STATUS OF INDUSTRIAL ARTS IN OKLAHOMA SCHOOLS FOR 1938
AND SUGGESTED STATEMENTS FOR CONTROLLING PHILOSOPHY
FOR INDUSTRIAL ARTS
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AND SUGGESTED STATEMENTS OF CONTROLLING PHILOSOPHY

FOR INDUSTRIAL ARTS

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Dean of School of Engineering

Dean of Graduate School
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E.B.P.
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CHAPTER I

THE SCOPE AND ORGANIZATION OF THE STUDY

In spite of the fact that the home, industry, and social factors have played a most important part in our national life, it is only within the past few years that instruction is being given an amount of interest at all equal to the social demands. New ideas regarding the aims and purposes of education are today bringing about long needed changes in subject matter and in the method of presentation, while school courses are being reconstructed that they may more effectively meet the demands made upon them from the outside world.

President Roosevelt's Advisory Committee on Education made the following statement in their report. (2 page 98)

The failure of the secondary school to hold its pupils can be ascribed for the most part to two major causes, one of which is economic and the other is curricular... The curricular cause consists simply in the failure of the school to provide a course of study that retains the interest of the pupil, or that appeals to him as at all useful or appropriate. The schools are not responsible for the loss of pupils through economic circumstances beyond their control, but they must accept a large measure of responsibility for an unsatisfactory curriculum.

A large amount of material in regard to industry, with which all men should be familiar, has been and is being collected, organized, and evaluated, into a new and vital part of the school program. The material is a cultural study with emphasis upon the how and why, instead of manipulative processes only. The making in school of electric motors, leather projects, or printed forms may be regarded as good exercises, but the amount of benefit derived from such activities, is not to be compared to that amount of information connected with a study of the industries they represent. Instruction in the industries will create in youths an interest and a knowledge of the things industrial, to enlarge their appreciation of products, and enjoy the work of artists, mechanics, or manufacturers. Such an ability will be brought about by investigating the conditions under which products are made; by making
drawings to illustrate forms, facts, and operations, thus clarifying industrial concepts; by working with the materials from which these products are made, therefore creating a new product; and by making decorative design to improve the beauty of the projects.

A great deal of progress has been made in industrial arts since this type of program was first introduced in America through the indirect influences of the teaching of Pestolozzi and Froebel. Manual training was first introduced about 1876 when J. D. Runkle, of Massachusetts Institute of Technology, and C. M. Woodward of the Saint Louis Manual Training School, recommended this type of training in schools of America. Exercises in wood and drawing were used for formal discipline and to develop a high degree of skill in manipulation.

The second step of progress in industrial education was taken about 1894 when Bennett, Salomon, and Griffith introduced a new conception which they named "manual arts". This newer training used a variety of materials such as: printing, plastics, textile, mechanical, and bookmaking. These were introduced to develop skill only on the crafts basis.

About twenty years later, in 1910, Bonser, Dewey, and Bigelow introduced a still newer, and more inclusive term, "industrial arts", which was brought about by the influence of industry. This new idea was to keep all that was good in the manual arts, with new ideas and concepts introduced into the program of training. The demand for diversity was prevalent rather than a specialization of skills in manipulative activity. The introduction of many materials with many experiences in the methods of production and related information were to be desired.

This newer idea was introduced by an early definition of Bonser and Mossman. (4 page 5)

As a subject for educative purposes, industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes.

With the rapid changes in products of industry, the many new inventions,
and newer methods of merchandising, each new generation will be faced with more problems than the one preceding.

C. E. Vance, superintendent of schools in Danville, Illinois, in a paper presented at a group meeting of the American Association of School Administrators of the National Education Association has the following to say in regard to the rapid changes in industry. (23 page 23)

Then too, each person is a consumer. In this age of high pressure advertising and salesmanship, a knowledge of materials, design, and construction should be a part of his equipment as a protection against false or extravagant claims. A class in architectural drawing can learn how to plan a house without going very far into the matter of what constitutes a good structure unless the teacher takes them rather far afield in the study of materials, construction, design, and other related information. The writer knows of many who have been cheated in the purchase of a house because they look no farther than the surface of the wall.

More people who pass through our industrial arts course will be consumers of goods and service than will be producers of goods. That fact would seem to give the clue as to where the emphasis should be placed in our instruction.

Division of the Study. This study is divided into two parts. The first part is an attempt to establish basic principles or statements of philosophy for industrial arts in Oklahoma schools.

The second part is a study of the status of industrial arts in Oklahoma Schools for the year 1937-38.

Purpose of the Study. The first part of the study was made to help guide the State Advisory Committee for Industrial Arts in Oklahoma Schools, in formulating and making recommendations for the basic principles and philosophy of industrial arts in Oklahoma.

The second part is to determine what is being done in the industrial arts in Oklahoma schools at the present. A comparison is made, in part, to the status of industrial arts in Oklahoma in 1931, (6) and in 1934 (18).

Need for this Study. What the basic principles, philosophy, and objectives of industrial arts should be, is a question of concern to the leaders in industrial education. An attempt has been made in this part of the study to determine what philosophy and objectives would be acceptable by the majority of educational leaders in Oklahoma. A study of the status of industrial arts
is needed to determine what is being done in this field so that recommendations for changes or further progress may be made. The study will also give a basis on which teacher training institutions may build their curriculum.

**Studies of Similar Nature.** In 1931, M.A. Franklin (6) conducted a survey to obtain information which would be of benefit in evaluating the teacher training program, and to aid in making adjustments to better prepare teachers to meet the conditions that exist. His study determined the school enrollment, the number of industrial arts teachers, the enrollment in industrial arts subjects by grades, the course activities offered, number of schools in which courses in industrial arts were offered, the number of years each teacher had been in the position that he held, the range of salaries, where industrial arts teachers had received their training, the number of years of teaching experience of the various teachers, teaching combinations of industrial arts teachers, the amount of training of each teacher, and a large amount of information in regard to the various teacher training institutions in existence at that time.

Another study that is similar to this, was made by Tearl Singleterry in 1934, (18) which was a survey to determine what subjects were taught, in what grades industrial arts were taught, what industrial arts units were offered, the size of the classes, the length of periods, the number of hours per week industrial arts was taught, the size of schools, amount of training completed by teachers, number of years of teaching experience held by each teacher, and the approximate cost of the shop equipment.

These are the only studies, to date, that have been completed in Oklahoma related, in nature, to this study.

**Expected Uses of the Study.** It is expected that the study will be used by the State Advisory Committee for Industrial Arts in Oklahoma Schools, as a foundation for making recommendations for the furtherance of industrial arts; that the latter part of the study may also be used by this committee, and be of help to the state teacher training institutions. There is also a satisfaction in knowing that progress is being made in the industrial arts program.
CHAPTER II
PROPOSED STATEMENTS OF CONTROLLING PHILOSOPHY FOR
INDUSTRIAL ARTS IN OKLAHOMA SCHOOLS

One of the accomplishments of the Industrial Arts group at the state meeting of the Oklahoma Education Association in Tulsa in 1937, was the formation of a State Advisory Committee for Industrial Arts in Oklahoma Schools. This committee was organized for the purpose of making studies of the various problems with which teachers of industrial arts are faced, and to make recommendations for the solution of these problems. The general committee was divided into several sub-committees to study each of the several problems. One of these committees was assigned the problem of studying and making certain recommendations on the objectives and philosophies of industrial arts. The information that has been gathered for this part of this thesis, has been due to the efforts of this committee.

Origin of the Problem. The committee on objectives and philosophy decided to formulate a tentative statement of objectives and philosophy, which was to be presented to a larger group for their approval or disapproval. The task of making this study was rather large for any one member of this committee to undertake, because of the time and expense. As a result of this need, this thesis was derived. The study of this problem seems to be a timely one and well worth the effort that has been expended.

Formation of the Statements. The statements as they were presented to the jury for reaction were derived from the list of tentative statements that had been set up by the committee. These statements were discussed at the state meeting in Oklahoma City of the Oklahoma Education Association in 1938 by O. B. Badger of the Tulsa public school system. The statements that were discussed at this meeting were reorganized with several changes being made in the form in which the statements were written so that they might be checked in a simple way. One of the definitions was entirely rewritten, and several
more were altered to include some ideas that had been advanced. These changes were then approved by the committee before they were incorporated in the new statements that were to be presented to the jury.

**Jury Selection.** It was decided by the committee that the statements should be checked by two groups, one to be composed of not less than fifty superintendents of schools and the other to be not less than fifty leaders of industrial education in Oklahoma. This necessitated two sources from which to select the mailing list. The bulletin from the Oklahoma State Department of Education, listing all of the schools, superintendents, and principles of the schools was used for the selection of the names of the superintendents. A rapid survey of the names in the bulletin, with a check mark by the names of the schools that offer some type of industrial training, led to the selection of the members for this part of the jury. From this list sixty-five names of superintendents were chosen, representing schools that are rather evenly distributed geographically and from the large to the small school. The object was to get a very general cross-section of the schools of the state.

The mailing list for the part of the jury representing the industrial leaders of the State of Oklahoma was selected from the State Directory of Industrial Teachers. This directory is published each year through the efforts of the Industrial Arts Education and Trade and Industrial Education Departments of Oklahoma Agricultural and Mechanical College. It lists the towns of the state in an alphabetical order, the enrollment of the high school, the names of the teachers, the kind of work taught, and the name of the school in which the industrial training is given. Sixty-five names were selected as being those of men who are considered leaders in industrial education and who would possibly be willing and interested in furthering a study of this type.

