Secondary Schools". In this one, the committee recommended the general shop program for the small high school (20, p. 3). A very general course outline is given which closely approximates a comprehensive type of general shop as spoken of on previous pages. It includes most of the same areas listed by Newkirk under "general industrial arts" (17, p. 42).

From the foregoing, it can be seen that general shop was

experiencing growth and that educational people of our own state were recognizing the value of such a program in meeting the industrial arts needs of the small high school.

Cloyce Avey (2) completed a study in 1951 pertaining to the limited industrial arts program in the small high schools. His main concern was, that in Oregon the vocational agriculture instructor is the only person allowed to teach farm mechanics and farm shop, and that they are being certified with only 15 credit hours of agriculture engineering. He also noted that where the farm mechanics part of vocational agriculture is the only shop work offered, some of the students enrolled in the class only for the shop part of the program and had little or no interest in agriculture as such. In his recommendations, Avey suggested a coordinated program whereby industrial art teachers major in industrial arts and have minors in agricultural engineering, thus giving them the necessary skills and methods needed to teach industrial arts and farm shop and also the philosophy of agricultural education desired by the State Department of Vocational Education. This, Avey believed, would produce more effective vocational agriculture and industrial arts programs and would free the vocational agriculture teacher to teach other science subjects outside the vocational agriculture program. His recommendations are primarily aimed at the smaller schools that have a need for teaching both vocational agriculture and industrial arts, but

feel the establishment of two separate programs is not economically feasible.

In 1961, Mark Callender completed a study in which he found a definite trend toward providing facilities and areas with the general shop specifically in mind (4, p. 40). The general shop, he said, was especially useful in smaller schools but was spreading rapidly to all schools. One of Callender's conclusions was that we needed definite organization, goals, planning, etc. . . for general shop and that probably it should be from the state level. He said that general shop needed to be an integral part of education.

Action along the line of Avey's recommendations is currently underway at the state department level and in some high schools throughout the state. Programs are being revised and developed so that much, or in some cases all, of the shopwork is separated from the regular vocational agriculture classes and is available to all students. In some schools, the vocational agriculture instructor will teach the shopwork, but in other instances some of the shopwork will be taught by a regular industrial arts person.<sup>2, 3, 4</sup>

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<sup>2</sup>Christensen, Leno V., Teacher Trainer of Farm Mechanics, Personal interview. Corvallis, Oregon State University, June 4, 1965.

<sup>3</sup>Kaiser, Ronald Earl, Supervisor of Curriculum and Program Development Division of Community Colleges and Vocational Education, Oregon State Department of Education. Personal interview. Salem, Oregon, June 3, 1965.

<sup>4</sup>Ward, Darrell L., Consultant Agriculture Education, State Department of Education. Personal conference. Salem, Oregon, June 3, 1965.

In 1963, Ronald Kaiser (14) finished a study determining the status of industrial arts in Oregon's secondary schools. His study revealed the picture of industrial arts from an administrative standpoint. He found that the majority of the administrators in his study had a poor understanding and a rather dim view of industrial arts. They didn't really understand the objectives that industrial arts courses are or should be designed to achieve. Poor instructors had left a "bad taste" in the mouth of many administrators. Kaiser did find, however, that administrators were interested in a state-prepared course of study for industrial arts. Fifty-four percent of the 256 school administrators in the study felt that the industrial arts program in their school needed expanding. The desired changes most commonly listed were an increase in the variety of courses taught and an increase in the physical facilities (14, p. 33-35). Forty-two percent were satisfied with their present program.

Kaiser's study provides insight into aspects of general shop growth not previously considered. With the experiences, feelings, and attitudes toward industrial arts revealed in this sampling of administrators, it is a wonder that progress in industrial arts and especially general shop has developed to the extent it has.

A study by Croft (6) in 1960 in Missouri sought the opinions of industrial arts teachers in that state concerning what they desired in content for a general shop instructional guide. He found that,

according to the information supplied by the respondents to his study, a definite need was indicated for a general shop course of study planned on a state level. These instructors desired a complete guide, one which would tell them specifically what to do. This Missouri study indicated that Oregon is not the only state in which a general shop course outline is needed at the state level. These Missouri instructors were obviously doing as Oregon instructors are doing, that is, teaching areas in which they feel competent and have the greatest interest rather than teaching a somewhat standardized program that really meets the present and future needs of the students.

The emphasis on science and mathematics since 1957 has undoubtedly had its effect on industrial arts, but the pendulum is beginning to swing in the other direction. One example is the Vocational Education Act of 1963 which is just beginning to have its effects in this state. Now federal legislation with President Johnson's support is providing more emphasis for vocational subjects. The Vocational Education Act of 1963 and especially our state version of this act, The Oregon State Plan for Vocational Education, will be given little consideration in this study. The main objective of the Oregon State Plan for Vocational Education is instruction which is designed to prepare individuals for employment in either a single recognized occupation or in a cluster of occupations in a recognized field (24, p. 31-32). Since the primary goal of this study is the development

of a general shop guide for the small high school that offers only one or perhaps two periods of general shop, a course of study cannot be readily developed to meet the objectives of both the state vocational plan and the needs of the small high school. A beginning general shop class is more exploratory in nature and therefore could not prepare one for an occupation. Conversations with personnel in the Vocational Education Division of the State Department of Education for Oregon have indicated that vocational programs will need to be submitted for consideration on an individual basis. The course outline developed herein is considered important enough to be put into operation regardless of federal support, but the federal vocational acts and programs should not be overlooked in the development of local programs.

A bulletin published by the South Dakota Department of Public Instruction (31) recommended that the general shop program in the small high school should train the students on an amateur basis. The objective, they stated, should not be a highly skilled worker, but experiences of an exploratory nature. The general shop, they said, should be a diversified program for occupational adjustment. This type of program is not outdated. There is much knowledge and many basic skills that do not change appreciably.

