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Title of Study: INDUSTRIAL ARTS IN THE PUBLIC HIGH SCHOOLS OF OREGON 1957-1958

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Major Field: Industrial Arts Education

Scope of Study: This report deals with the industrial arts in the public high schools of Oregon with respect to professional preparation, experience, tenure, salary, and special duties of the teacher. The enrollment, subject content, and use of textbooks, teaching aids and field trips of the industrial arts classes are surveyed. The type, the size, and location of the shop; the money allotted, the name of the department, and the enrollment of the school are also included. The teacher education institutions of Oregon are also studied. The information is presented in table form with an explanation of each. Included, also, are the conclusions of the study and recommendations for improvement.

Findings and Conclusions. The teachers, in general, feel that a master's degree is desirable. Very little summer employment is made available by the schools to the industrial arts teachers. Woodworking and drawing are the most frequently offered industrial arts subjects, and there is a lack of variety in subject matter. The classes are limited, to some extent, in size, thus making it easier to administer individual instruction. Girls have not been encouraged to enroll in industrial arts classes, and in many places they are not permitted to enroll. Some departments are still referred to as "shop" or "manual training". Only one college in Oregon offers any industrial arts courses or a degree in industrial education. Definite requirements for the certification of industrial arts teachers should be established, thus eliminating the problems of teachers teaching industrial arts without any preparation in the field. Industrial arts should be offered in more of the colleges of Oregon.

Advisor's Approval L. H. Burgtorf

INDUSTRIAL ARTS IN THE PUBLIC HIGH SCHOOLS OF OREGON, 1957-1958

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By

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Bachelor of Science

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Goodwell, Oklahoma

1955

Submitted to the Faculty of the Graduate
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of Agriculture and Applied Sciences
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SCOPE AND ORGANIZATION OF THE STUDY

Industrial arts and its place in the school curriculum is of great importance. Today, more schools are including industrial arts in their curricula and are offering courses needed for this modern scientific age. Information is needed about the different industries in order for the public to better understand the new industrial tools and processes. Industrial arts in the high schools is designed to acquaint the children with these different tools and processes as a part of their general education in order to make them better citizens. In order to determine what the schools of one particular state are offering in the field of industrial arts, questionnaires should be sent to each industrial arts teacher within that state. This would serve, then, as a basis for the summarization of the status of industrial arts in that state.

Methods of Investigation. The normative- survey research method was used for the nucleus of the study. Questionnaires, which were sent to 257 industrial arts teachers in 169 Oregon public senior high schools, were used as a technique to collect data of conditions as they exist at the present. Documentary information from Oregon State College, Corvallis, and a personal interview with the head of the industrial arts department of Oregon State College furnished data not covered by the questionnaire.

Definitions of Terms. To assist the reader in understanding the material contained in this study, a glossary of terms follows.

> Manual Training. That phase of industrial training originated to emphasize the importance of making "good workmen" as well as "educated intellects". (3, page 361)
>
> Manual Arts. A change in view following the demand that the "art" and other phases of manual training be developed through having the individual pupils choose and design their own projects. (15, page 4)
>
> Industrial Arts. A phase of general education that concerns itself with the materials, processes and products of manufacture, and with the contribution of those engaged in industry. (10, page 15)
>
> Vocational Education. A generic term whose scope embraces all kinds of vocationally purposeful education such as industrial, homemaking, agricultural, commercial, mining, and so on. (7, page 7).
>
> Adult Education. A means for continuing growth in manipulative skill, intellectually, emotionally, morally, and spiritually, long after evident physical growth has ceased. (16, page 490)
>
> Unit Shop. A unit shop may be defined as one which deals primarily with the tools, processes, materials, and information of a single occupational area. (19, pages 101-102)
>
> General Shop. A general shop is distinguished from a unit shop by the fact that activities in two or more areas are carried on simultaneously. (19, page 108)

The foregoing definitions were quoted from books by leaders in the field of industrial education. Although some disagree in detail, actually all agree generally upon the definitions of each of the terms.

Reviews of Other works of this Nature. Darrell D. Simmons, in 1949, completed a similar study on the status of industrial arts in South Dakota during the school year of 1948-1949. The study was divided into two sections; one for schools having membership in the North Central

Association, and the second for schools accredited only by the state. The groups were compared as to curriculum, enrollment, salaries of teachers, average class size, inventory of shop equipment, and teacher preparation. In addition, information concerning the duties of industrial arts teachers outside of teaching activities, the use of textbooks in classroom instruction, and the use of audio-visual aids, is included.

John L. Trease, in 1951, completed a similar survey on the status of industrial arts in Kansas during the school year of 1950-1951. Professional preparation, teaching load, extra-curricular activities, teaching methods, and salaries of the teachers were considered. Information about the physical plant and the curriculum were also included.

Jerald Alfred Griess, in 1955, completed a study of this type on the status of industrial arts in Nebraska. This study deals with the status of industrial arts in Nebraska with respect to professional preparation, experience, tenure, salary, and special duties of the teacher. Also, the enrollment, subject content, and use of textbooks and field trips of the industrial arts classes, the type, size and location of the shop, the money allotted for and the name of the department, and the enrollment of the school are included.

Delimitations of the Study. This study is limited to industrial arts in Oregon. This survey does not include any type of vocational programs such as: vocational agriculture, home economics, or trade and industrial education. It is basically limited to industrial arts in the secondary level with a brief summarization of the industrial arts teacher training at Oregon State College. No attempt has been made to compare Oregon industrial arts with programs in other states.

It is hoped that the foregoing limitations will suggest topics for further research in the industrial arts field as this study is limited to the status of industrial arts in the public high schools of Oregon.

Plan for Presenting Material. A brief history of the development of industrial arts and the current philosophy of industrial arts on a nation-wide basis as well as the philosophy as proposed by the writer is included in chapter II. Definitions and objectives of industrial arts are also considered.

A discussion of the methods used in research and the presentation of the data concerning the teachers, curricula, and physical facilities of the schools will compose Chapter III. Also, information about the teacher training facilities for industrial arts teachers of Oregon is included in Chapter III.