**Letter of Transmittal.** DeWitt Hunt, Chairman of the State Advisory Committee for Industrial Arts in Oklahoma Schools, kindly consented to write the letter of transmittal to the selected jurymen. The letter, which follows, was mimeographed on the regular letterhead stationery of the Department of Industrial
Arts Education and Engineering Shopwork of Oklahoma Agricultural and Mechanical College.

OKLAHOMA

AGRICULTURAL AND MECHANICAL COLLEGE

DIVISION OF ENGINEERING

Stillwater

Department of
Industrial Arts Education
and Engineering Shopwork

April 11, 1938

To a Selected Jury of Sixty-five Superintendents
of Schools and Sixty-five Industrial Arts
Teachers in Oklahoma Schools

Gentlemen:

At the request of the State Advisory Committee for Industrial Arts in Oklahoma Schools, Mr. Eugene Pope, who is writing a thesis on the status of Industrial Arts in Oklahoma is including in his study an attempt to establish basic principles or statements of philosophy for our guidance. In order to do this, he is asking you to read carefully the enclosed list of statements concerning Industrial Arts and to note on this list your agreement or disagreement with these statements.

In general, these statements were prepared by a sub-committee of the State Advisory Committee. In order to validate these statements, we believe that their careful examination by a select jury of school superintendents plus an agreement from leading teachers of Industrial Arts, would be necessary.

We have selected sixty-five superintendents and sixty-five shop teachers for the jury. May I urge you to read these statements and to vote "Yes" if you agree with them and to vote "No" if you disagree and state your point of disagreement.

The real place of Industrial Arts in the program of secondary education in Oklahoma will be determined more truly and more objectively by this approach. May I urge you to return the questionnaire to Mr. Pope in the self-addressed and stamped envelop which is enclosed.

Yours very sincerely,

DeWitt Hunt
Chairman, State Advisory Committee
For Industrial Arts in Oklahoma Schools
Technique for Collecting The Information. (The information for the study of this problem was secured by the use of a questionnaire statement form.) The statements are made in such a way that they may be answered with a "Yes", if the person is in agreement with the statement, or with a "No" if he is in disagreement with it. When there was a disagreement, the person questioned was asked to state his point of objection on the margin. A statement of the industrial activities that are of importance to the community was given so that it could be ranked according to its importance to the community in question. A list of objectives for industrial arts was given the person checking the statements. Each person was asked to mark those of major importance with a double check mark and those of lesser importance with a single check mark.

It appears that the questionnaire method is very much frowned upon by some of the leaders in research, but all do agree that it has its place if it is properly used. Crawford (5 page 177) states in regard to the questionnaire technique in research:

According to some people, the most important piece of advice about questionnaire technique would be to avoid it entirely. It is quite true that it has been seriously and frequently abused, and that its use by untrained and uncritical workers has brought it into general disfavor. It should not be used as a lazy substitute for other methods, nor to collect facts that are available in print or in official records which are reasonably accessible.

The information desired from this questionnaire could not be collected very easily by any other method. This fact seems to justify the method of attack that has been used. Schluter (14 page 84) has this to say about the questionnaire technique:

The questionnaire is often a useful, but also a much abused, method of collecting data. ——— The importance of the questionnaire letter must not be underestimated and, therefore, should be carefully composed.

It is indeed hoped that the use of the questionnaire method in this study has not degraded it to any further extent.
The Statements as Presented to the Jury. In regard to the trends concerning philosophy and objectives of industrial arts, Arthur B. Mays has made these statements. (10 page 116)

-- the most significant trend in recent books for teachers and other students of industrial arts education is the disposition critically to reexamine the whole philosophy of industrial arts and to devise means of reconstructing both the instructional materials and the methods of teaching.---------

A most striking outcome of the new trend is a persistent reexamination and restatement of objectives. The rather general and idealistic purposes expressed in earlier books are giving way to statements of aims which are thought to be objective, measurable by exact means, and somewhat more in keeping with the economic and social philosophy which has dominated national thought in recent years. As a result some very careful thinking has been done with reference to the place, the purposes, and the methods of industrial arts.

A copy of the statements as presented to the jury is presented at this point so that the form and content may be noted.

STATEMENTS OF CONTROLLING PHILOSOPHY FOR INDUSTRIAL ARTS IN OKLAHOMA SCHOOLS

Directions for answering this inquiry:

Please write "Yes" or "No" on the line after each number indicating whether you agree or disagree with the statement in the list. In case you disagree will you write on the margin your points of disagreement.

Basic Concepts

1. _____ Industrial Arts is the term used to refer to all kinds of shopwork and industrial drawing given in junior high schools for general education and guidance purposes and in senior high schools for further general education and preliminary vocational education preparation.

2. _____ The term Industrial Arts should be used to describe shop and industrial drawing courses, displacing the term Manual Training. (Manual Training as a phrase was used to describe shopwork from 1900 to 1915. The work was formalized, it consisted of many exercises, and its value was based on the doctrine of formal discipline.)

3. _____ Industrial Arts consists of studies of the methods and processes of changing the form and uses of natural materials to make them more valuable and pleasing to man. It includes knowledge and understanding of the raw materials together with practices in working changes in these materials.
4. Many experiences with and much knowledge about industrial products, materials, equipment, and processes are the primary objectives of Industrial Arts, with manipulative skill being a secondary objective.

5. Industrial Education as a term includes all shopwork instruction as well as courses directly related to shopwork, taught in secondary schools for any purpose whatsoever: Vocational, general education, avocational, etc.

Types of Shops in High School or Junior High School

6. Where the school is large enough to maintain them, unit shops, i.e., single-subject shops of a comprehensive type are desirable. Thus a shop representing woodworking trades alone, one for the electrical trades alone, all units of the printing trades, etc., would be more desirable and more easily organized and conducted.

7. Where only two teachers are available, two diversified shops should be organized.

8. It is also possible to plan one large general shop with two teachers in one room conducting two classes of twenty to twenty-four pupils each at the same time.

9. In the school where only one teacher can be employed, a broadly diversified type of shop is recommended. This shop would provide for from six to nine types of work, including twice as many work stations as there are pupils in the course. The program of activity would require the teaching of only three to five of these at one time.

10. In general, the high school pupil as well as the junior high school pupil should have an opportunity to work in two or three major industrial areas, such as woodworking, industrial drawing, electrical work, printing, metal work, etc.

Industrial Arts in the Junior High School

11. All boys in junior high school should be required to take four semesters of work in Industrial Arts. This work should be offered in the seventh and eighth grades when boys are most interested in a variety of activities, and when the creative urge is highest.

12. A wide variety of industrial activities should be provided in the junior high school.

13. Some of the industrial activities that are of extreme importance and interest to boys in Oklahoma are: (Number these in order of importance)

Woodworking, woodturning, jig saw work.

Industrial Drawing.

Electrical Work.

Ornamental Iron

Sheet Metal Work
Art Leather Work.
---
Art Copper Work.
---
Foundry.

14. Basic courses of woodworking and industrial drawing should be provided, approximately one semester of each being required of pupils in the junior high school.

15. Shorter units of work should be offered in the junior high school. Such as six or nine weeks of electrical work, iron work, one or more of the arts crafts type of work, etc.

Objectives

16. The following educational outcomes would be of assistance in justifying the requirement of Industrial Arts for all junior high school boys. (Indicate with one check mark if important and with two check marks if very important)

He learns systematic methods of attacking practical problems and develops good habits of problem solving.
He learns to apply theoretical knowledge to concrete situations.
He learns to work in cooperation with other boys and with his teacher.
He becomes a more intelligent consumer of materials, processes, and products of industry. Wise purchase, use and maintenance of these products is facilitated.
He learns about basic materials and fundamental processes and products of modern industry.
He learns many valuable facts and achieves many abilities which will function directly or indirectly in an avocational activity.
He is better able to care for, operate, and repair the mechanical devices in the home.
He learns to make and read industrial drawings, blueprints, and is able to follow directions included in a drawing.
He develops safety consciousness and attitudes of carefulness in carrying out dangerous activities.
He experiences work characteristics of several mechanical occupations and discovers his likes or dislikes of manipulative activities.
He subconsciously makes decisions about the choice of an occupation or at least decides against certain ones.
He develops habits of orderliness and neatness which function in everyday life.
He develops muscular coordination.
Skill in the use of tools develops attitudes of exactness and carefulness.
Vocational training of varying degrees may result, increasing almost in proportion to the amount and extent of shop courses taken.
The interests of the boy are provided with an outlet.
Health values are apparent in the opportunity provided for physical activity.
Industrial Arts in the Senior High School

17. One year of either shop work or industrial drawing, or both, should be required of each boy in the high school, and two units should be accepted on any diploma in the standard high school in Oklahoma.

18. Unit courses are to be preferred in the high school. To complete a unit course, the boy must spend five hours per week for a full semester in one type of work, such as woodworking, architectural drafting, electrical work, etc., for which course the school must be accredited.

19. Two or three unit courses may be taught simultaneously in one shop and by one teacher where the school has small enrollment. Adequate facilities must be provided for accrediting the work.

20. The well planned high school Industrial Arts Department will not be confined to woodworking alone, but will offer substantial work of at least one unit of credit in several units of industry, such as printing, metal work, machine or architectural drafting, electrical work, auto mechanics, etc.