The current status of any project or program must be determined before progress and direction can occur. Such is the case here, and studies were sought which would give an indication of what



is currently being taught in general shop in Oregon. Three studies were found that pertained to this state. One was a study made in 1954 by Leland Harter (12). He was concerned with finding out what is done and what can be done with industrial arts in the small high school where industrial arts courses are offered on a part-time or limited basis. He found the five most commonly taught subject areas to be:

1. Beginning woodworking
2. Advanced woodworking
3. General shop
4. General drafting
5. Advanced general woodworking

Harter also found that most schools were teaching a unit-type shop equipped primarily for woodworking. He believed the emphasis on woodworking to be due to its economic importance in our state. This opinion is not shared by some leaders in this field, for in a publication by the industrial education department at Oregon State University, they comment: (26, p. 1)

Shop offering beyond the General Shop level should be based upon occupational needs and student interests. (At present, many schools offer woodworking. This does not represent the largest occupational need in most areas and there is no evidence that this offering is based upon student interests-woodworking is all too often the student's only choice.

It is very possible that the emphasis on woodworking is a carry-over from the days of manual arts training.

Harter recommended a general shop type of program for the

small high school and developed a general shop course outline as a part of his study. The five areas he proposed in his outline are:

1. General woodwork
2. Crafts - plastic, leather, woodcarving, and metal craft
3. General drafting
4. Bench metal work
5. Sheet metal work

The outline is good in that it de-emphasizes woodworking and does appear more like a true comprehensive general shop outline.

Mark Callender's study (4) in 1961, lists the top ten subject areas most frequently taught as:

- |                       |                  |
|-----------------------|------------------|
| 1. Mechanical drawing | 6. Welding       |
| 2. Woodworking        | 7. Leather craft |
| 3. Metal crafts       | 8. Electricity   |
| 4. Sheet metal        | 9. Plastics      |
| 5. Bench metal        | 10. Machine shop |

Home mechanics followed in eleventh place, but was taught by only 35 percent of the instructors. The study also showed that of the number of these areas that were taught concurrently, four was most popular, then two, with three areas taught concurrently as third choice. This finding seemed a bit unusual for Silvius and Curry (29, p. 49) say, "Three major activities taught simultaneously are the limit for most good teachers."

In 1963, Ronald Kaiser (14) found general shop to be the fourth most common industrial arts area taught. Forty-five percent of the schools reported having a general shop area. General woods, mechanical drawing, and advanced woods were first, second and third

respectively. Of the areas offered within the general shop program, Kaiser found woodworking, mechanical drawing, metal working, leather working, plastics, and electricity, in that order, to be the six main areas taught.

In the development of a course of study, guidelines are needed. The texts of leading authorities in general and vocational education were studied and consulted in the development of this course of study. Silvius and Bohn define a course of study as being, (28, p. 5)

The written materials designed to describe accurately the teacher's plan for a course that he is qualified to teach.

Ericson and Seefeld (8, p. 292) point out that a course of study is for a single subject at a definite grade or age level. A curriculum, lest the two terms should be confused, is for groups of courses covering large segments of subject matter areas (i. e. industrial arts curriculum, English curriculum, science curriculum, etc. . . .) and includes all those activities that come under the jurisdiction of the school.

In developing a course of study, one of the first steps is to determine the objectives of the course. These objectives should guide the entire course of study. Wilber in his text, states, (36, p. 57)

There is one primary purpose of all subject matter. That purpose is to achieve the objectives of the particular course in question. This fact holds true whether the subject is Latin, mathematics, Chinese or industrial arts.

He also says, (36, p. 45-46)

A careful analysis of the objectives of any subject will indicate that behavior changes are what are really desired. The student's behavior after he has finished the course should be different from that when he started. If this is not the case, learning has probably not taken place.

This would be true whether the course gives the student new skills with his body or a better background of materials for his mind so that he would deal with the subject in a more intelligent and learned manner after completing the course. Wilber further states that, (36, p. 46)

Since behavior changes are the desired outcomes, the objectives should be analyzed in terms of such changes as appear desirable.

Often the objectives arrived at are theoretically desirable and "look good on paper". They do not give enough consideration to the students' real needs and interests. Wilber also is of the same opinion for he says. (36, p. 46)

Too frequently aims and purposes remain vague and unattainable because their true significance is not disclosed by a searching study of what is required by way of behavior changes.

This all points up the fact that what educators deem important and necessary is sometimes far from being what the students really need.

Silvius and Bohn say, (28, p. 225)

The instructional program must be selected and designed to fulfill the aims established for the course. . . . Planning without aim usually results in instructional units that represent the interest and strength of the instructor. Such planning would only accidentally fulfill the educational need of students and society.

Once the objectives for the course have been established, then instructional units may be selected. In selecting these units, much consideration will need to be given to the actual teaching conditions where this program will function. There are at least three main areas of consideration. First is the community in which the course will be taught. What type and size of community is present? What is the local economy? What opportunities and uses of industrial arts skills and knowledge are being utilized locally? These and many more questions will need to be answered in examining the community.

The school is the second consideration, but is not necessarily second in importance. What is the size of the school? What are the physical facilities available for the shop program? What equipment is available? What budget monies will be available? What are the attitudes of the school administration toward such a program? These and other questions concerning the school will need to be appraised accurately.

The third consideration is the students--without a doubt the most important. How many students will need to be planned for? What is their social and economic background? How will they compare intellectually with the rest of the student body? What are their interests? What type of vocation will they be apt to choose? What are the future normal educational needs of the majority of these students? These are the most crucial questions which will need to be

considered in developing an instructional program. Silvius and Bohn suggest that a committee may be used to aid the teacher in selecting instructional units or areas. Once the areas are selected, then teaching order, time allotment, number of units, etc. . . is determined (28, p. 228).