A summary of the findings, conclusions indicated by the survey, and recommendations concerning problems for further study form Chapter IV.

This study is confined to 257 industrial arts teachers in senior high schools in Oregon as listed by the Oregon Industrial Arts Association, department of the Oregon Education Association. In order that the results of the study might be better understood a history and philosophy of industrial arts and related material will be presented.

CHAPTER II

HISTORY AND PHILOSOPHY OF INDUSTRIAL ARTS

The history of industrial arts education dates back to prehistoric man. The beginning was when the father of the household would teach his son to make the necessary items he needed for the home. It has been developed steadily through the years and with the coming of the Industrial Revolution, there was a great demand for the manual arts training program and many schools were started for this purpose. Although the name industrial arts has been changed and altered, the basic principles and philosophies have remained the same. A brief historical and philosophical background of industrial arts is presented in this chapter so that a better understanding of the development of industrial arts may be had by the reader.

Part A

Early History of Industrial Arts

The education of the primitive people consisted wholly of imitation. They learned the things necessary to provide food, clothing, and shelter, from their elders and were little interested in anything else.

Old Greek Education. The old Greek education had little or no place for definite instruction of a literary character, but was essentially a training process in definite practical activities. The education

of this period, as with all primitive peoples, consisted in that practical training which prepared for the immediate duties of life. Such training was given in the home for providing the necessities of life such as food, clothing and shelter. The remainder of their education was the training received in council, wars, and any expeditions on which they were compelled to go. The education was wholly physical and moral. After the first seven years at home, the boys were placed in a school to be trained to be warriors. While Sparta destroyed the home, Athens aimed at preserving it. The training in Athens was little more than simple training through imitation, but its purpose was to prepare the boys for active citizenship as well as military service. Athens was the first state in the world's history where all human capacities were allowed to develop freely.

Egyptian Culture. Thousands of years went by before the emergence of the first civilization. During these years the conquest of external nature was slowly taking place. First came the domestication of animals and the practice of agriculture. These developments called for man to begin to concentrate on the elaboration of the arts and crafts.

The discovery of copper (4000 BC) and the discovery of iron ushered in the metal age. These very important discoveries brought about the making of better tools, weapons, and instruments. As time went on, the increasing skill in the practice of the arts and the continued growth of knowledge and social adjustments increased the necessity for better education. Skill in the use of the hands was more and more emphasized in the making of useful items. It was here that members of the Egyptian race began to specialize in the different trades such as carpenter work,

ship building, and baking. At first it was a trade handed down from family to family, then young people agreed to work for several years for other individuals to be taught a trade. This was the beginning of apprenticeship. Struck, in his Foundations of Industrial Education, restates a definition of an apprentice taken from Wisconsin Statues of 1917. The definition is:

> The term apprentice shall mean any minor, sixteen years of age or over, who shall enter into any contract of service, expressed or implied, whereby he is to receive from or through his employer, in consideration for his services in whole or in part, instruction in any craft or business. (16, page 2)

Jewish Education. The ancient Jews recognized handiwork as essential to a person's life. Next to the instruction in the law was instruction in some trade or vocation. In the book of Thalmud are found such statements as these: "As it is your duty to teach your son the laws, teach him a trade". "He who does not have his son taught a trade prepares him to be a robber". (2, page 13)

Early European History. In Germany during the 16th century, there were two fundamental ideas adopted upon which modern instruction in manual arts has been built. The first is: sense impressions are the basis of thought and consequently of knowledge. The second is related to the ideas of learning by doing.

The object method of teaching and also the laboratory method soon developed from the first ideas. The value of making something with hand tools in a skillful manner developed from the second idea. Some of the first men of Europe to give guidance in the handicrafts were Francke, Rousseau, Pestalozzi, Fellenberg, and Froebel.

The Francke Institute. In 1694, August Hermann Francke organized a religious school for the poor children. In addition to his religious instruction he gave instruction in several of the manual arts. A teacher who studied under Francke, Johann Julius Hecker, went to Berlin, Germany, in 1747. He established the first non-classical school in Germany.

Rousseau's Philosophy. Jean Jacques Rousseau firmly believed that experience is the best teacher and he would therefore have everything possible taught by action and say only what one could not do. Rousseau's recognition of the fact that the manual arts may be a means of mental training marked the beginning of a new era in education. Rousseau's beliefs were followed closely by Pestalozzi.

The Work of Pestalozzi. Johann Heinrich Pestalozzi has been called the "father of manual training" (2, page 106). Pestalozzi had read of the work of Rousseau and believed in his educational views. He had an intense desire to improve the conditions of the poor children of Switzerland. He wanted to use objects or concrete things in his teaching instead of words and abstractions. Pestalozzi believed that children should learn to work in school, not only for the economic values of skill but because the work experience gives sense-impressions which become the basis of knowledge. His success in the use of objects as a means of teaching the traditional school subjects was realized. Pestalozzi said, "There are two ways of instructing, either we go from words to things or from things to words. Mine is the second method". (2, page 119)

Fellenberg's Institution. Phillip Emanual Von Fellenberg founded his institution in Hofwyl, Switzerland, in 1799. Some of the teachings of Pestalozzi were followed by Fellenberg and the institution influenced the manual arts more than any other educational movement of the early nineteenth century.

Some of the schools of the institution were the Academy Farm and Trade School and the School of Applied Sciences. The Farm and Trade School took care of poor boys. These boys were taught farm work until they were old enough to select a trade. In a school experiment Fellenberg employed mechanics from several trades and gave each a shop. The tradesmen represented were blacksmith, wheelwright, cabinetmaker, carpenter, turner, brass worker, shoemaker, harness-maker, tailor, lithographer, and bookbinder. When the students left the school, they left with high morals, a general education, a trade, and a practical knowledge of farming.