21. Where extensive shops are available or where a satisfactory diversified shop is available a four year curriculum known as the Industrial Arts Curriculum should be provided to parallel the Commercial, Home Economics, Agricultural, or General Education curricula. This would include science and mathematics and would permit six units of work in shop and industrial drawing courses. Boys completing this curriculum can enter to advantage either technical courses in college or industrial occupations. This implies an increasing vocational objective as more time is spent in Industrial Arts courses.

22. Teachers of high school industrial arts should not be required to accept coaching duties.

23. The definition of a Standard High School in Oklahoma should be set up by the State Department of Education. The definition of a Standard High School should require that at least two units of work in Industrial Arts shall be offered.

Extent of the Responses. Out of the total of one hundred thirty questionnaires mailed, there was a total of eighty-five returned with the statements checked so that they could be tabulated. Two of the questionnaires were returned by the same man, who had also checked both of them, necessitating the rejection of one of them. One other was returned with the statement that since the school offered only a small amount of industrial drawing he did not feel that he could help by answering the request. This made a total of eighty-seven returned, which is 66.92 percent.
Table I gives the tabulation returns of the votes that were cast for the various statements. Column one gives the numbers of the statements as they were presented to the jury. Column two gives the votes of those that were in agreement with the statements, column three the disagreement, and column four the number that did not reply or questioned its content. It will be noted that statements one and six had only one dissenting vote, while numbers twenty and twenty-one had only two, and number three had only three disagreements. Statement number eight, in regard to having two teachers in one large general shop, received the most negative votes, there being forty-five in favor and thirty-nine
opposed to it. The other results may be noted on the table.

Table III, page 29, gives the rank of the importance of the industrial activities that were suggested in statement thirteen. Column one indicates the activities in the order of their preference, while column two gives the total number of scores for each. The numbers in this column are the total of the rank as given by the jury. First place was given a value of one, second two, etc. This will cause the smaller numbers to represent the activities of first choice. When there was only a partial list given, the remainder of the activities were given the same value, nine, since there were nine of these in all. It will be noted from the table that woodworking and mechanical drawing are still the favorites.

**TABLE II**

**TABULATION OF VOTES ON OBJECTIVES**

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<td>15</td>
<td>87</td>
</tr>
<tr>
<td>17</td>
<td>69</td>
</tr>
</tbody>
</table>

Table II shows the order in which the jury thought the objectives were most important. Column one represents the number of the objective as given on the questionnaire, the numbers in column two represent the number of votes for each one. When two checks were placed by the statement, the recorded value
was two, for one check mark, a value of one was recorded, and for those that were not checked no numerical value was given. It will be noted that number one retained first place, with number three second and number seven third. It will also be noted that number seventeen remained last while sixteen moved to fifth place.

**Personal Statements Regarding the Questionnaire.** There was no criticism offered on the questionnaire as a whole, but there were a few who did not understand exactly what was meant by some of the statements. This was perhaps due to the fact that they had not been so closely connected with this type program as some of the others. That was probably the case with those who did not make a reply to some of the statements.

In addition to those few criticisms there were several very favorable comments made on the statements. One man wrote as follows:

"I am very happy to have had the opportunity to help advance our Industrial Arts program. I have not marked most of the statements "Yes" merely to be agreeable, but rather, I have been quite interested in this development for some time."

Another of the superintendents wrote as follows:

"I think the questionnaire is a good one. It is a little difficult to answer intelligently unless one had been thinking along the line of industrial education. I may be disagreeing without all the facts in mind that the committee had when making the statements."

There were other statements made, saying that they were glad to be of assistance. These comments were indeed appreciated, for it makes one feel that the efforts have not been cast to the winds in vain attempts, and that as a whole the teachers in Oklahoma are doing some thinking along the line of reconstruction.
CHAPTER III
FINDINGS FOR THE STATEMENTS OF
PHILOSOPHIES AND OBJECTIVES

In order to establish the basic principles and statements of philosophy for guidance in the furtherance of the industrial arts work, a discussion of each of the statements will, no doubt, be of value and interest. Each of the statements has a great deal more material contained in it than can be presented in a study of this type; therefore, a short resume of each of the statements will help to solve the problems. It is with this fact in mind that the following statements are discussed briefly.

BASIC CONCEPTS

1. INDUSTRIAL ARTS IS THE TERM USED TO REFER TO ALL KINDS OF SHOPWORK AND INDUSTRIAL DRAWING GIVEN IN THE JUNIOR HIGH SCHOOLS FOR GENERAL EDUCATION AND GUIDANCE PURPOSES AND IN THE SENIOR HIGH SCHOOLS FOR FURTHER GENERAL EDUCATION AND PRELIMINARY VOCATIONAL EDUCATION PREPARATION.

This statement in regard to the definition of industrial arts assumes that the portion of the industrial arts program which appears in the junior high school is for the purpose of finding one's likes or dislikes, if possible, and also furthering the general education by broadening the ideas, concepts, and experiences of the pupil. It is assumed that the industrial arts program for the junior high school should be of great deal of benefit as a means for guidance, whether it be vocational or educational. The varied experiences should at least guide the pupil in determining whether he likes or dislikes a certain type of work.

The work in high school should develop these activities to a greater degree. If the activities are developed to the point where they are becoming
more than vocational or educational guidance, then they may become preliminary vocational education. This would indeed be true if the person should follow the line of work into industry.

This definition was accepted by the jurymen for the survey as being representative of the industrial arts. There were eighty-four in favor of the definition as it was stated with only one dissenting vote. The person who cast the vote disagreeing with the statement gave no reason for his disagreement.

2. THE TERM INDUSTRIAL ARTS SHOULD BE USED TO DESCRIBE SHOP AND INDUSTRIAL DRAWING COURSES, DISPLACING THE TERM "MANUAL TRAINING". (MANUAL TRAINING AS A PHRASE WAS USED TO DESCRIBE SHOPWORK FROM 1900 TO 1915. THE WORK WAS FORMALIZED, IT CONSISTED OF MANY EXERCISES, AND ITS VALUE WAS BASED ON THE DOCTRINE OF FORMAL DISCIPLINE.)

The term "manual training" was first used about 1876 when a few of the schools of Sweden and Russia exhibited some of their work in wood at the Centennial Exposition in Philadelphia. This exhibit created a large amount of interest that spread over the United States. The work was first adopted formally in the Saint Louis public schools, when the Board of Education, with Dr. C. M. Woodward as its president, made manual training a part of the regular work in the district schools for the year 1899-1900. (9 pages 148-150)

Through the efforts of Dr. Woodward, this work grew and then spread to other schools until now a large percent of the schools of the United States have some form of industrial education in their curriculum. The work that was done by Dr. Woodward gained for him the title of, "The Father of Manual Training".

The name of the work has changed to one that has a more general acceptance and a different set of objectives. Struck (21 page 31) has this to say about the evolution of the term:

Manual training, given for purposes of general education, was soon to be expressed in terms of the newer theories and beliefs of
education; it was soon to emerge from a "special" subject into one that was considered fundamental and one that was to be required in grades seven, eight, and nine. Its very name was gradually to be changed in many states to industrial arts education.

Out of the early forms of manual training has gradually evolved an enlarged and enriched subject known as industrial arts education, with objectives distinctly different from those of vocational industrial education. Each is necessary; and each will continue to develop in the forward trend common to all education that serves the purpose for which society is constituted.

It is generally accepted by the leaders in industrial education that the term "manual training" should no longer be used to describe the new program which includes other aims than those on which manual training was founded. Snedden (19 page 576) says:

The term "industrial arts" is now preferred, inasmuch as the words "manual training" connote theories of form discipline no longer accepted.

Friesen writes in regard to the term "manual training", (8 page 55):

This term (manual training) was the first to find general favor in the United States after it became apparent that the European term "Sloyd" would not be accepted as a designation for the American handwork. "Manual training" is still used in some communities to designate boys' handwork in general education. In many instances the term has been carried over from the early introduction of the work in a community. It suggests the theory of formal discipline carried over into handwork instruction. The term "manual training" is not obsolete, but there can be no denial that in the past few years it has fallen into disuse quite generally. A survey of the present-day literature will reveal this fact.

It is a rather difficult process to change the term "manual training" to industrial arts when the former has been used in a community for several years. This can only be done by the teacher and the administration. If the name is changed on the class schedule and it is referred to in the shop as industrial arts, it will be but a few years until the newer term will be accepted. The jury agreed that the term should be discontinued and the new one "industrial arts" used.

3. INDUSTRIAL ARTS CONSISTS OF STUDIES OF THE METHODS AND PROCESSES OF CHANGING THE FORM AND USES OF NATURAL MATERIALS TO MAKE THEM MORE VALUABLE
AND PLEASING TO MAN. IT INCLUDES KNOWLEDGE AND UNDERSTANDING OF THE RAW MATERIALS TOGETHER WITH PRACTICES IN WORKING CHANGES IN THESE MATERIALS.

Some of the other definitions that have been given by various authorities on this subject will be of value in determining how their statements agree with a statement by F. Theodore Struck in a recent issue of the American Vocational Association Bulletin which says: (20 page 85)

The manipulative work in the school shop is the core activity through and around which much interesting knowledge is introduced.

The pupils learn about tools, materials, processes, and design. He learns about the lives of the people involved in changing raw materials to finished products. What he learns helps to unify knowledge and to point out essential relationships.

It appears quite evident that Bonser's definition of industrial arts has had a great deal of influence on the ones that have been stated since his was first published. The one stated by Bonser and Mossman (4 page 5) gives the definition as:

Industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes.