Ericson and Seefeld have condensed the mentioned areas of course construction into five steps:

1. State definite goals and objectives for activity contemplated
2. Survey and analyze possible teaching content
3. Select most feasible items
4. Organize in instructional sequence
5. Organize into format of course of study

They further suggest a breakdown of the course of study into instructional units which could be broken down as fine as daily lesson plans.

Suggested sections of this breakdown are: (8, p. 298-299)

1. Body of teaching content (main information to be covered)
2. Suggested projects
3. Instructional aids
4. Methods and techniques
5. Guidance and occupational information
6. Safety
7. Organization and management

One further area of consideration in addition to the community, school, and students, in developing the course of study, will have to be the capabilities and limitations of the instructor himself. These will vary but the most elaborate and well-made course of study will be of very little value if the instructor is not knowledgeable and capable in that area.

## PRELIMINARY CONSIDERATIONS

In 1961, a pilot study was conducted by the author to determine the number of vocational agriculture instructors in the state of Oregon that were engaged in the instruction of industrial arts courses in addition to their regular agricultural classes. It was hypothesized that a large number of vocational agriculture teachers were engaged in such instruction. The results of this 1961 study showed that in the 1960-61 school year, 36 of the 97 teachers of vocational agriculture were teaching an industrial arts class in addition to their regular agriculture classes. Of these 36 instructors, 22 were in a school with an enrollment of less than 300 students. No significant conclusions were drawn from this study, but it did bring to light the fairly important role that industrial arts subjects were playing in the job of the vocational agriculture instructor, particularly in the smaller schools.

Two similar studies were conducted for the 1962-63 and 1963-64 school years to check the validity of the findings in the 1961 study. These studies shall be referred to hereafter as studies I, II, and III respectively. The source of the data used in studies I, II, and III was from the individual preliminary reports of secondary schools in Oregon for the 1960-61, 1962-63, and 1963-64 school years. This material is on file in the Public Service Building, Department of

Education, Salem, Oregon. More specifically, the information was obtained from the teaching schedules prepared by the individual schools.

The following information was gathered by an individual examination of each school's folder:

1. Name of school
2. Size of enrollment
3. What did vocational agriculture teachers teach?
  - a. All vocational agriculture
  - b. Vocational agriculture plus industrial arts subjects
  - c. Vocational agriculture plus non-industrial arts subjects
  - d. Vocational agriculture plus both types of subjects
4. Was vocational agriculture only shop offered in the school
5. Did school have more than one vocational agriculture instructor. If so, how many.

Only those schools having a vocational agriculture program as listed by the State Department of Agriculture Education were studied.

The results of study I are shown in Table I. An examination of this table reveals 89 vocational agriculture departments in the state of Oregon with a total of 97 vocational agriculture instructors employed. The difference in number of departments and number of teachers is explained by the existence of eight multiple-teacher departments. Of the 97 instructors, only 39.2 percent were hired solely to teach vocational agriculture, while 60.8 percent taught other subjects in addition to vocational agriculture. Of those teaching other subjects, 47.5 percent taught industrial arts subjects, 39.0



Table I

No. Schools	Size	Vo-ag only		Vo-ag & IA subj.		Vo-ag & non- IA subj.		Vo-ag & both		Vo-ag only shop offered		No. of instr.
		No.	%	No.	%	No.	%	No.	%	No.	%	
8	0-99	1	12.5	1	12.5	5	62.5	1	12.5	8	100.0	8
20	100-199	3	15.0	8	40.0	4	20.0	5	25.0	17	85.0	20
12	200-299	2	15.4	7	53.8	4	30.8	0	0.0	7	53.8	13
8	300-399	4	44.4	2	22.2	2	22.2	1	11.1	2	22.2	9
12	400-499	7	50.0	3	21.4	3	21.4	1	7.1	0	0.0	14
29	500 plus	21	63.6	7	21.2	5	15.2	0	0.0	0	0.0	33
TOTAL Instructors												
89		38		28		23		8		34		97

- |   |               |
|---|---------------|
| 1. Number of vo-ag departments in Oregon                  | 89            |
| 2. Number of vo-ag instructors                            | 97            |
| 3. Number of instructors teaching vo-ag only              | 38 (39.2%)    |
| 4. Number of instructors teaching vo-ag & IA subjects     | 28 (28.9%)    |
| 5. Number of instructors teaching vo-ag & non-IA subjects | 23 (23.7%)    |
| 6. Number of instructors teaching vo-ag & both types      | 8 (8.2%)      |
|   | <u>100.0%</u> |

percent taught non-industrial arts subjects, and 13.5 percent taught both types of subjects. When all 97 teachers of vocational agriculture in Oregon were considered, it was found that 37.1 percent were teaching an industrial arts subject.

The results of studies II and III are shown in Tables II and III. In study II, it was found that there were 88 vocational agriculture departments with a total of 95 instructors. There was no decrease in the number of vocational agriculture departments from the 1960-61 school year, but the difference in figures is attributed to the lack of one or two school's records being on file in the state department. Of the 95 instructors, 42.1 percent were teaching all vocational agriculture, a slight increase over study I. Of all vocational agriculture instructors in Oregon that year, 41.0 percent of them were teaching an industrial arts subject.

In study III, it was found that 91 vocational agriculture departments existed utilizing 99 instructors. Of the 99 instructors, 38.4 percent were hired to teach only vocational agriculture, a slight decrease from the previous year. Of all vocational agriculture instructors in Oregon during the 1963-64 school year, 45.4 percent were teaching an industrial arts subject.