Froebel's Ideals of Self-Activity. Friedrich Wilhelm Augustus Froebel fully accepted Pestalozzi's idea of organic growth and developed it into the doctrine of self-activity which he made the very center of his educational theory. The high place of handwork in Froebel's scheme of education is indicated by the following quotation from The Education of Man. "The young, growing human being should, therefore, be trained early for outer work, for creative and productive activity". (2, page 210)

Sloyd System. The origin of the sloyd system was in the northern countries of Europe among the peasant class of farmers that spent long winter evenings making artistic and useful things for the home. The

Finnish reformer, Cygnaeus, was the originator of the earliest manual training in the school. The subject of handwork was being taught in much the same manner as it was practiced in the home. It was then realized that the student must create ideas of his own.

Later development and improvement of the sloyd system was brought about by Otto Salomon who had learned the views of Cygnaeus. Even though the sloyd system was approved as a whole and was being widespread, Salomon sought to improve it, emphasizing the cultural functions and adopting the work into stages to be graded. The sloyd system was the first to recognize world wide acclaim. Books have been written in many languages to describe the system to the different countries. In discussing the aims of educational sloyd, Bennett stated:

> The Swedish system . . . was worked out by an educator whose primary interest was the enrichment of the education of all children during the elementary school period, recognizing capacities and individual speeds in learning: it was an individual-production system, not a mass-production system of general education. (3, page 67)

Development of Manual Training. Manual training shops began to appear in Paris, France, in 1879, and in 1880 there were twelve opened and operating. This was brought about by a law passed by the government to place manual training programs in the public schools. The National Industrial School was opened in France in 1887 and was soon turned into a vocational school.

Manual training was rapidly moving into all the countries of the world. The importance of knowing tools and their uses was being realized by more and more people. In December, 1848, the School Board of London, England, put into action a plan of teaching mechanics in some of the schools and in 1887 it was extended to all schools of the city.

Part B

The Development in America

Since America was an area of settlers from European countries it was logical that it would inherit many of the practices that were carried on in Europe at the time of her settlement. As these many practices in education began to mingle together, they started to lose their narrow characteristics. Only the essential ones of each were retained and used to form the method of education in America. With this continued mingling, the outcome was a general education more advanced than ever before.

Pre-Colonization Days. In early colonial days of America there were few formal industrial schools for the people. The children would work under an apprenticeship to gain their industrial knowledge. In 1641, the General Court of the Colony of New Plymouth passed an act adapting the English Poor Law of 1601 to the needs of the colony. Under this act a town through its select men would apprentice the children of the poor into families where they could be better brought up and provided for. This care included not only the maintenance but also the education of apprentices.

History in the Nineteenth Century. The Gardiner Lyceum was the first school of Applied Science and Engineering to be opened in America. It was opened in Gardiner, Maine, in 1823. The purpose of the Gardiner Lyceum, as stated in the inaugural address of the principal, was:

> "to give instruction in those branches which are most intimately connected with the arts, and to teach them as the foundation of the arts . . . It is not sufficient for them as for the general scholar, to be taught in the general laws of chemistry; they must be instructed particularly in the chemistry of agriculture and the arts. It is not

> sufficient for them to be able to repeat and to demonstrate a few of the general laws of mechanics; they must be taught the application of the laws. They must be made acquainted with machines". (2, pages 348-9)

The second and most important school of this type was the Rensselaer School at Troy, New York, which grew into the Rensselaer Polytechnic Institute of the present day.

With the passing of the Civil War and the ever increasing advancement of the machine age, free schools came into being and with them came the laws requiring the attendance of the children. As the children came of age and began to leave the free schools, the need arose for schools which were capable of introducing them to several trades so that they could best choose a life's vocation.

It was at this time that Runkle made the recommendation which was responsible for establishing "Mechanics Arts" in the schools of Boston in 1876. Only a little later, in 1880, Woodward introduced manual training in the secondary schools at the Washington University Manual Training School in St. Louis, Missouri.

In 1894, Bennett referred to the movement of manual training as "Manual Arts". Still later, in an editorial of the Manual Training Magazine of October, 1904, Richards suggested that the term of "Industrial Arts" be used, thus its evolution and the use of the term "Industrial Arts". (3, page 453)

The Development of the Sloyd System in America. As good as the Russian system seemed to be, it was not exactly all that America needed. It is true that it served a purpose, but the American youth was not satisfied with tools which did not produce an object of use or beauty

but just offered development of skill in the use of tools. It was this condition that led to the establishment of the sloyd system which was free from the defects that had caused manual training to decline in the public schools. The first sloyd system was established in America in 1888. It was established at Boston, Massachusetts, in a school known as the Sloyd Training School. Gustaf Larsson was the leading champion of the system in America. The different types of schools that were established in Europe were naturally influential in the school systems in America that were, and still are, teaching manual training in industrial arts.

Part C

Current Situations and Philosophies in Industrial Arts

Industial arts, as a phase of general education, has been so engrossed that it has lost sight of its tremendous mission. It has been caught between its humble origin of simple shop work and a soaring technology. Industrial arts, therefore, has a new and profound mission of orienting everyone, especially in regard to the pertinent aspects of production, consumption, and recreation. Its procedures of learning remain the most natural ones because of laboratory activities involved, but industrial arts is no longer a simple subject. Now all people - from young to old - and all phases of the school - from the social to the technical - are stimulated, as never before, to master the implications that industry has brought to this country.

The Field of Industrial Arts. In the field of industrial arts a very wide range of experiences may contribute with equal effectiveness to the desired end. In this field, it is sought to give the youth the

information and experiences which will interest him in industrial life. Also, it enables him to do effectively the things that most boys and men are called upon to do without respect to their vocation. It is by no means necessary to give the pupil training in making the identical things he later may be called upon to make, but it is important that he is given experiences capable of wide application, and the opportunity to develop a habit of orderly procedure and systematic work which will be of value in any line of endeavor. (12, pages 35-36)

Possible Educational Values of Industrial Arts. Close analysis of the needs of individuals, or of the needs of the social groups in which they have membership, will show that industrial arts studies and practices may, and under some circumstances probably do, contribute the following types of educational values: "Prevocational" Training, Vocational Guidance, "Handyman" Avocations, Utilizer's Appreciations, Social Insights, "Training Hand and Eye", and Developmental Experience. (15, Pages 27-36)

Objectives of Industrial Arts. Until the advent of the present industrial arts phase of education, opportunities were not equal for the more than half of our school population who think more readily in terms of concrete experiences than in verbal or abstract terms. The abilities of children to construct, to investigate, to experiment, and to learn, by engaging in activities that are undertaken with satisfaction and success, had been almost wholly neglected.