Bonser says that: (3 page 50)

Industrial arts as a school subject is the distilled experiences of man in his resolution of natural materials to his needs for creature comfort to the end that he may more richly live his spiritual life.

Selvidge and Fryklund (16 pages 35 and 52) give this definition:

In this field we seek to give the youth the information and experiences which will interest him in industrial life and enable him to do effectively the things that most boys and men are called upon to do without respect to their vocation. Our main purpose is to give information and training with respect to industrial facts and processes that will tend to promote interests and establish habits of thought and action that will be of value to the individual without respect to his future vocation.

It will probably be noted that these statements of definitions are very similar to the statement that was presented to the committee for their reaction. The jury agreed by a vote of eighty-one to three that the statement
in their opinion, is correct.

4. MANY EXPERIENCES WITH AND MUCH KNOWLEDGE ABOUT INDUSTRIAL PRODUCTS, MATERIALS, EQUIPMENT, AND PROCESSES ARE THE PRIMARY OBJECTIVES OF INDUSTRIAL ARTS, WITH MANIPULATIVE SKILL BEING A SECONDARY OBJECTIVE.

In most cases the jury agreed that there should be a wide variety of activities and more information taught rather than placing too much stress on the development of skill. Out of the eighty-five who answered the questionnaire, sixty-one, or seventy percent, agreed to the statement while twenty-one disagreed. Most of those who disagreed believed that the development of skill should be as important as the acquisition of knowledge and a wide variety of experiences with many materials.

In a study of Objectives of Industrial Arts Education by John J. Worth and William L. Hunter, (24), a large jury of teachers and leaders of industrial arts education ranked "a degree of skill", ninth in importance out of fifteen objectives. It may be noted that the words "a degree" in the statement imply only a small amount of skill. Warner states in his summary of the objectives recommended by the study (25 page 44) in the sixth objective for junior and senior high schools that:

6. Development of a degree of skill with tools and in tool or machine processes commensurate with the ability of the pupil and incidental to the completion of a project or activity which seems to have "educational" value.

It is probable that the nearer the industrial arts program approaches the aims of vocational industrial education, the greater will be the amount of skill desired. It is quite evident that many of the schools expect a higher degree of skill than others. They are, evidently, placing their program nearer the level of vocational training. This perhaps is the reason for approximately thirty percent of the jury stating that the development of skill should be on a par with knowledge and experience in a variety of activities.
5. INDUSTRIAL EDUCATION, AS A TERM, INCLUDES ALL SHOPWORK INSTRUCTION AS WELL AS COURSES DIRECTLY RELATED TO SHOPWORK, TAUGHT IN SECONDARY SCHOOLS FOR ANY PURPOSE WHATSOEVER; VOCATIONAL, GENERAL EDUCATION, AVOCATIONAL, ETC.

Again to establish some of the basic concepts, sources and authorities in industrial education must be reverted to in order to ascertain what has been said about the subject. John F. Friese gives this definition for industrial education that is usually accepted as correct. (7 page 11)

INDUSTRIAL EDUCATION - A generic term including all educational activities concerned with modern industry, its raw materials, products, machines, personnel, and problems. It therefore includes both industrial arts, the general education forerunner of or introduction to vocational industrial education, and the latter also.

Warner (25 page 6) defines it as:

Industrial education is an old term that has been used to describe almost any kind of manual, trade, industrial mechanical, or practical education. It is still commonly used and may include Smith-Hughes courses as well as the more professional offerings in industrial arts education.

It was generally agreed by the jurors that the definition as stated is acceptable. There were seventy-five, or eighty-six percent in favor of the statement with nine opposed. Most of those who voted "No" on the statement gave no reason for their objection, while one or two thought that the term defined only vocational industrial education. A few of the early writers gave this definition as being vocational industrial education. This probably was the reason for the differences of opinion. It is rather certain that the newer group of authorities accept the term as given in the questionnaire.

TYPES OF SHOPS IN HIGH SCHOOL OR JUNIOR HIGH SCHOOL

6. WHERE THE SCHOOL IS LARGE ENOUGH TO MAINTAIN THEM, UNIT SHOPS, i.e., SINGLE-SUBJECT SHOPS OF A COMPREHENSIVE TYPE ARE DESIRABLE. THUS A SHOP REPRESENTING WOODWORKING TRADES ALONE, ONE FOR THE ELECTRICAL TRADES ALONE, ALL UNITS OF THE PRINTING TRADES ETC., WOULD BE MORE DESIRABLE AND MORE EASILY ORGANIZED AND CONDUCTED.
It has been conceded generally that in schools large enough to maintain them, unit shops are much to be preferred. In this type of shop the teacher can better organize his instruction, and conduct his classes much more easily and efficiently.

Struck (21 page 44) says:

A series of single activity or unit shops through which the students may rotate is very desirable, but a single one-activity shop is too restricted to meet modern demands.

Newkirk and Stoddard (12 page 12) in their book The General Shop, have this to say about the unit shop:

(1) Rotation thru a series of related shops—
This plan is barred from the small school with limited funds because of the cost of providing and equipping large divisions in separate rooms, but is suitable for schools with a large enrollment and ample space, equipment and staff. It is good practice to use this plan in large city schools where a general shop is employed.

The jury for the consideration of this problem was practically unanimous in its agreement that this plan is a good one. Out of the eighty-five who answered the questionnaire, only one was in disagreement and he gave no reason.

7. WHERE ONLY TWO TEACHERS ARE AVAILABLE, TWO DIVERSIFIED SHOPS SHOULD BE ORGANIZED.

Struck (21 page 47) says in regard to this type of organization:

When the number of pupils eligible for shop instruction becomes large enough to require two teachers, the general shop may well be changed into what, for lack of a better name, is called a modified general shop. ——One quite obvious advantage that the general shop of this organization has over the other, is that when two teachers are available each has to handle only two, or at most three, activities to provide training in from four to six types of instruction.

The jurors were fairly well in agreement on this question. Sixty-six, or seventy-eight percent of them favored this statement, while sixteen were opposed. In a few instances it was quite evident that some of the jurors did not understand the meaning of the term "diversified shop", for in their discussion it was evident that this was the type of shop they favored.

Another arrangement suggested was for one shop to be general with the other a
unit shop. If there are to be two teachers, it is perhaps better to divide the general shop into two diversified shops, thus providing for better instruction and organization.

8. IT IS ALSO POSSIBLE TO PLAN ONE LARGE GENERAL SHOP WITH TWO TEACHERS IN ONE ROOM CONDUCTING TWO CLASSES OF TWENTY TO TWENTY-FOUR PUPILS EACH AT THE SAME TIME.

There was a large amount of disagreement on this statement. Out of the eighty-five jurymen, forty-five stated that this arrangement would be possible, but nine of this number also added that the idea was not a practical one. Most of the criticism was to the effect that this arrangement would lead to a large amount of confusion between classes, would be unsatisfactory, and that it would not work out successfully. Two of the jurors stated that they had been connected with a plan of this type and that it had proven most unsatisfactory. Another suggestion was that if the room were large a partition could be placed between them. It is evident that this plan would meet with much disapproval if it should be recommended by the sub-committee of the State Advisory Committee.

9. IN THE SCHOOL WHERE ONLY ONE TEACHER CAN BE EMPLOYED A BROADLY DIVERSIFIED TYPE OF SHOP IS RECOMMENDED. THIS SHOP WOULD PROVIDE FOR FROM SIX TO NINE TYPES OF WORK, INCLUDING TWICE AS MANY WORK STATIONS AS THERE ARE PUPILS IN THE COURSE. THE PROGRAM OF ACTIVITY WOULD REQUIRE THE TEACHING OF ONLY THREE TO FIVE OF THESE AT ONE TIME.

There is doubt as to whether this type program will be adopted to any great degree in Oklahoma until many of the old shops are abandoned and new ones established. Many of the new shops are being planned and built so that this type of program may be adopted. The tendency is to continue to teach and conduct the single-activity shop on the same basis as it has been conducted for a great many years. If the objectives of the newer type shop program, industrial arts, are to be accepted, there must be available more
than one single-activity shop. Unless there is available more than one single-activity shop, it is impossible to give a wide variety of experiences in an activity.

Warner (25 page 53) has this to say:

Dewey, Bonser and others have indicated the place of industrial arts in the elementary, junior and senior high school curriculum. But can it be applied in all situations?

—Discussion of the general shop, avocational, exploratory, consumer, guidance, and household mechanics purposes indicate both the solution and the objectives for such work in the smaller schools of the country.

According to the Research Bulletin of the National Education Association, Vitalizing the High-School Curriculum, there needs to be something done about the single-activity shops. They have this to say: (11 page 234)

According to the last United States Bureau of Education Biennial Survey, the variety of work offered in the great majority of schools is still so limited that the values which should accrue from this type of work cannot be realized. Woodwork is commonly the only shop activity offered, or else it receives a larger proportion of the time, relative to other activities, than its value warrants.

There are other authorities who agree with this statement in regard to the diversified activities in the industrial arts program. No doubt there will be a more general acceptance of the general shop idea in Oklahoma as progress is made in our educational policies.

The jury was sixty percent in favor of this item. Most of those who objected stated that the expense of organizing a shop of this type was prohibitive, and that the requirements would be too great on one teacher. In most of the shops where woodwork is being taught, the additional cost does not need to be excessive. The requirements on the teacher can be minimized very satisfactorily with proper organization. By carefully planning the course of study in each activity and providing suitable units of work in the form of instruction or job sheets, the teaching will become comparatively easy. There is a wonderful opportunity in this type shop for a good personnel organization, which will not only lighten the duties of the teacher but will
also furnish valuable instruction and experiences for the youth.