In comparing tables I, II, and III, one can see that the number of vocational agriculture departments did not change appreciably. There was a slight increase in the number of vocational agriculture

Table II

No. Schools	Size	Vo-ag only		Vo-ag & IA subj.		Vo-ag & non- IA subj.		Vo-ag & both		Vo-ag only shop offered		No. of instr.
		No.	%	No.	%	No.	%	No.	%	No.	%	
10	0-99	0	0.0	5	50.0	5	50.0	0	0.0	10	100.0	10
14	100-199	1	7.1	9	64.3	4	28.6	0	0.0	12	87.5	14
15	200-299	3	20.0	7	46.7	3	20.0	2	13.3	9	60.0	15
7	300-399	7	100.0	0	0.0	0	0.0	0	0.0	0	0.0	7
9	400-499	7	70.0	3	30.0	0	0.0	0	0.0	0	0.0	10
33	500 plus	22	56.4	11	28.2	4	10.3	2	5.1	0	0.0	39
TOTAL Instructors												
88		40		35		16		4		31		95

- |   |              |
|---|--------------|
| 1. Number of vo-ag departments in Oregon                  | 88           |
| 2. Number of vo-ag instructors                            | 95           |
| 3. Number of instructors teaching vo-ag only              | 40 (42.1%)   |
| 4. Number of instructors teaching vo-ag & IA subjects     | 35 (36.8%)   |
| 5. Number of instructors teaching vo-ag & non-IA subjects | 16 (16.8%)   |
| 6. Number of instructors teaching vo-ag & both types      | 4 (4.2%)     |
|   | <u>99.9%</u> |

Table III

No. Schools	Size	Vo-ag only		Vo-ag & IA subj.		Vo-ag & non- IA subj.		Vo-ag & both		Vo-ag only shop offered		No. of instr.
		No.	%	No.	%	No.	%	No.	%	No.	%	
10	0-99	1	10.0	3	30.0	6	60.0	0	0.0	8	80.0	10
17	100-199	1	5.9	11	64.7	4	23.5	1	5.9	16	94.1	17
13	300-299	2	15.4	7	53.8	4	30.8	0	0.0	6	46.2	13
8	300-399	3	37.5	5	62.5	0	0.0	0	0.0	3	37.5	8
6	400-499	4	57.1	3	42.9	0	0.0	0	0.0	0	0.0	7
37	500 plus	27	61.4	14	31.8	2	4.5	1	2.3	0	0.0	44
TOTAL Instructors												
91		38		43		16		2		33		99

1. Number of vo-ag departments in Oregon	91
2. Number of vo-ag instructors	99
3. Number of instructors teaching vo-ag only	38 (38.4%)
4. Number of instructors teaching vo-ag & IA subjects	43 (43.4%)
5. Number of instructors teaching vo-ag & non-IA subjects	16 (16.2%)
6. Number of instructors teaching vo-ag & both types	2 (2.0%)
	<u>100.0%</u>

instructors, however. The number of vocational agriculture teachers teaching only vocational agriculture did not appreciably change.

However, when comparing the total number of vocational agriculture instructors teaching agriculture plus industrial arts subjects, there is a steady increase of four percent each time. A steady decrease is found among the number of vocational agriculture teachers teaching vocational agriculture plus non-industrial arts subjects and the number of instructors teaching vocational agriculture plus both types of subjects. These changes can probably be attributed to the increased enrollment in all of the schools which made more schools large enough to broaden their curriculum offerings.

In summary, it appears that in the small schools (0-99), maximum utilization of the staff is a must from an economic standpoint. Therefore, the vocational agriculture instructors in these schools are most likely to be teaching academic subjects such as science, English, and mathematics in addition to their vocational agriculture programs. In the medium-size schools (200-299), curriculum offerings are broadened and the vocational agriculture instructor is more likely to be teaching industrial arts subjects. These schools are large enough to offer some industrial arts subjects, but not large enough to maintain and staff a separate industrial arts department. In the larger schools (300 and up), it becomes more and more economically feasible to establish separate vocational agriculture

and industrial arts departments and staff each.

There is no way of knowing if the findings of these studies will continue upward, reach a plateau, or decline. They do show, however, that many vocational agriculture instructors are involved in teaching industrial arts subjects in addition to their regular programs. A more thorough analysis of these studies would yield statistically valid and perhaps significant data, but a relative comparison was all that was desired here.

### The Questionnaire

The 79 questionnaire returns in the current (1963-64) study considered valid were tabulated and the information analyzed. It was found that 42 of these instructors were currently teaching an industrial arts subject in addition to their vocational agriculture program. Eight more instructors indicated that they had taught an industrial arts class within the past five years but were not teaching one this year. The questionnaire returns of these 50 instructors have been used in the compilation of the remaining data that is presented.

Of the 50 instructors, 37 of them have taught their industrial arts class for five years or less. This would seem to indicate quite a growth of these classes in the past five years. Not all of this can be attributed to growth, however, for some of these men may be relatively new to the teaching profession and may not have taught more

than five years. Lack of the number of years of teaching experience for these instructors prohibits any conclusions from being drawn on this point.

The number of periods per day that each instructor taught an industrial arts class was the next consideration. Twenty-six of them taught only one period each day, and 20 of them taught two periods per day. Only two instructors taught three periods per day. Approximately two out of three of them taught only a beginning shop class. The industrial arts classes that were taught by these men were most frequently called general shop. Almost half of them were so named. Metal shop and wood shop were the other two most popular names for the classes.

Only two instructors were allotted extra preparation time for these classes. The remaining 48 had to prepare for their industrial arts classes during their regular preparation period or whenever they prepared for their other classes. It is presumed that this may be part of the reason that so many of these instructors said they patterned their shop classes after their farm mechanics program. Twenty-four percent said they patterned them entirely, 58 percent partially, and only 18 percent said not at all. Thirty percent of them felt that preparation for teaching these classes was a definite burden, but the other 70 percent did not feel this way.