The following statements of objectives express the desired outcomes of industrial arts in regard to its present philosophy:

1. To provide training in the common skills needed in the use of the hand tools necessary for the upkeep of the house, including the repair of the machines, appliances and equipment usually found in modern homes.

2. To provide training in the designing and construction of various articles which meet a personal or social need realized by the pupils, and which call for the solving of such technical and mechanical problems as will aid in the development of habits of analysis and constructive planning in dealing with mechanical and technical problems.

3. To provide opportunity for the exercise of the normal constructive mechanical tendencies of boys, through the making of useful articles in an orderly manner, by approved, modern methods of mechanical work.

4. To teach the methods of production, transportation and preparation of the raw materials and the processes of manufacture in the basic industries of America.

5. To develop appreciation of good design and construction in the commonly used products of manufacture to the end that the boys may become intelligent consumers of such things.

6. To develop an understanding of the methods of production, transmission and application of power, to the end that the boys may become intelligent consumers of such power, and that they may become able to deal intelligently with the mechanical and economic problems involved in this important factor of modern life.

7. To afford opportunity for the discovery of general mechanical or specific trade aptitudes through work in shops representing the typical trades and industries.

8. To give technical training which prepares in part for the positions in industry and for entrance to engineering colleges. (9, pages 198-200)

The following list of objectives were set up by a committee of industrial arts teachers of Oregon and published in Industrial Arts Handbook for Oregon's Secondary Schools.

1. Adequate knowledge and appreciation of modern industrial processes, products, and procedures through the study of raw materials, primary processes, remanufacture, industrial organization, and industrial relationships.

2. Basic skills with tools and equipment commonly owned by people generally; experimental sampling of industrial operations.

3. Continuing pleasure in creative and constructive work with tools and craft materials.

4. Social experiences in working with others in industry-like surroundings affording opportunities for cooperating, leading, planning, sharing, and taking responsibility.

5. Development of ability to select, use, and maintain the industrial products and equipment of everyday living. (22, page 2)

The objectives of industrial arts, as they apply to the teacher, are not essentially different from those of teachers in other subjects, since general aims of academic subjects are the same as those in industrial arts. Industrial arts should always be conceived and practiced as a phase of general education, but the previously named objectives are those for which industrial arts teachers should assume a large measure of responsibility.

Application of Current Philosophy. The present development of the general shop plan for industrial arts classes seems to more nearly approach the fulfillment of objectives in the industrial arts programs of small schools. The unit type shop has not become obsolete, for nearly all large junior and senior high schools now use individual shops, each teaching a single subject, and those deviating from the practice do so only to a certain point. Still, the student must enroll in a number of different courses to gather "information about, and experiences

in, the basic processes of many industries".

The philosophy of industrial education has changed immensely since the beginning of manual training in America. No doubt, as we progress into an ever greater scientific and mechanical age, the general views and beliefs will undergo changes that cannot be understood today.

CHAPTER III

PRESENT STATUS OF INDUSTRIAL ARTS IN OREGON

Finding the real facts with regard to the existing condition of industrial arts in Oregon was the problem of this study. Since it was not only impractical, but also impossible to see personally each of the teachers of industrial arts, a questionnaire was used to secure the needed information. The answers given to the questions will be presented in this chapter.

Part A

Research Methods Employed

Man has yet to devise the perfect method of searching for truths. The very foundation of his progress may depend upon the efforts expended by him in that direction. The accepted methods of research were used by the writer in approaching and attempting to show the status of industrial arts in the Oregon high schools.

The Inquiry Form. The questionnaire or inquiry form was prepared with the intention of gathering from teachers in the field of industrial arts that information not available from other sources. So that a minimum amount of time would be required to complete the questionnaire, the form was made as brief as possible. The questions were devised for the purpose of gathering data concerning professional preparation of the teachers, teaching load, experience, courses offered in the high schools, teaching methods, the physical plant, and the salaries of teachers.

The questionnaires, accompanied by a letter of explanation and a self-addressed, stamped envelope, were sent to the industrial arts teachers of Oregon.

Methods of Study. For the majority of the information of this study the questionnaire type of the normative-survey technique of research was used. Additional information was obtained from a personal interview with the Department Head of Industrial Arts and Industrial Engineering, Oregon State College, Corvallis, Oregon.

Validity of Results. It is not feasible to expect 100 per cent of the questionnaires to be returned. In order to prove that this study revealed what it is supposed to reveal, some statistics concerning the returns will be presented.

There are thirty-six counties in the State of Oregon. Of these, thirty-five counties were listed as offering industrial arts in at least one public high school. Questionnaires were sent to the industrial arts teachers of the schools in the thirty-six counties and the returns received represented thirty-one, or 88.6 per cent, of these counties. Of the 257 questionnaires mailed, 159, or 61.9 per cent, usable returns were received. The teachers represented 169 high schools with 130, or 76.9 per cent, of these schools returning the questionnaires.

Part B

Industrial Arts Teachers

The success of any phase of the educational program is largely dependent upon the ability of the teacher. Since the growth of industrial arts education has been accompanied by a corresponding increase

in professional standards, the current status of industrial arts may be reflected to a certain extent by the teachers in the field.

Professional Preparation. Teachers indicating that their degrees were in industrial arts were in the minority. Although not a special question, many mentioned that their degrees were in education. Those having a master's degree numbered sixty-one, or 37.7 per cent, of the total of 159 teachers reporting. The number and types of degrees are listed in Table I.

TABLE I

TYPES OF DEGREES HELD

Degree	Frequency
B. S.	69
B. A.	29
M. Ed.	25
M. S.	22
M. A.	14
Total	159

Of the ninty-eight teachers holding a bachelor's degree, fifty-eight, or 59 per cent, were working toward a master's degree. The greater number of these indicated that the advanced degree was in administration. There were sixty-one teachers who had a master's degree and two of them were working toward a doctor's degree.