10. **IN GENERAL, THE HIGH SCHOOL PUPIL AS WELL AS THE JUNIOR HIGH SCHOOL PUPIL SHOULD HAVE AN OPPORTUNITY TO WORK IN TWO OR THREE MAJOR INDUSTRIAL AREAS, SUCH AS WOODWORKING, INDUSTRIAL DRAWING, ELECTRICAL WORK, PRINTING, METAL WORK, ETC.**

The Office of Education Committee on Industrial Arts has the following to say about a wide variety of industrial activities for the high school.

(22 page 64)

Likewise, industrial arts has come to mean a broad program—the organization of economic, social, scientific, materialistic, and idealistic knowledge, as such is related to the lives of people in an industrial age. It is concerned with material media—materials of instruction, tools, and processes—that are significant in developing the values which industry contributes to life. Not until this large concept gained quite general acceptance did industrial arts make for itself a secure place in the American high-school family of accepted studies.

It was, at one time, considered feasible to specialize to a high degree, but during the last few years there has been a movement under way for more general educational training. The recent period of depression found many who were too highly specialized to be able to adjust themselves to the type of employment that could be secured. This condition caused no end of suffering and humiliation to families that had been self-sufficient economically for many years. This condition has caused a serious consideration for a more general training program than has been attempted for several years.

Since the average high school youth has not made an occupational selection, it would necessarily follow that he should not be allowed to choose a specializing curriculum.

If provisions are made in high school for several activities, the youths who have not made an occupational selection in junior high school, may be able, after they have explored more of the activities, to choose a vocation for further study.

The jury agreed almost unanimously that this type of program is to be desired for the high schools. Eighty-four favored while one opposed.
INDUSTRIAL ARTS IN THE JUNIOR HIGH SCHOOL

11. All boys in junior high school should be required to take four semesters of work in industrial arts. This work should be offered in the seventh and eighth grades when boys are most interested in a variety of activities, and when the creative urge is highest.

There seems to be a difference of opinions as to whether or not industrial arts should be required in the junior high school. Sixty percent, or fifty-one of the jurors, were in favor of requiring four semesters in the seventh and eighth grades, while forty percent, or thirty-four, were opposed. Several of those who opposed suggested that two semesters only should be required, making any further participation optional. Some of the jurymen thought that many of the boys would be disinterested or would not be adapted to this type of training. Others thought that boys in the seventh grade had not developed enough physically, while others suggested that the courses should be entirely elective.

Ordinarily there are no elective subjects in the junior high school of small schools. Small enrollment does not permit this type of schedule to be arranged. Usually the course is outlined for all the pupils who take the same subjects with the exception of girls who will probably take home economics, while the boys are taking industrial arts of some type. The Office of Education Committee on Industrial Arts (22 page 69) makes the following statement:

1. Relation to the whole program: Industrial arts must be planned as an integral part of any well-rounded high school program and be treated as a regular subject. Such treatment is the first step in establishing industrial arts in its proper place in the school. Industrial arts should be as much a part of the program of studies as is English and mathematics. The teachers of industrial arts should reach standards equal to those of other teachers. After integration of industrial arts is an attitude of mind on the part of administrators, and reflected by both teachers and students, which recognizes it as an area in education equal in significance to any other.
In cases where the boys are physically disabled, there can usually be found some type of activity in which they can participate. The work is required in many schools for the seventh and eighth boys and there are few boys who have not developed enough physically to be able to do the work that is required.

Newkirk and Stoddard (12 page 15) have this to say about the relation of the general shop to the junior high school.

The general shop is well adapted to the junior high school. This is the period when pupils are making wide contacts with objects and materials. The pupils need information about the things they meet in the world; they need the experience which comes from the handling and knowing these products. They also need to try their skill in manipulating tools and materials. They need to learn how to care for the electrical and mechanical devices about the home and community. They should be trained to become efficient members of the family group, regardless of the vocation they may choose. They need training in the selection of commodities which they will consume as members of a modern American community.

12. A WIDE VARIETY OF INDUSTRIAL ACTIVITIES SHOULD BE PROVIDED IN THE JUNIOR HIGH SCHOOL.

In regard to the industrial activities in the junior high school, Siepert (17 pages 94-95) says:

The Junior High School — Among the many claims for the reorganization of American schools, the functions of the exploration and guidance frequently appear. These functions are possible of realization so long as the industrial arts field is concerned, only as there becomes available a wide range of contacts in place of but one phase, such as woodwork.

The jury agreed that there should be a wide variety of activities in the junior high school. Seventy-eight, or ninety-two percent, of the jurors voted in favor of the statement. There were very few comments from the objectors to this statement. Those who did comment stated that there should be a limit put on the word "wide".

The Office of Education Committee on Industrial Arts has the following to say about providing a wide variety of activities for the junior high school: (22 page 46)
There is a tendency to increase the number of media for industrial arts, and some experimental centers have undertaken to show the value of including a much larger variety. The following is to be regarded only as an initial list for the constantly expanding program of activities: Woodwork, metalwork, printing and other graphic arts, electricity, arts and crafts, ceramics, textiles, foods and planning— including drawing, reading, and design. Time, place, and circumstances all should influence the selection of media and activities through which industrial arts is to be presented. The constant shifting of our people raises the question of overemphasis on local industrial units, but because they are of community interest they should be considered and in many cases made quite prominent in the program.

Many of the modern writers on the junior high school movement agree that the junior high school is a place for investigation and exploration. This will fit into the industrial arts program only if there is a wide variety of activities. If there is a wide variety of activities, the youth will be helped along greatly in his vocational selection. At least he will make decisions for or against certain types of work. If he can make a decision as to what occupation he would like to follow, the more formal course of training in this particular field may then be pursued in high school.

13. SOME OF THE INDUSTRIAL ACTIVITIES THAT ARE OF EXTREME IMPORTANCE TO BOYS IN OKLAHOMA ARE:

1. WOODWORKING, WOODTURNING, JIGSAW WORK
2. INDUSTRIAL DRAWING
3. ELECTRICAL WORK
4. ORNAMENTAL IRON
5. SHEET METAL
6. PRINTING
7. ART LEATHER WORK
8. ART COPPER WORK
9. FOUNDRY

Table III shows how the jury rated the industrial activities.
TABLE III
RANK OF INDUSTRIAL ACTIVITIES FOR OKLAHOMA

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Activity</th>
<th>No. Votes</th>
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<tbody>
<tr>
<td>1.</td>
<td>Woodworking</td>
<td>102</td>
</tr>
<tr>
<td>2.</td>
<td>Industrial Drawing</td>
<td>180</td>
</tr>
<tr>
<td>3.</td>
<td>Electrical Work</td>
<td>245</td>
</tr>
<tr>
<td>4.</td>
<td>Sheetmetal Work</td>
<td>360</td>
</tr>
<tr>
<td>5.</td>
<td>Printing</td>
<td>390</td>
</tr>
<tr>
<td>6.</td>
<td>Foundry</td>
<td>479</td>
</tr>
<tr>
<td>7.</td>
<td>Art Leather Work</td>
<td>491</td>
</tr>
<tr>
<td>8.</td>
<td>Ornamental Iron</td>
<td>611</td>
</tr>
<tr>
<td>9.</td>
<td>Art Copper Work</td>
<td>570</td>
</tr>
</tbody>
</table>

* First place was given one point, second two, etc. This accounts for the smaller numbers being in first place, second place, etc.

It will be noted from the table that woodworking is rated first among the industrial activities, with industrial drawing rating second, etc. It will also be noted that the jury placed foundry in sixth place, instead of ninth as it had been presented by the committee, and ornamental iron was changed from fourth to eighth place. Table VIII, page 51, shows how the various activities rank at the present time in regard to the number of pupils enrolled in each subject.

14. BASIC COURSES OF WOODWORKING AND INDUSTRIAL DRAWING SHOULD BE PROVIDED APPROXIMATELY ONE SEMESTER OF EACH BEING REQUIRED OF PUPILS IN THE JUNIOR HIGH SCHOOL.

The jury was in agreement on the statement of providing and requiring approximately one semester of basic courses in woodworking and industrial drawing. Seventy-two, or eighty-four percent, of the jurors were in favor of this requirement while eleven were opposed, most of whom gave no reason for their opposition. Others contended that no part of the program should be required, but should be elective.

In some schools where drawing and woodworking equipment is now available,
these basic courses should be required for two semesters, this arrange-
ment permitting arts in the eighth grade to be diversified activities. On
the other hand this plan would lessen, by two, the number of activities that
could be explored, assuming that nine weeks will be spent in each.

15. SHORTER UNITS OF WORK SHOULD BE OFFERED IN THE JUNIOR HIGH SCHOOL.
SUCH AS SIX OR NINE WEEKS OR ELECTRICAL WORK, IRON WORK, ONE OR MORE OF
THE ARTS CRAFTS TYPE OF WORK, ETC.

One of the major objectives of industrial arts in the junior high
school is to cover as many of the various activities as possible. By adopt-
ing the shorter periods, six activities, instead of four, can be used in
the general shop program. On the other hand, it is doubtful whether the
shorter periods should be adopted, since the technical information related
to the activity would have to be very brief. This may not be enough time
to really introduce the pupils to the activity. By using the longer periods,
nine weeks, there may be four activities covered each year, or eight in
two years. This number should give a sufficient amount of experience and
knowledge in regard to the industries to accomplish that which is desired.