The vocational agriculture shop facilities were used by 47 of

the instructors for their industrial arts classes. Of the remaining three who used separate facilities, two taught mechanical drawing and one an eighth grade woodshop. Thirty-one of the instructors said they had no special equipment for their industrial arts classes. Of those who did have special equipment, the most frequent was found to be special auto mechanics tools and test equipment, metal lathes, sheet metal equipment, and power woodworking tools in order of decreasing frequency. Separate budgets for industrial arts classes were reported by only 16 of the instructors. These budgets varied greatly from \$200 to \$2000. The approximate average of these budgets was \$550.

One of the main purposes of the questionnaire was to find out what subjects or subject areas were being taught. The following information was obtained:

#### Welding

Arc- 43

Gas- 43

#### Tool Use & Care

#### Hand & Power

Wood- 31

Metal- 36

#### Drawing

Simple blue print reading 17

Basic mechanical drawing 21

Advanced mechanical drawing 2

Figuring bills of materials 30

#### Gas Engines

Small motor maintenance 18

Gas Engine theory 23

Automotive maintenance 21

Tractor maintenance 9

Body & Fender 5

#### Woodwork

Rough construction 23

Finish or cabinet work 17

Building construction 13

Painting 23



		<u>Electricity</u>	
		Basic Electricity	26
		Motor theory of operation	16
		Motor selection, care & maintenance	15
		Wiring fundamentals	25
		<u>Other</u>	
		Ropework	3
		Plumbing	16
		Concrete	17
<u>Metal Work</u>			
Hot & cold metal	31		
Metal craft - ornamental	3		
Sheet metal	18		
Soldering	27		
Lathe & mill work	11		

One particularly startling fact disclosed by the questionnaire was that where the vocational agriculture instructor was teaching an industrial arts class, 50 percent of these schools also had shop courses taught by regular industrial arts instructors. The only apparent reason for this seemed to be that these schools were large enough to expand their industrial arts offerings but not large enough to have two full-time industrial arts men. Therefore, the vocational agriculture instructor, with his background and training in farm mechanics and farm shop, was the logical person to be utilized as a part-time industrial arts instructor.

When asked if they felt that they could benefit from a curriculum guide in the area of general shop, 42 instructors answered yes, while eight said no. Several of the questionnaires contained comments saying that the instructor would be starting a shop class in the 1964-65 school year.

In brief summary, the questionnaire showed that approximately

45 percent of the vocational agriculture instructors were involved in teaching industrial arts classes. Most of them teach one or two periods of a beginning or first-year shop, and in almost all cases these classes are taught in the vocational agriculture facilities. Just two instructors were allotted extra preparation time. Only 30 percent of them felt that the preparation was a real burden. Eighty-two percent of them patterned their shop classes partially or entirely after their farm mechanics in vocational agriculture. Special budgets and equipment were possessed by relatively few, although a few individuals were especially well-equipped and financed. In exactly half of the schools where the vocational agriculture instructor taught an industrial arts class, there were other industrial arts classes taught by a regular industrial arts instructor. Eighty-four percent felt they could benefit from a curriculum guide in general shop.

#### Development of Course of Study

As was discussed previously, the first step in the development of a course of study is to determine the objectives for the course. The objectives developed here will of necessity need to be somewhat general in nature as conditions and situations will vary from school to school. Objectives cannot be established which will fit every school. Each individual instructor will, in turn, need to establish his own more specific objectives. Keeping these things in mind, the

following objectives were developed:

1. Students should be exposed to several industrial arts areas - especially those prevalent in or near the community.
2. Students should gain a basic background of knowledge in each of these areas.
3. Students should become exposed to and acquainted with the more common skills used in each area with some degree of proficiency developed.
4. Students should become acquainted with the occupational aspect of each area.
5. Students should develop new concepts, a greater understanding, and perhaps a greater appreciation in each subject area and of industry as a whole.

As a direct result of this class they should be able to deal more intelligently and skillfully with any of the subject areas as they may affect their life, either in or out of school. They should also be able to give more intelligent consideration to these and related areas as possible choices for a vocation. Last of all, they should gain basic skills and knowledge which are common in many occupations and of considerable value just around the home.

With these objectives in mind, the next step in the development of this course of study is the consideration of the conditions where this program will be expected to function. The community will in

most all cases be rural in nature. This means that one of the prime occupational areas will be farming. In many cases though, forestry and logging will also be primary occupational areas. The economy of these communities will vary greatly, but in a majority of the instances they will not be wealthy communities. Some of these communities will be widely scattered such as they are in Eastern Oregon and along the coastal region, while others will be grouped more closely together as they are in the Willamette Valley. The nearness of other industry and communities will have a definite bearing upon the opportunities that are available which utilize industrial arts skills and knowledge.

The school, the second consideration, will have an enrollment of fewer than 300 pupils in most all cases. There will be a vocational agriculture program with one instructor. The school will not have an industrial arts department in the majority of cases and if one should exist, it would primarily be a woodworking shop. The vocational agriculture shop will contain the only metal and mechanics equipment present. The equipment in the vocational agriculture shop will consist, it is assumed, of most of the items found in the suggested list of equipment for Oregon vocational agriculture shops in the booklet "Planning Vocational Agriculture Facilities" (25, p. 12-13). It is also assumed that the shop arrangement will be similar to that suggested in the same booklet. The school districts are not

likely to be financially wealthy, so an operational budget of \$500 for consumable supplies will be used as an approximate limit in developing the course of study. The course will be designed as much as possible to utilize what facilities and equipment exist in the typical vocational agriculture shop.