Oregon State College ranked first among the schools conferring the industrial arts teachers with both bachelor's and master's degrees.

Colorado State College of Education ranked second among those conferring industrial arts teachers with both bachelor's and master's degrees. Represented in conferring degrees were forty-eight different colleges and universities from twenty different states.

TABLE II

SOURCE OF DEGREES

School	Frequency Bachelor's	Frequency Master's
Oregon State	58	38
Colorado State	6	5
Linfield College, Oregon	5	0
University of Idaho	4	3
Montana State	4	1
Dickinson S.T.C., N. Dakota	3	0
College of Idaho	3	0
Eastern Wash. College of Education	3	0
Stout S.T.C., Wisc.	3	1
Washington State	3	1
Northwestern S.T.C., Okla.	3	0
Pacific University, Oregon	3	2
St. Cloud S.T.C., Minn.	2	0
University of Nebraska	2	1
Northern Illinois University	2	0
North Idaho College of Education	2	0
Utah State University	2	0
Peru S.T.C., Nebraska	2	0
University of Minn.	2	1
Kansas S.T.C., Emporia	2	0
Ellendale, N. Dakota	2	0
Iowa State College	2	0
University of Washington	2	0
Kearney S.T.C., Neb.	2	0
University of Oregon	0	3
*Others	19	9
Did not answer	18	1

* Other schools listed once were: Bemidji S.T.C., Minn., Ohio State University, Brigham Young University, Southern Illinois University, Texas School of Technology, University of Illinois, Missouri S.T.C., Bradley University, Ill, Southern Teacher's College, S. Dak., Carson-Newman College, Tenn., Okla. A&M, Minot S.T.C., N. Dak., Parsons College, Iowa, Kansas S.T.C.,

TABLE II (Continued)

Pittsburg, Tulsa University, Okla., Colorado A&M, Northeastern S.T.C., Okla., Bowling Green, Ohio, Panhandle A&M, Okla., Kent State University, Ohio, Eastern Oregon College of Education, Lewis and Clark College, Oregon, Pennsylvania State.

The number of semester hours in industrial arts is listed in Table III. Some of those who listed over fifty hours had received credit hours of the quarter hour basis. Hours of preparation ranged from zero to over one hundred. The majority, fifty-five, or 46 per cent, had from thirty to sixty hours in the field of industrial arts while nine, or 5.6 per cent, had no hours in industrial arts.

TABLE III

HOURS OF PREPARATION IN INDUSTRIAL ARTS

Number of Hours	Frequency
0	9
1 - 9	10
10 - 19	6
20 - 29	7
30 - 39	9
40 - 49	27
50 - 59	28
60 - 69	18
70 - 79	9
80 - 89	6
90 - 99	6
Over 100	8
Did not answer	17
Total	159

Teaching experience and tenure of the teachers may be found in Table IV, page 23. Of the 159 teachers reporting, seven, or 4.4 per cent, were teaching industrial arts for the first time. The majority, 105, or 66 per cent, had ten or less years of experience. Those having

TABLE IV

TEACHING EXPERIENCE AND TENURE

Years of Experience	Frequency Present	Frequency Total
First	18	7
2 - 5	79	39
6 - 10	40	66
11 - 15	16	22
16 - 20	4	13
21 - 30	1	9
Over 30	1	3
Total	159	159

more than fifteen years' experience numbered twenty-five, or 15.7 per cent, of the total. The teachers who are in new positions this year numbered eighteen, or 11.3 per cent, while seventy-nine, or 49.6 per cent, have been in their present position from two to five years. Only six, or 3.7 per cent, have been in their present positions for more than fifteen years.

Special Duties. Since industrial arts is of a practical nature, the teacher and the shop students are called upon many times to do maintenance, repair, and construction work. Teachers required to do maintenance numbered nineteen, or 11.9 per cent, of the total. Some of these did the maintenance during the summer with extra pay. There were a few who did some maintenance but were not required to do so.

Of importance to the teacher is the possibility of summer employment. Thirty, or 18.8 per cent, of the 159 teachers reporting have been

employed by the school during the summer, nineteen reporting that they were employed "sometimes", and six reporting that they could have summer employment "if they desired". The types of employment consisted of maintenance, construction, and related work, with a few working with vocational agriculture programs.

Positions and Salaries. Teachers reporting held a variety of fourteen different positions in addition to industrial arts. The combination of industrial arts and science headed the list, followed by industrial arts and mathematics. The complete list of positions is represented in Table V.

TABLE V

TEACHING POSITIONS HELD

Position	Frequency
Only Industrial Arts	108
Science	28
Mathematics	18
Coach	12
Agriculture	10
History	6
Commerce	4
Visual Aids	4
Principal	4
Vice-Principal	2
Geography	2
Driver Education	2
Councelor	1
Choir	1
English	1

Since the question concerning salary was optional, a total of 148 replied. The salaries ranged from about $3,800 to about $8,200. Of the teachers reporting, forty-five, or thirty per cent, received from

$4,501 to $5,000 per year while thirty-six, or 24.3 per cent, received from $5,001 to $5,500 per year. The higher salaries were paid mostly to teachers on a twelve months basis for maintenance during the summer.

TABLE VI

SALARIES OF TEACHERS

Annual Salary	Frequency
$3,501-$4,000	3
4,001- 4,500	11
4,501- 5,000	45
5,001- 5,500	36
5,501- 6,000	21
6,001- 6,500	19
6,501- 7,000	9
7,001- 8,000	3
Over $8,000	1
Did not answer	11
Total	159

Part C

Curriculum in School

The courses being offered, teaching methods in use, and teaching equipment available, are important factors regarding the educational program of any state. These components are included in the following pages as they apply to industrial arts.

Enrollment of High Schools. The enrollments of the high schools had a large variation. The smallest high school offering industrial arts courses had twenty-seven students in grades nine through twelve with the largest having about 2,400 students. The enrollment of the high schools is shown in Table VII, page 26.