The Office of Education Committee on Industrial Arts has the following
to say about objectives of industrial arts. (22 page 66)

The objectives of industrial arts education are identical
with the accepted objectives of a good high-school program.
If properly administered the industrial arts program will contrib-
ute its full share to the education of the whole child. The
subject matter, the teaching methods, the activities in which pupils
engage, provide some of the finest situations for developing ethical
character, creating a sense of good citizenship, promoting thrift,
developing a keen appreciation of fine things produced by good
craftsmen, and for building a clear understanding of the problems
which confront those who do the manual work of the world.

OBJECTIVES

16. THE FOLLOWING EDUCATIONAL OUTCOMES WOULD BE OF ASSISTANCE IN JUSTIFYING
THE REQUIREMENT OF INDUSTRIAL ARTS FOR ALL JUNIOR HIGH SCHOOL BOYS.

To reach certain desirable ideals, habits, attitudes, industry, and
accomplishments, it is necessary to know what they are, how they can be
secured and how to provide experiences through which they may be attained.

Selvidge (15 page 29):

Reflective thought or reasoning, and the use of tools in construction are the principle activities that distinguish man from the lower animals, and much of such thought is concerned with planning and doing. Creative thought is essential to man’s progress; creative doing is essential to his life and comfort. It appears, therefore, that teachers are neglecting one of the most important phases of man’s life if they fail to develop his abilities in planning and doing through such experiences as involve these activities.

Just as the academic subjects teacher often falls into the habit of emphasizing only the facts and fundamental processes, so the industrial arts teacher is likely to fall into the error of emphasizing skills and the making of things to the great neglect of the exceptional opportunities offered for developing those traits which contribute so much to good citizenship and worthy home membership.

If there is to be progress and social justification for the industrial arts program, there must be objectives organized by each teacher that will help to accomplish the desired results. It is with this in mind that the following list of objectives is presented and discussed briefly.

1. He learns systematic methods of attacking practical problems and develops good habits of problem solving.

The development of this objective is one of the very important tasks of the school. There are too many people who do not properly plan their work. If the problem is well planned, as it should be, and the procedure for doing the job is properly analyzed, the result will be a success and the task a simple one. This objective can be accomplished by requiring a working drawing and a definite step-by-step plan of the procedure for completing the project. However, this objective should not be limited to the industrial arts program.

2. He learns to apply theoretical knowledge to concrete situations.

There is no better place for applying theoretical information to concrete situations than in the shop. The principles of mathematics, science, English, and many of the other school subjects can be applied to
the project. This theoretical knowledge should be taught as related information at the time when it is most needed. By teaching the information at this time, there will be a greater retention of the instructional material.

3. He learns to work in cooperation with other boys and his teacher.

In a democracy this objective is very important. The pupils should be taught how to cooperate with others and the importance of cooperation. This can be done in the shop by planning the courses of study so that the assistance of classmates will be required to complete a project. The desire to help others is important, this may be developed by asking one of the boys to assist another with his work. Another means of accomplishing this objective is through group projects. Usually this type of project will be developed by production methods which will require the cooperation of the entire class.

4. He becomes a more intelligent consumer of materials, processes, and products of industry. Wise purchase, use and maintenance of these products is facilitated.

This particular objective covers a wide range of information and, to cover it completely would be quite an extensive study. It should not only cover the selection, use and care of the mechanical products of industry but should also provide a study of clothing, food, shelter, furnishings, personal belongings and many other things. The desire to take proper care of the commodities of industry should be encouraged and taught, insisting on the proper care of machines, brushes, materials, and other items in the shop will help wonderfully in teaching the pupils how to care for their personal property. The proper care of equipment may have to be demanded from some boys at first, but soon it will become a habit and the training will be appreciated more in later life.

5. He learns about basic materials and fundamental processes and products of industry.
The value gained by a study of basic materials, problems related to products of industry and processes of changing the materials worthy of study in all grades in school and by all pupils regardless of sex. All people are concerned with these problems, for everyone is affected by the changes that are made in products of industry and by the problems of life related to the changes. Social problems, such as strikes, are of concern to every individual. Industrial studies will enable the individual to have a better understanding and to be more sympathetic with these situations.

6. He learns many valuable facts and achieves many abilities which will function directly or indirectly in an avocational activity.

Since working hours have been shortened considerably in the last few years there has been a greater amount of interest manifested in avocational activities or as they are sometimes called, "hobbies". The carry over of the training in the shop program has been found to be of a large amount of help in this respect. Much of the information, as well as the mechanical operations, is used in the home workshop.

C. E. Vance, Superintendent of Schools, Danville, Illinois, at the Atlantic City Convention in 1933, of the American Association of School Administrators made the following statement in regard to avocational training:

(23 page 24)

In addition to the many other values not mentioned and the practical side just named, there is one by reason of its importance must be considered; namely, the value to the individual of the skills, interests and knowledge derived from the industrial arts course as leisure-time activities. A truly educated person must be well equipped to play and to occupy his leisure time as he is equipped to work and earn a living. The necessity for definitely providing the individual with this equipment grows more imperative as the ratio between the unemployed and employed hours grow greater. Too often the individual has been importuned to develop an appreciation of art, music, and literature to fill in the leisure hours. These suggestions are excellent, but they do not fill the bill completely. Likewise, one cannot resort to sports alone for his recreation.--- The normal individual requires activity, and this need must be supplied as well as the others. The people who are healthiest mentally and physically are those who have hobbies. The
industrial arts program is especially fitted to recognize, develop, and strengthen lasting interests that will serve to make leisure time interesting, safe, and profitable.

7. He is better able to care for, operate, and repair the mechanical devices in the home.

The mechanical training that is given in the school shop will be of direct benefit when there is need for a home repair such as mending a screen door or assembling an electrical extension cord. The use of machines in the shop will give a better understanding of and will help in operating and repairing the mechanical devices used in the home.

8. He learns to make and to read industrial drawings, blueprints, and is able to follow directions included in the drawing.

In order to make definite plans for construction, the pupil will need to be able to read blueprints. If he is to do any original designing, he will need a knowledge of how industrial drawings are made and how blueprints are developed. If he is to construct a project that is represented on a drawing, it will be necessary to know how to follow directions that are included in the drawing, they know the meaning of various symbols. The ability to read blueprints and to make simple drawings is of benefit to everyone regardless of his occupation.

9. He develops safety consciousness and attitudes of carefulness in carrying out dangerous activities.

In a recent bulletin (22 page 76), Industrial Arts Its Interpretation in American Schools, published by the United States Department of the Interior, Office of Education, the following statement is made in regard to safety education:

---Industrial arts can contribute more in this field than any other division within a school organization. Safety education represents an outstanding social need at the present time. Industrial education deals with the effect of the machine on our social order. Machines have placed people in hazardous situations, and the use of machines has taken a toll in human life as has no war or pestilence.
Therefore the subject-matter of industrial arts deals directly with safety in relation to the machines which are used. The attitude that "the right way is the safe way" must be developed. The general shop and the pupil personnel organization provide ideal situations for making pupils safety conscious.

The teachers should take as much time in preparing safety instruction as they do for developing the most intricate skill. There will be a definite development of safety consciousness if the proper practice is demanded in the school shop.

10. He experiences work characteristics of several mechanical occupations and discovers his likes or dislikes of manipulative activities.

Many youngsters find that during their experiences in the shop they are not adapted to the various manipulative activities, and decide to try some other field of study. While, on the other hand, there are boys who discover their manipulative abilities and decide to pursue this type of activity as an occupation. For guidance purposes in cases of this type, there is a great deal of value to be derived from the experiences with the work characteristics of several mechanical occupations.

11. He subconsciously makes decisions about the choice of occupation or at least decides against certain ones.

This objective is related very closely to the former one, in that it is occupational selection. This objective may or may not be the selection of manipulative occupations, however, it implies that the occupation is a non-manipulative activity. If the aims of the industrial arts program are accomplished, certain occupations will be selected or rejected.

President Roosevelt's Advisory Committee on Education made the following statement on vocational selection and guidance. (2 page 112)

Clearly the school can and should provide educational and vocational guidance that will assist young people to select their future occupations and to prepare for them. The schools should in all cases provide training in the basic skills and general knowledge useful in a wide variety of employment situations. In this way they would give young people a broad base from which to build up their training for specialized occupations....Finally, the
school can and perhaps should provide intensive preparation for a limited number of occupations for which training can be carried relatively far at a reasonable cost, with equipment that can be installed in the schools.

12. **He develops habits of orderliness and neatness which function in everyday life.**

If the shop is kept neat and orderly and the instructor insists on neatness and orderliness in the pupil's work, the above objective can be attained. These are the habits that are to be desired and they will become fixed if the proper stimulation is given.

13. **He develops muscular coordination.**

There is usually a lack of muscular coordination in the average boy who comes into the shop for the first time. He finds that he has a great deal of difficulty in doing manipulative activities. No doubt, he will have greatly developed his coordination by the time he has been in the shop for one semester, for he is usually more able to do the things that were at first difficult.

14. **Skill in the use of tools develops attitudes of exactness and carefulness.**

Attitudes of exactness and carefulness are developed to a large extent by skill in the use of tools. This factor can be developed in the pupil very easily if the teacher will hold the pupils to the best grade of work that he is capable of doing. A good example will inspire the accomplishments of this aim.