This course is constructed for one period per day for one year. The number of students will vary, but a maximum number would be 20, with 15 or 16 being far more desirable. Most of these students will be of average or below average ability academically, so the program will need to be well-balanced between classwork and shopwork. The students in vocational agriculture should not be in this course as they usually receive much of this same training in the farm mechanics taught in vocational agriculture. This course should be aimed at the sophomore level so that the occupational exploration in the course may occur at a point early enough to allow the students more time in selecting a possible vocation. On the other hand, since this will be the only shop course offered in these schools, it may be more desirable to limit the offering to the junior and senior levels where the students will have attained a greater degree of maturity and clearer idea of their plans for the future. It would definitely be best to exclude freshmen from this course due to their maturation level. They would have interest in the course but would not be able to benefit to as great a degree as older students. The final decision in these

matters will have to be up to the individual schools. This course of study will be for any student--college bound or other wise, even if he does not take another industrial arts course.

The subject areas selected will have to be those in which the vocational agriculture instructors are normally trained at the colleges. Individual teachers may need to vary the course of study slightly according to their individual strengths and weaknesses, but should adhere as closely as possible because it has been designed so as to provide the student with a sound background in basic knowledge and skills in the industrial arts areas found in everyday living. Any major alterations would defeat the purpose of this proposed course of study. It is realized that in some cases the school has requested the vocational agriculture instructor to organize and teach a class of shop, while in other schools the instructor is doing so of his own volition. One of the main aims of this entire study was to develop a course of study for either of these types of instructors which would utilize their present training and yet provide a course of real value to those students outside of vocational agriculture who wanted some industrial arts training.

With the foregoing considerations in mind, and after considerable study and examination of various other curricula and texts, the following course of study was prepared and is hereby presented as a proposed guide especially for the vocational agriculture teachers

of Oregon:

### Course of Study

This course of study is presented not as a detailed outline to follow, but as a guide showing the areas to be covered in developing a well-rounded local program of general shop that is most likely to meet the needs of the majority of students. The divisions are only suggested areas to cover. The exact information covered is left to the discretion of individual instructors. The over-all objective, it should be remembered, is to explore these various areas, not to develop proficiency in skills.

#### FIRST SEMESTER

- I Orientation and Basic (general) Safety - suggested time is two to three days.
  - A. Policies
  - B. Scope of course
  - C. General safety
- II Basic Tools - the main objective is to acquaint the students with the basic knowledge, proper use, and care of each of these tools. The dissemination of this information can be done by normal methods such as textbooks, lectures, discussion, and audio visual aids. Demonstrations will be especially useful. Suggested time is three weeks.
  - A. Woodworking tools
    1. Measuring and marking
      - a. Rules, tapes, marking gauge
      - b. Squares - framing, combination, tri-square, bevel
      - c. Compass and dividers
      - d. Chalk line, level, plumb bob

## 2. Saws

- a. Hand - crosscut, rip, keyhole, coping
- b. Power - sabre and skil types (table and radial arm are optional)

## 3. Planes - parts, adjustments, kinds, applications

## 4. Chisels

## 5. Boring tools

- a. Brace
- b. Hand drill
- c. Bits - auger, expansion, electric
- d. Countersinks

## 6. Hammers - claw styles, weights

# B. Metal and mechanic hand tools

## 1. Wrenches

- a. End - box, open, combination
- b. Sockets and accessories
- c. Adjustable (crescent type)
- d. Pipe and monkey
- e. Pliers - common household, electrician's, needle-nose, diagonal wire cutting

## 2. Screwdrivers - common, phillips, spiral ratchet, offset

## 3. Hammers - types and weights, - ball-peen, blacksmith, sledge, others

## 4. Files - shapes, sizes, cut, coarseness

## 5. Hacksaws - frames, blades

## 6. Vises - wood, machinists, blacksmith, pipe, others

## 7. Punches and chisels

## 8. Taps and dies

## 9. Drills and drill bits - nomenclature of parts and functions

# III Metal Working - suggested time is four weeks

## A. Metal identification

- 1. Ferrous
- 2. Non-ferrous



B. Hot and cold metal work - much of this information will already be covered in metal tools of section II

1. Marking and layout work
2. Cutting
  - a. Hacksaw - hand (power optional)
  - b. Shear
  - c. Cold chisel
  - d. File
  - e. Power grinder
3. Drilling
  - a. Use of drill press
  - b. Selecting drilling equipment
  - c. Center punching
  - d. Safety
4. Bending and forming
  - a. Equipment and techniques - flats and squares
  - b. Equipment and techniques - pipe and angle shapes
  - c. Use of heat in bending and forming
5. Tempering and annealing
  - a. Purpose
  - b. Processes involved
6. Threads and threading
  - a. Classifications
  - b. Equipment - processes and techniques of use

C. Sheet metal

1. Layout and marking
2. Cutting and drilling
3. Bending and forming seams
4. Soldering
  - a. Preparation of work
  - b. Preparation of soldering iron
  - c. Procedures and techniques

- D. Project exercises - select projects or exercises which utilize as many of the basic operations of wood and metal working tools as possible and draw upon the technical and related information previously presented. A rotational type of organization is suggested spending a total of approximately three weeks.

IV Welding - it is suggested that arc and gas welding information be covered first in the classroom and then exercises be utilized in shop on a rotational basis. Suggested time is six weeks.

A. Arc welding - classroom

1. Principles of operation
2. Electrode identification and selection
3. Preparation of the work
4. Setting up and using the arc welder
5. Safety

B. Oxyacetylene welding - classroom

1. Principles of operation
2. Setting up the equipment
3. Weld types and techniques (brazing and mild steel)
4. Using the cutting torch
5. Shutting down and putting equipment away
6. Safety

C. Arc welding - shop

1. Demonstration on striking arc and running a bead
2. Make a bead - flat position
3. Make a horizontal fillet or "T" weld
4. Horizontal or vertical butt (optional)

D. Oxyacetylene - shop

1. Learn to carry a puddle
2. Learn how to make mild steel beads
3. Butt weld - mild steel
4. Flat fillet weld - brazed
5. Use of cutting torch to make some type of cut

- E. Occupational information - one or two days - may utilize a local welder, employment person, or guidance person from the school.