Of the teachers reporting, six, or 3.8 per cent, were teaching

in high schools with under fifty students. The schools with 101 to 200 students numbered twenty-six, or 16.3 per cent, of the teachers reporting. There were eight, or five per cent, of the teachers in schools of over 2,000 students.

TABLE VII

ENROLLMENT OF HIGH SCHOOLS

Number of Students	Frequency of Teachers
Under 50	6
51 - 100	16
101 - 200	26
201 - 300	10
301 - 400	13
401 - 500	6
501 - 750	21
751 - 1,000	5
1,001 - 1,500	21
1,501 - 2,000	11
Over 2,000	8
Did not answer	15
Total	159

Size of Classes. The industrial arts classes ran in size from two to thirty-four students. Table VIII, page 27, shows the frequencies of the class sizes.

There were eighteen , or 2.4 per cent of the classes with from one to five students. The most frequent class size was between sixteen and twenty students which numbered 218, or 30.6 per cent, of the classes. The classes reporting over twenty-five students were mostly mechanical drawing classes. Most of the woodworking classes had twenty or less students.

TABLE VIII

CLASS SIZE

Size	Frequency
1 - 5	18
6 - 10	70
11 - 15	168
16 - 20	218
21 - 25	197
26 - 30	42
31 - 35	3

Industrial Arts Courses. The unit shop type of instruction is employed in the largest number of the school systems. The unit shop applied mostly to the larger high schools, with most of the smaller schools reporting employing a general shop. Of the 130 schools reporting having industrial arts, sixty-three, or 48.4 per cent, used the unit shop, with thirty-nine, or thirty per cent, using the general shop. The remaining twenty-eight, or 21.6 per cent, used the shop as both unit and general.

Woodworking is the most widely taught course in the industrial arts field. Woodworking is taught in ninety-five, or seventy-three per cent, of the schools. Table IX, page 28, lists the courses taught during the school year of 1957-58.

Concerning the question, "Are girls permitted to enroll in shop classes?"

YES	NO
84	75

TABLE IX

INDUSTRIAL ARTS COURSES

Course	Frequency
Woodworking	95
Mechanical Drawing	61
General Shop	53
Crafts	24
General Metal	23
Carpentry	14
Drafting	12
Stagecraft	7
Art Metal	6
Auto Mechanics	3
Photography	3
Boat Building	3
General Mechanics	2
Art	2
*Others	4

* Other subjects listed once: Leather, Home Planning, Radio, and Electronics.

Only 52.8 per cent of the schools permitted girls to enroll in purely shop classes. Several schools indicated drawing courses were open to girls. The following comments further explain existing policies concerning the question.

"Crafts only"
"Yes, but none have"
"Not as co-ed"
"In homecraft, in separate class"
"Drafting only"
"Switch with home economics for nine weeks"
"Not yet"
"No room"

Night classes in adult education were being taught by instructors at forty-seven schools. These classes consisted mostly in general shop and home mechanics with some of them listing crafts as being the chief course taught.

Teaching Methods. Textbooks were used by 123, or 76.7 per cent, of the teachers reporting. The others reported using them for "reference only". Six of the teachers did not use any type of supplementary teaching aids with the remaining 153 reporting that they used some type of teaching aid.

Teachers taking their classes on field trips numbered fifty-one, or thirty-two per cent, of the total reporting. Of the remaining teachers reporting, eighty-three, or fifty-two per cent, do not take them on field trips and twenty-five, or sixteen per cent, reporting "very seldom".

Part D

Industrial Arts Facilities

Since industrial arts is a laboratory course, it requires more facilities than those which are classroom courses. This is one of the reasons why it is a difficult task to begin an industrial arts department.

Department. The names of the departments reported by the teachers were varied. There were eight different names used in referring to the department. For a complete listing see Table X.

TABLE X

NAME OF DEPARTMENT

Name	Frequency
Industrial Arts	121
Shop	23
Manual Training	5
Woodshop	4
Applied Arts	3
Crafts	1

TABLE X (Continued)

Name	Frequency
Industrial Education	1
Manual Arts	1
Total	159

The majority, 121, or 76.1 per cent, of the teachers reporting, taught in a department which is called "industrial arts". Those who taught where the department was called "shop" numbered twenty-three, or 14.4 per cent, of the total. Three teachers listed the department as being a part of the department of "applied arts". Applied arts consisted of the following departments: home economics, drafting, woodworking, metal and automotive, arts and crafts, art, radio, and driver training.

The industrial arts departments beginning before 1910 in Oregon numbered six. There has been a steady increase in the number of departments since this time, as Table XI shows.

TABLE XI

ESTABLISHMENT OF DEPARTMENT

Years of Existence	Frequency
Began this year	1
1 - 5	20
6 - 10	22
11 - 20	20
21 - 30	24
Over 30	25
Unknown	47
Total	159

There was one new industrial arts department established this year. Two of the teachers reported that their department had been on

a "hit and miss" basis for several years.

The majority of the teachers reporting did not require the students to pay a fee other than for materials used. Only fifty-three, or 33.3 per cent, of them required a fee. The fees as listed by the teachers follow:

$1.00 per semester
Breakage fee only
$1.50 for insurance
$1.50 for Shop I; $3.00 for Shop II
$10.00 per year
$5.00 per year
$.50 per nine weeks

Of the 159 teachers reporting, eighty-four, or 52.8 per cent, received a certain amount of money to buy new tools and to repair old ones. Twenty-six, or seventeen per cent, were budgeted to a certain amount and the remainder reported "no certain amount" or "buy as needed".

The size of the shop is very important, as a small shop will limit the type and number of machines, the number of different areas, and the number of students. The smallest shop listed had 400 square feet of floor space, while the largest had 10,500 square feet. The larger ones had more than one room or space allowed for storage, office, finishing, and classroom. Of the teachers reporting, ten, or 6.3 per cent, teach in shops having 1,000 square feet or less of floor space. The largest number, forty-five, or 28.3 per cent, of the teachers reporting are teaching in shops from 2,000 to 3,000 square feet of floor space. A complete listing of the various sizes of the high school shops is shown in Table XII.