15. **Vocational training of varying degrees may result, increasing almost in proportion to the amount and extent of shop courses taken.**

As the number of shop courses increase, the degree of vocational training increases in proportion. This does not mean that the industrial arts program is designed to give vocational training, but that the training given will incidentally become vocational training to a degree, varying of course with different individuals.

C. E. Vance, Superintendent of Schools in Danville, Illinois, says that their industrial arts program does give value as vocational training.
None of the work is vocational in the narrow sense of the term, but many students go directly into jobs after leaving high school. One manufacturer said that the boys coming from our school were farther advanced in two weeks than the average apprentice in two years.

16. The interests of the boy are provided with an outlet.

Many of the boys who come into the shop have many questions to ask and many things that they would like to "build". They have many and varied interests, which may find an outlet in the school shop. The interests may only be a passing fancy but nevertheless they must have an outlet before the boy is convinced that they are of only minor importance.

17. Health values are apparent in the opportunity provided for physical activity.

The opportunity for doing physical work is provided in the shop. The boy learns to conserve and gain strength and develops muscular coordination through the manipulative activities. He becomes familiar with health hazards and dangers connected with various occupations; at the same time learning to use safety precautions.

**INDUSTRIAL ARTS IN THE SENIOR HIGH SCHOOL**

17. ONE YEAR OF EITHER SHOPWORK OR INDUSTRIAL DRAWING, OR BOTH, SHOULD BE REQUIRED OF EACH BOY IN THE HIGH SCHOOL, AND TWO UNITS SHOULD BE ACCEPTED ON ANY DIPLOMA IN THE STANDARD HIGH SCHOOL IN OKLAHOMA.

There is a difference of opinions in regard to requiring one year of either shop work or industrial drawing or both in high school. There is more agreement on the last part of this statement. In several cases, a part of the jury favored the idea of accepting more than just two units on any highschool diploma in Oklahoma. It was the opinion of some of the jurors that if industrial arts had been required in junior high school, it should not be required in high school. It appears that if the boy has been required to take the courses in junior high school, he should be able to make a decision as to
whether he should or should not have more training in this field. It is
human nature to look kindly toward desired activities and to dislike those
that are forced upon us. No doubt the boy who is required to take a course
would do much better work and make more progress if he is permitted to
make the selection.

Fifty-eight, or sixty-eight percent, of the jurors thought that shopwork
or drawing should be required in high school, while twenty-six, or thirty-two
percent, were opposed. A few who were in favor of the course being required
in high school thought that even more than the stated amount should be re-
quired. If the course is organized on the basis of other than manipulative
activities, the requirement will be more generally accepted. Products and
problems of industry should be given a more extensive study than is usually
required in industrial arts courses.

18. UNIT COURSES ARE TO BE PREFERRED IN THE HIGH SCHOOL. TO COMPLETE A
UNIT COURSE, THE BOY MUST SPEND FIVE HOURS PER WEEK FOR A FULL SEMESTER IN
ONE TYPE OF WORK, SUCH AS WOODWORKING, ARCHITECTURAL DRAFTING, ELECTRICAL
WORK, ETC., FOR WHICH COURSE THE SCHOOL MUST BE ACCREDITED.

When a boy has found his interests are toward a certain line of activity,
he should be afforded the opportunity, and allowed to study and delve more
deeply into this type of work. This provision can be made more readily
through unit courses, rather than diversified training in several activities.
Unit shops are to be preferred for this training, but where they cannot be
provided, the next best plan is a general shop organized into unit courses.
This type of shop will require a well-trained and capable teacher, with a
well organized course of study for each unit of activity.

19. TWO OR THREE UNIT COURSES MAY BE TAUGHT SIMULTANEously IN ONE SHOP AND
BY ONE TEACHER WHERE THE SCHOOL HAS SMALL ENROLLMENT. ADEQUATE FACILITIES
MUST BE PROVIDED FOR ACCREDITING THE WORK.
The same discussion will be applicable for this type of "set-up" as in statement number nine. The work can be done satisfactorily if the teacher is well trained and has the proper organization in his course of study and personnel.

The jurymen were in favor of this statement as indicated by their vote of seventy-one, or eighty-two percent, in favor to fourteen in opposition.

20. THE WELL PLANNED HIGH SCHOOL INDUSTRIAL ARTS DEPARTMENT WILL NOT BE CONFINED TO WOODWORKING ALONE, BUT WILL OFFER SUBSTANTIAL WORK OF AT LEAST ONE UNIT OF CREDIT IN SEVERAL UNITS OF INDUSTRY, SUCH AS: PRINTING, METAL WORK, MACHINE OR ARCHITECTURAL DRAFTING, ELECTRICAL WORK, AUTO MECHANICS, ETC.

Industrial arts programs that are well planned will not limit their activities to woodworking alone, nor to any one of the industrial arts. They should include units of work in several industries to provide a larger variety of activities.

The Office of Education Committee on Industrial Arts (22 page 69) has published this statement:

5. Courses of Study: The fact that industrial art draws its materials of learning from the varied craft trades and industrial activities of life makes the selection of learning units one of the most perplexing problems. The early conception of manual training led the educators to emphasize the use of wood in relation to the tools and processes of woodwork. The present concept of industrial arts includes not only wood but metal and clay and fibers, in fact any material that man has used to effect his living conditions. In some situations the courses of study have been developed in very specialized subjects, such as pattern making, woodturning, machine shop practice, welding, or forge work. The inability to provide shops for so many specialized courses has encouraged the development of general shops in which various specialized activities are combined into more general courses covering a great variety of activities.

The jury was practically unanimous in approving this statement, there being only two dissenting votes.

21. WHERE EXTENSIVE SHOPS ARE AVAILABLE OR WHERE A SATISFACTORY DIVERSIFIED SHOP IS AVAILABLE, A FOUR YEAR CURRICULUM KNOWN AS THE INDUSTRIAL ARTS
CURRICULUM SHOULD BE PROVIDED TO PARALLEL THE COMMERCIAL, HOME ECONOMICS, AGRICULTURAL, OR GENERAL EDUCATION CURRICULA. THIS WOULD INCLUDE SCIENCE AND MATHEMATICS AND WOULD PERMIT SIX UNITS OF WORK IN SHOP AND INDUSTRIAL DRAWING COURSES. BOYS COMPLETING THIS CURRICULUM CAN ENTER TO ADVANTAGE EITHER TECHNICAL COURSES IN COLLEGE OR INDUSTRIAL OCCUPATIONS. THIS IMPLIES AN INCREASING VOCATIONAL OBJECTIVE AS MORE TIME IS SPENT IN INDUSTRIAL ARTS COURSES.

Boys who enter this type of curriculum will have a better opportunity to continue in a vocation, than if they had completed a general curriculum. Those who complete this curriculum will have an advantage when entering technical courses in college or in securing a position at the completion of their high school training. The Office of Education Committee on Industrial Arts says: (22 page 68)

It would be difficult to conceive of any program of secondary education which did not attempt to give vocational direction to the pupils who are to come under its influence. Spelling, writing, arithmetic, and bookkeeping could be considered as most definite vocational if and when they are used to prepare a high school pupil for a job as a bookkeeper. Nevertheless, one never thinks of spelling, writing, and arithmetic as vocational subjects unless they are preparatory to specific employment. It is just so with all the subjects that comprise the whole field of industrial arts. As a part of the general education program of any high school many industrial arts subjects may lead into definite vocational study.

A well organized general shop or several unit shops should be provided for this curriculum of industrial arts. It would be impractical to offer this plan where the shop is limited to only one activity.

This organization met with the approval of nearly all the jurors, only two of the eighty-five were opposed to the statement as it was presented in the questionnaire.

22. TEACHERS OF HIGH SCHOOL INDUSTRIAL ARTS SHOULD NOT BE REQUIRED TO ACCEPT COACHING DUTIES.

The Industrial arts shop usually requires a great deal of time for mak-
ing repairs to machines, sharpening tools, organizing instructional materials, ordering and caring for supplies, constructing school furniture, and many other tasks. A well cared for shop and a functioning program allows very little time for other activities.

On the other hand, coaching athletics also requires a great amount of time. Much time is spent in athletics after school hours or at night. There is usually considerable physical activity connected with this duty, and this, in addition to a day in the industrial arts shop, will usually terminate in physical exhaustion. It is evident that either the industrial arts program or coaching will be neglected, because a demand is placed on the coach to develop a winning team; winning in athletics being of major importance to many school patrons.

The industrial arts program is as important as any other subject or school activity. To insure this place in the curriculum, the industrial arts teacher should not be required to accept coaching duties. The jurymen voted to adopt this recommendation by a decision of seventy-one, or eighty-two percent, to fourteen.

23. THE DEFINITION OF A STANDARD HIGH SCHOOL IN OKLAHOMA SHOULD BE SET UP BY THE STATE DEPARTMENT OF EDUCATION. THE DEFINITION OF A STANDARD HIGH SCHOOL SHOULD REQUIRE THAT AT LEAST TWO UNITS OF WORK IN INDUSTRIAL ARTS SHALL BE OFFERED.

The jurors, as a whole, were in favor of the State Department of Education defining a standard high school, and of requiring at least two units of industrial arts to be taught. The vote was sixty-seven to fifteen in favor of this plan.