V Power Mechanics - Heat Engines (primarily gasoline) - 4 weeks

A. Engine types and basic principles of operation

1. Steam
2. Turbine
3. Gasoline
4. Diesel

B. Basic Construction and Function of Main Parts

1. Block, crankcase, head
2. Crankshaft, connecting rod, piston, rings
3. Valves, camshaft, and valve train

C. Accessory Engine Systems - construction and operation

1. Fuel
2. Lubrication
3. Cooling
4. Ignition
  - a. Battery type
  - b. Magneto type

D. Maintenance

1. Tune up
2. Preventive
3. Storage

E. Occupational Orientation

SECOND SEMESTER - BUILDING TRADES AND SKILLS  
(Construction Technology)

I Basic Drawing - suggested time is four weeks

- A. Basic lines used in drawing
- B. Lettering and dimensioning

- C. Views
- D. Reading drawings and simple blueprints
- E. Make practice drawings
- F. Floor plans - reading and making
- G. Figuring bills of materials - wood and metal
- H. Make plan of small building and figure bill of materials (optional)

## II Construction Materials - suggested time is three weeks

- A. Lumber products - types, grades, uses
- B. Fasteners - types and uses
- C. Insulation - types and uses
- D. Roofing - types and uses
- E. Concrete and masonry - basic fundamentals in making and using
- F. Finishing Materials
  - 1. Paints and varnishes
  - 2. Floor coverings
  - 3. Wall materials
  - 4. Ceiling materials

## III Construction Processes - It is suggested that much of this section could be taught through field trips to buildings in various stages of completion. The suggested time is nine weeks.

- A. Types of building construction
  - 1. Materials
  - 2. Floor plans
  - 3. Roof types
  - 4. Uses (utility v. s. dwelling)
- B. Layout of foundations
- C. Construction of foundations
- D. Sub-floor assembly
- E. Framing (walls)
- F. Roof construction
- G. Plumbing - allow about two weeks for this area
  - 1. Basic equipment and terminology
  - 2. Fittings, fixtures and their uses
  - 3. Basic plumbing layouts as used in the home

H. Electricity and wiring - approximately three weeks for this area

1. Basic fundamentals and terminology
2. Simple house wiring
3. Operation and care of electric motors

I. Finishing processes

1. Plaster
2. Dry wall
3. Wallpaper
4. Paneling
5. Flooring
6. Cabinet work

IV Occupational orientation - through the above section (III), the "how" of the various occupations will have been explored. This would be a summary of the various occupational areas explored in building and construction plus a survey of the educational and training requirements, working conditions, salaries, and job opportunities in each area.

This course of study has as its emphasis, exploration of the skills as used in various occupations, not the mastering of skills. The proposal has been designed to be operated on a semester basis with the second semester being as independent as possible of the first one, so that a student could enter the shop class at mid-year and not find himself needing previously learned knowledge and skills from the first semester. Under this type of arrangement, students who had an interest primarily in the mechanical aspect of shop work could enroll for the first semester only, without having to plow through material in which they have little or no interest. It would be desirable for the students to complete both semesters of the program in

order to establish a more complete background for future training.

This plan then, offers some flexibility to the small school situation where normally it would be difficult to have any flexibility at all.

Although this course of study has been designed especially for the vocational agriculture instructor who teaches shop courses in a small high school, it would fit well as an introductory course in the larger schools with expanded industrial arts programs.

## SUMMARY

In small high schools, especially those with an enrollment of 300 or fewer students a problem often exists in the development or offering of a class in industrial arts. These schools are not of sufficient size to hire a full-time industrial arts instructor so usually the vocational agriculture instructor, with his training and background, is called upon to organize and teach such a class.

The problem is what to teach. At present no guides exist that utilize the vocational agriculture teacher's training, facilities, and equipment. Therefore, the purpose of this paper was to develop a course outline primarily for the vocational agriculture instructor in the above-mentioned situation.

The general shop type of organization was selected in developing this course of study for three reasons. First, it is very similar to the type of shop work taught by the vocational agriculture instructor in his farm mechanics program. Second, the type of equipment found in the vocational agriculture shop lends itself best to this type of organization. Third, a general shop provides the small high school with the broadest industrial arts program possible in only one or two periods per day.

In 1961, a pilot study was conducted to find out how many vocational agriculture instructors in Oregon were engaged in the

instruction of industrial arts classes in addition to their regular vocational agriculture classes. The study revealed that 37.1 percent of the vocational agriculture instructors that year were also teaching an industrial arts class or classes in addition to their agriculture classes. The greatest number of instructors so involved occurred in the schools with an enrollment of fewer than 300 students. Similar studies were conducted in 1962 and 1963 to try to determine any indication of trends in the role of industrial arts classes taught by the vocational agriculture teacher and to check the validity of the findings in the 1961 study. These two additional studies revealed a steady increase each year of four percent in the number of vocational agriculture teachers who were involved in teaching industrial arts classes in addition to their vocational agriculture classes.

A questionnaire was developed and sent to all of the vocational agriculture instructors in Oregon in May of 1964. The purpose of the questionnaire was to obtain information about the industrial arts classes taught by these instructors and to determine what subject areas were being taught.

The various texts and writing of leading educators were reviewed to develop guidelines for developing this course of study. The areas of course construction are broken down into five steps:

1. Develop definite goals or objectives.
2. Survey and analyze possible teaching content.



3. Select most feasible items.
4. Organize items in instructional sequence.
5. Organize into format of course of study.

The first three steps above involve the appraisal of the conditions where this program would be expected to function. The four prime considerations being community, school, students, and instructor.

With the objectives and these considerations in mind, and after considerable study of various other curricula and text books, a course of study was developed.