TABLE XII

SIZE OF SHOP

Area in square feet	Frequency
Under 1,000	10
1,000 - 1,500	12
1,500 - 2,000	32
2,000 - 3,000	45
3,000 - 4,000	20
4,000 - 5,000	11
Over 5,000	17
Did not answer	12
Total	159

The shops are located in various places at the schools. Some of the variations in the locations of the shops are listed in Table XIII.

TABLE XIII

LOCATION OF SHOP

Location	Frequency
Separate Building	77
Main Building	57
Basement	25
Total	159

Part E

Industrial Arts Teacher Training

Much of the success of the industrial arts teacher depends upon the teacher-training provided by the colleges that offer training in this department. It is therefore important that an adequate teacher-training be administered by all colleges preparing teachers in industrial arts.

Oregon State College. Oregon State College, Corvallis, Oregon, is the only college in Oregon which offers industrial arts courses. The curriculum in the colleges is controlled by the Oregon State System of Higher Education. In order to cut the costs of setting up an industrial arts department in the colleges, industrial arts has been limited to Oregon State College. Oregon State College offers both bachelor's and master's degrees in industrial arts education.

Industrial Arts Instruction. Industrial arts education is a department of the Industrial Engineering and Industrial Arts department. The industrial arts building was constructed in 1908 and since has had additions made to it.

There are fifteen instructors in the Industrial Engineering and Industrial Arts department. Of these, six have master's degrees, eight have bachelor's degrees, and one does not hold a college degree.

Industrial Arts Education Curriculum. For a bachelor's degree in industrial arts education the following curriculum is prescribed for the student:

> Basic technology and related arts, 75 term hours, either wood or metal emphasis with six hours of work in the other emphasis.
>
> Psychology and education, 36 term hours.
>
> Written and oral expression, twelve term hours.
>
> Physical and social sciences, 45 term hours.
>
> Physical education and military science, twelve term hours.
>
> Electives, twelve term hours. (21, pages 269-270)

The situation existing in the public high schools and colleges of

Oregon, regarding industrial arts, is no doubt improving along with other phases of education, but the ultimate goal of achievement has not yet been reached. The information included in this chapter may form the basis for evaluating the program as it now exists. Final conclusions concerning industrial arts in the high schools and colleges of Oregon are included in Chapter IV of this study.

CHAPTER IV

SUMMARY AND RECOMMENDATIONS

The aims of this chapter are to present the factual information contained in the preceding chapter in summary form, to establish conclusions drawn from the data by the writer, and to provide recommendations for the further development and improvement of industrial arts in Oregon.

Summary of Findings. Industrial arts was being offered in at least one public high school in thirty-five of Oregon's thirty-six counties. The returns received represented thirty-one, or 88.6 per cent, of these counties. Since the normative-survey method of study was employed, 257 questionnaires were sent to industrial arts teachers in the state, and 159, or 61.9 per cent, brought usable returns.

Because of the importance of the instructor in any class, much emphasis was placed upon the professional preparation, special duties, positions, and salaries of the teacher. The percentage of the teachers who had a master's degree was 37.7 per cent of the 159 teachers reporting; and fifty-nine per cent of those having a bachelor's degree were working toward a master's degree. The reporting teachers had attended forty-eight different colleges and universities from twenty different states. More teachers received bachelor's and master's degrees from Oregon State College than from any other institution. Forty-six per cent of the teachers reporting had from thirty to sixty hours

in the field of industrial arts while 5.6 per cent had no hours in industrial arts. Of the reporting teachers, 4.4 per cent were teaching industrial arts for the first time. The majority, sixty-six per cent, had ten years or less of teaching experience. Seventy-nine, or 49.6 per cent, of the teachers reporting had been in their present position five years or less.

Many times it becomes necessary for the teacher and the shop students to do maintenance and construction work. The teachers reporting that were required to do this type of work numbered nineteen, or 11.9 per cent, of the total. Thirty, or 18.8 per cent, of the teachers reporting were employed by the school during the summer months. The types of employment consisted of maintenance, construction, and related work, with a few working with vocational agriculture programs.

The teachers reporting held a variety of fourteen different positions in conjunction with industrial arts. The other fields represented included science, mathematics, physical education, and agriculture.

Since the question concerning salary was optional, a total of 148 replied. The salaries ranged from about $3,800 to about $8,200. Of the teachers reporting, thirty per cent earned between $4,501 and $5,000 per year while 24.3 per cent received from $5,001 to $5,500 annually.

The class was also studied in this survey. The enrollment, subject content, and use of textbooks and field trips, were analyzed. Schools offering industrial arts varied in size from twenty-seven to 2,400 pupils. The largest percentage of teachers taught in schools having

an enrollment of 200 and under. Class sizes ranged from two to thirty-four students. The most frequent class size was from sixteen to twenty students. Eighty-four, or 52.8 per cent, of the teachers stated that girls were allowed to enroll in industrial arts classes.

The term industrial arts has a very broad scope. Subjects taught by the industrial arts teachers reporting ranged from woodworking to radio and electronics. Eighteen subjects were listed, headed by woodworking and mechanical drawing. Classes in adult education were taught in 37.7 per cent of the schools reporting.

Frequently textbooks were used as the basic source of information. Textbooks were used by 76.7 per cent of the teachers. The other teachers reported using them as references along with other supplementary teaching aids. Field trips were used by forty-eight per cent of the teachers reporting.

"Industrial Arts" was one of eight names given to the department. It was, however, the name used by the majority, or 76.1 per cent. There has been a steady increase in the number of departments established since about 1920. There were six departments established prior to 1910 and one new department established this year. One-third of the teachers reporting were allotted a certain amount to repair old tools and buy new ones.

Some of the teachers reported that their shops were "too small" and others reported "very adequate shops". This can be shown by the variation of the shop sizes. The smallest shop reported has 400 square feet of floor space while the largest has 10,500 square feet of floor space. The majority, 48.4 per cent, of the shops are located in separate

buildings while 35.9 per cent are located in the main school building with 15.7 per cent in basements.

Due to the high cost of setting up an industrial arts department in the colleges, industrial arts has been limited to one college. Both master's and bachelor's degrees in industrial arts education are offered in the curriculum.

Conclusions Indicated by the Study. It was indicated that, generally, the teachers feel that a master's degree is desirable. Most of the degrees were received from Oregon colleges even though there are a large number of colleges represented.

Summer employment is very important to the teacher who is paid on a nine months' basis. Little, if any, summer employment is made available by the schools to the industrial arts teachers of Oregon.

The Oregon high schools seem to offer about the same subjects in industrial arts. The majority of them offer woodworking and mechanical drawing with some of the larger schools offering more variety in subjects. The size of the classes seemed to have some limitation as to the number of students that could enroll in them.

Girls have not been encouraged to enroll in industrial arts classes. In many places they are not permitted to enroll. In other places they are permitted only in specified subjects.

A clear concept of industrial arts seemed to be lacking in the minds of the people in general. This was emphasized by the fact that some departments are still called "shop" or "manual training". The shops, in general, are fairly well equipped with tools and equipment.

Recommendations. A similar study conducted after a period of several years would be of value in determining the progress in industrial arts in Oregon.

A stronger and ever-active industrial arts association with more emphasis upon student association affiliations, association newsletters, clinics, and teacher directories, could be of great professional value. There should be some methods devised to help promote the industrial arts programs in the high schools.

The establishment of definite requirements for the certification of industrial arts teachers would be desirable. This would do away with the problem of teachers teaching industrial arts without any preparation in the field.

Greater use of the general shop plan, at least in the smaller schools, would increase the scope of industrial arts courses in the high schools. To introduce the students, both boys and girls, to a variety of basic processes involved in different materials of industry, the general shop would seem to be the logical solution.

Industrial arts is offered in only one college in Oregon. There are thirteen other colleges that do not have industrial arts included in their curricula. The industrial arts program could be helped by offering the courses in some of these other colleges.

Although the problems of industrial arts in Oregon have not been solved, it is hoped by the writer that a light might be cast upon them through this study. A comparison of the status of industrial arts in other states was not attempted in this study but it could be beneficial.

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APPENDICES

A. Letter of Transmittal

B. Questionnaire

APPENDIX A

Jewell, Oregon
March 12, 1958

Dear Sir:

I am endeavoring to collect data for a graduate report entitled "Industrial Arts in the Public High Schools of Oregon, 1957-1958". I am doing my graduate study at Oklahoma State University under the guidance of Mr. L. H. Bengtson, Associate Professor, School of Industrial Arts Education. The data received from the enclosed questionnaire will be used in my report which is a partial fulfillment of the requirements for a Master's Degree. I plan on completing this study during the summer session of 1958.

Your co-operation and prompt response will be appreciated. Enclosed is a self-addressed envelope for your convenience. Should you desire a summary of this information when compiled, please indicate on the questionnaire.

All information will be kept confidential. Your name will not be used in the survey unless permission is granted by you. I would like very much to have a reply from every teacher.

Sincerely,

Charley O. Francis

APPENDIX B

QUESTIONNAIRE

PLEASE PRINT

Directions: Please fill in the blanks below as they apply to your school.

1. Reported by _____ Position _____

   Name of School _____ City _____ Oregon

   Elementary _____ Junior High _____ Senior High _____

   Junior College _____

2. High School enrollment (grades 9-12) _____

3. Please fill in the blanks to indicate your daily teaching (include all classes). Be specific, i.e., Woodworking, bench metal, etc.

Period	Grade	Subjects Taught	No. of pupils	
			Boys	Girls
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

4. How many college hours do you have in Industrial Arts? _____

5. What college degrees do you have and where did you earn them?

   _____

6. Are you working toward a degree at the present time? _____

   Type of Degree _____

7. How many years have you been teaching Industrial Arts? _____

8. How many years have you been in your present position? _____

9. Are you required to do maintenance work for the school? _____

10. When was Industrial Arts started in your school? _____

11. Do you teach adult Industrial Arts classes? _____

12. Are you employed by the school during the summer? _____

13. How does your school refer to your department? (Industrial Arts, Manual Training, etc.) _____

14. Are girls permitted to enroll in Industrial Arts? _____

15. Do you use textbooks in your classes? _____

16. What is your annual salary? (Optional) _____

17. Is Industrial Arts in your school organized as a unit shop, general shop, or both? _____

18. Do you take your classes on field trips? _____

19. Do you use any supplementary teaching aids? _____

20. Are you allowed a certain amount per year to buy new tools and repair old ones? _____

21. Do your students have to pay a fee other than for the cost of materials? If so, how much? _____

22. Where is your shop located? Main building? _____

    Separate building? _____ Basement? _____

23. What is the size of your shop? Length? _____ Width? _____

COMMENTS:

VITA

CHARLEY OSCAR FRANCIS

Candidate for the Master of Science Degree

Report: INDUSTRIAL ARTS IN THE PUBLIC HIGH SCHOOLS OF OREGON, 1957-1958

Major Field: Industrial Arts Education

Biographical:

Personal data: Born in Plainview, Texas, July 15, 1929, the son of H. D. and Julia Francis.

Education: Attended grade school at North Elm, near Erick, and Elk City, Oklahoma; graduated from Elk City High School in May, 1947; received the Bachelor of Science degree from Panhandle Agricultural and Mechanical College, with a major in Industrial Arts Education, in July, 1955; completed requirements for the Master of Science degree at Oklahoma State University in August, 1958.

Professional experience: Entered the United States Army in March, 1951; served twenty-three months active duty; honorably discharged January, 1953; taught one year at Canute, Oklahoma; taught one year at Reydon, Oklahoma; taught one year at Jewell, Oregon.

Organizations: Iota Lambda Sigma.

REPORT TITLE: INDUSTRIAL ARTS IN THE PUBLIC HIGH SCHOOLS OF OREGON, 1957-1958

AUTHOR: Charley O. Francis

REPORT ADVISOR: L. H. Bengtson

The content and form have been checked and approved by the author and the report advisor. Changes or corrections in the report are not made by the Graduate School Office or by any committee. The copies are sent to the bindery just as they are approved by the author and faculty advisor.

TYPIST: Rose Chamberlain