### Conclusions

When this study was begun, it was hoped that a detailed course of study could be developed that would fit the needs in every school. As the study progressed, however, it soon became obvious that the conditions throughout Oregon were not identical enough to utilize such a guide in the intended manner. What has been developed is a course of study that is somewhat flexible in nature and can be applied in many of the situations existing at present. This is in no way a magic "cure all" for the vocational agriculture teachers, but it is hoped that this course of study will serve as a guide for these instructors as they develop and organize their own general shop classes. Used in this way it should prevent the teaching of classes that have heavy emphasis in one or two areas only.

With the number of federal programs being developed in the vocational area, it is likely that there will be great advances in the number and types of vocational classes offered in high schools within the next two or three years. There will always remain, however, the small school situations that can only offer industrial arts on a very limited basis. The type of program as developed herein, would appear to be of the greatest value under such conditions.

### Recommendations

It is recommended that anyone, teacher of vocational agriculture or otherwise, who would desire to develop or pattern his general shop class after this course of study, should first conduct a community survey to determine which industrial arts areas are most common in the community and surrounding area. The result of the survey should be one of the main factors in the development of the local course of study. Each instructor should also determine his own specific objectives in accordance with his and local educational philosophy. The federal vocational acts and programs should not be overlooked in developing the local programs, for it may be very possible that in the near future such a course of study may be widely accepted as a basic step in a total program. The following statement from the text of two well-known educators in the industrial arts field seems appropriate as a closing thought: (28, p. 251)

This is a rapidly changing society. A teacher cannot teach as he was taught because the industrial society is rapidly progressing. New units must be introduced and old units revised, upgraded, or discarded.

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## APPENDIX

A Study of General Shop Classes as Taught by  
the Vocational Agriculture Teacher in  
the State of Oregon  
(daytime only--not adult education)

In a pilot study in 1961, it was found that a substantial number of vocational agriculture teachers were engaged in the instruction of shop classes in addition to the vocational agriculture program.

The purpose of this present study is to develop a guide in the area of general shop which would be suitable for use by the vocational agriculture teacher--thereby making his job easier and also lending some degree of standardization over the state to the shop classes taught by the vocational agriculture teacher. (Outside of the regular vocational agriculture program).

1. Do you currently teach any type of shop class separate from the farm mechanics taught as a part of your vocational agriculture program? (not including adult education)

☐ YES                      ☐ NO

If your answer to number one was yes, please complete remainder of questionnaire omitting number two. If answer was no, complete question number two.

2. Have you ever taught a shop-type class in addition to a vocational agriculture program in past years?

☐ YES                      ☐ NO

If your answer to question number two is yes, please complete the remainder of the questionnaire applying it to the last year you taught the shop-type class. If your answer was no, you have completed the questionnaire. Please return it as soon as possible in the self-addressed envelope..... Thank you

3. Approximately how many years have you also taught a shop-type class? \_\_\_\_\_ years
4. How many periods per day do you teach a shop class? \_\_\_\_\_ periods
5. If you teach more than one period of shop, do you have a beginning and advanced class (i. e. Shop I, Shop II--please specify)  
☐ YES                      ☐ NO



6. Are you given extra time (preparation-wise) for this class (es)?  
☐ YES ☐ NO  
 If yes, how many periods? \_\_\_\_\_
7. Do you pattern your shop class(es) after the farm mechanics program as taught in your vocational agriculture class(es)?  
☐ YES ☐ NO ☐ PARTIALLY
8. How many students (total per year) do you have in your shop class(es)? \_\_\_\_\_
9. Does your shop class(es) have any age limitations for the students? (i. e. only Sophomores and Juniors, no Freshmen, etc...)  
☐ YES ☐ NO  
 If yes, please specify \_\_\_\_\_
10. Check the box(es) that most closely approximates the name(s) of your shop class(es).  
☐ Wood Shop ☐ General Shop ☐ Mechanical Drawing  
☐ Metal Shop ☐ Shop ☐ other (please name)  
☐ Machine Shop ☐ Crafts
11. Is this class(es) taught in the agriculture shop or in separate facilities? (underline answer)
12. What subject areas do you cover in your shop class(es). Check appropriate items and indicate Shop II where applicable.

Welding

- ☐ Arc  
☐ Gas

Tool Use and Care

- ☐ Wood - hand power  
☐ Metal- hand power

Gas Engines

- ☐ Small motor maintenance  
☐ Gas engine theory  
☐ Automotive maintenance  
☐ Tractor maintenance  
☐ Body and Fender

Drawing

- ☐ Simple blueprint reading  
☐ Basic mechanical drawing  
☐ Advanced mechanical drawing  
☐ Figuring bills of materials

Woodwork

- ☐ Rough construction  
☐ Finish or cabinet work  
☐ Building construction  
☐ Painting

Metal Work

- ☐ Hot and cold metal
- ☐ Metal craft (ornamental)
- ☐ Sheet metal
- ☐ Soldering
- ☐ Lathe & mill work

Electricity

- ☐ Basic electricity
- ☐ Motor theory of operation
- ☐ Motor selection care and maintenance
- ☐ Wiring fundamentals

Others

- ☐ Ropework
- ☐ Plumbing
- ☐ Concrete work
- ☐ Fencing

13. Do you have a separate budget for your shop class(es)?

☐ YES ☐ NO

If yes, approximately how much. \$ \_\_\_\_\_

14. Do you have any special equipment for your shop class(es) not normally found in an agriculture shop?

☐ YES ☐ NO

If yes, please list major items.

15. Are there also other shop type courses taught by a regular industrial arts teacher in your school?

☐ YES ☐ NO

16. Do you find the preparation for teaching shop class(es) a definite burden?

☐ YES ☐ NO

17. Do you feel that you could benefit from a curriculum guide in the area of general shop?

☐ YES ☐ NO