All schools should teach at least two units of industrial arts. If they are not doing so at the present time, they should add to their curriculum a course of study that will be of interest and will teach that for which the pupil feels a need. The cost of equipment is not prohibitive, and many schools now have room space available for shop work.
CHAPTER IV
THE STATUS OF INDUSTRIAL ARTS IN JUNIOR AND SENIOR HIGH
SCHOOL IN OKLAHOMA

Is there any progress being made in the field of industrial arts education? To what extent are various activities offered in junior and senior high schools in Oklahoma? What is the usual class size? What is the average teacher load? These and many other similar questions are asked each year in regard to the industrial arts. To determine the answer for as many of these questions as possible, was the motive for extending this section of the study.

Technique for Collecting the Information. The technique for collecting this information was the questionnaire. This method has received much criticism, however it is agreed by authorities on research that it has its place when it is properly used.

Reeder defends its use by saying: (Page 63)

Although the questionnaire method of securing information and of conducting research has probably been overworked during recent years, the fact remains that there are some types of problems—problems which are worth attacking—that cannot be attacked except by the means of the questionnaire. The questionnaire cannot, and should not, be abolished; but it should be more intelligently used than is now the case.

After examining several techniques for collecting information, the questionnaire method seemed to be the only logical way for obtaining the desired information. The only way of securing first hand information was to contact the teachers of the activities.

Formation of the Questionnaire. Proper form was attempted in composing this questionnaire by trying to avoid some of the common errors.

Abelson thinks these are some of the common errors made in formulating questionnaires: (Page 72)
Perhaps the most devastating practice is the request for information which is available in other sources. Second, the sheer length of the response often expected tends to discourage the busy recipient. Third, the failure to arouse any motive to answer may be mentioned—— Fourth, may be mentioned the frequent inclusion of questions of apparent unimportance—— As a final deficiency may be mentioned the common occurrence in questionnaires of equivocal questions.

The desired information was first determined: What is the enrollment in each high school? The plans of the junior and senior high schools? What periods of the day are most used for industrial arts? What subjects are taught? What is the length of the periods? In what grades are the subjects taught? How many graduates are in the program? Is the subject a trade course? What are the units in the general shops? How many girls are there in the industrial arts program? What is the average teaching load? What is the average size of the classes? What is the total number of pupils in each of the activities? and what is the total in all the classes? A form was then prepared giving the proper divisions so that it could be printed on a double post card. After the form had been prepared it was printed, using pen and ink, on a regulation size post card. As it was desired to give the questionnaire a personal appearance, the lithographing process of printing was used.

Jury Selection— The jury for this questionnaire was selected from the State Directory of Industrial Education Teachers for 1937-38. All the teachers listed in the directory, who possibly would teach industrial arts classes in the junior or senior high school were mailed a copy. This list was composed of the names of two hundred sixty nine men and women teachers.

Letter of Transmittal— The letter of transmittal was printed on the reverse side of the double post card by the same process of printing. The following is one of the letters.
Dear Mr.,

No doubt this question has entered your mind many times, "Am I offering Industrial Arts courses at the proper grade level?" I am making an effort to determine where most of the schools in Oklahoma are offering such courses. You have been suggested as one who would possibly be willing to cooperate in this study. You can assist, therefore, by filling in and returning the attached card as soon as possible.

Please accept my sincere thanks for your valuable cooperation and assistance.

Very truly yours,

[Signature]

---

Questionnaire as Submitted. The questionnaire was formed with the idea that it should be as easy to check as possible, and that there should be no questions to require a great deal of research or for personal opinion. The following is one of the questionnaires as they were submitted to the jury.

<table>
<thead>
<tr>
<th>Name of School if Different from City</th>
<th>Taff Jr. High</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Pupils in Your H.S.</td>
<td>No. in Jr. High</td>
</tr>
<tr>
<td>What Grades are in Your H.S.?</td>
<td>Check</td>
</tr>
<tr>
<td>Jr. High?</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period of Day</th>
<th>Subject Taught</th>
<th>Time</th>
<th>No. in Each Grade</th>
<th>Grade Course?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st.</td>
<td>Bench Woodwork</td>
<td>8:40-9:30</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>2nd.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If general shop is taught, check the following units that are included: _Bench Woodwork_ _Woodturning_ _Art Metal_ _Plumbing_ _Concrete_ _Electricity_ _Printing_ _Drawing_ _Auto-Mechanics_ _Leather Craft_ _Forging_ _General Metal_ _Welding_ Others.

Number of Girls in Industrial Arts Classes?

---

Extent of Responses. Out of a total of two hundred sixty-nine persons to whom questionnaires were mailed, one hundred forty-nine were kind enough to answer and return them. There were seven of these who did not give the proper
information for tabulation, while others had discontinued the program, or
their schools were of such nature the information could not be supplied. The
return was about 55.5 percent of the cards mailed. There were no "follow up"
cards mailed, since it was thought that those who answered gave a good example
of the program in the state.

TABULATION OF DATA

The information that was obtained from the questionnaire is presented
here in the form of discussion and tables. The order of presenting the mat-
terial will be in the order it appears on the questionnaire.

School Enrollment. The survey shows that there were schools represented from
an enrollment as low as fifty-five to five thousand or over. There are enough
schools represented between these extremes to give a good sampling of the en-
tire state. Enrollment in approximately forty percent of the schools is
below three hundred.

TABLE IV

<table>
<thead>
<tr>
<th>School Enrollment</th>
<th>(2) Number of Schools</th>
<th>(3) Percent of Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 - 99</td>
<td>14</td>
<td>10.2</td>
</tr>
<tr>
<td>100 - 199</td>
<td>23</td>
<td>16.8</td>
</tr>
<tr>
<td>200 - 299</td>
<td>17</td>
<td>12.4</td>
</tr>
<tr>
<td>300 - 399</td>
<td>8</td>
<td>5.9</td>
</tr>
<tr>
<td>400 - 499</td>
<td>8</td>
<td>5.9</td>
</tr>
<tr>
<td>500 - 599</td>
<td>5</td>
<td>3.6</td>
</tr>
<tr>
<td>600 - 699</td>
<td>13</td>
<td>9.4</td>
</tr>
<tr>
<td>700 - 799</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>800 - 899</td>
<td>11</td>
<td>8.0</td>
</tr>
<tr>
<td>900 - 999</td>
<td>4</td>
<td>2.9</td>
</tr>
<tr>
<td>1000 -5000</td>
<td>22</td>
<td>20.4</td>
</tr>
<tr>
<td>Over 5000</td>
<td>4</td>
<td>2.9</td>
</tr>
</tbody>
</table>

The following table is from a survey made by Tearle Singleterry in 1934,
entitled Industrial Arts In Oklahoma Schools. It is included here for compara-
tive purposes: (18 page 16)
Table VII

<table>
<thead>
<tr>
<th>Size of School</th>
<th>Number of Schools</th>
<th>Percent of Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 100</td>
<td>6</td>
<td>5.7</td>
</tr>
<tr>
<td>100 - 199</td>
<td>7</td>
<td>6.6</td>
</tr>
<tr>
<td>200 - 299</td>
<td>5</td>
<td>4.7</td>
</tr>
<tr>
<td>300 - 499</td>
<td>14</td>
<td>13.2</td>
</tr>
<tr>
<td>500 - 799</td>
<td>25</td>
<td>23.8</td>
</tr>
<tr>
<td>800 - 1000</td>
<td>10</td>
<td>9.5</td>
</tr>
<tr>
<td>1000 and over</td>
<td>38</td>
<td>36.2</td>
</tr>
</tbody>
</table>

* This column was added by the writer for comparative purposes.

Table IV page 45 gives some interesting material on the size of the schools that offer industrial arts. Comparing this table with that of Singletery reveals that only 5.7 percent of the schools in 1934 were below one hundred in enrollment, while this study shows that 10.2 percent of them are now below this number. His table shows that only seventeen percent of the schools were below three hundred, while this survey shows almost forty percent in this range.

Column one of Table IV page 45 indicates the number of pupils enrolled in these schools, column two shows the number of schools coming in the various enrollment ranges, and column three the percent of the total number of schools represented in each range. It will be noted from the table that there are seventeen or 12.4 percent of the total number of schools ranging from two to three hundred.

School Plans. From the schools reporting, the survey disclosed seven different school plans functioning among the ninety-two schools that reported.

The 6-3-3 plan was the most popular being used in thirty-one or thirty-three percent of the schools. The old 8-4 plan and the 6-2-4 plan were each used in twenty schools. Table V shows the plan used by the various schools.

Column one shows the plan, column two the number of schools using the plan, and column three the percent of the total number of schools. The first line shows thirty one, or 33.6 percent using the 6-3-3 plan. This plan shows that the tenth, eleventh and twelfth grades are in high school, the seventh
eighth, and ninth grades in junior high, and the remaining six grades in
elementary school.

**TABLE V**

**KINDS OF SCHOOL PLANS AND THE NUMBER OF SCHOOLS USING EACH**

<table>
<thead>
<tr>
<th>Kinds of School Plans</th>
<th>No. of Schools Using Plan</th>
<th>Percent of Total Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-3-3</td>
<td>31</td>
<td>35.6</td>
</tr>
<tr>
<td>8-4</td>
<td>20</td>
<td>21.9</td>
</tr>
<tr>
<td>6-2-4</td>
<td>20</td>
<td>21.9</td>
</tr>
<tr>
<td>5-3-4</td>
<td>7</td>
<td>7.4</td>
</tr>
<tr>
<td>7-2-3</td>
<td>5</td>
<td>5.5</td>
</tr>
<tr>
<td>7-1-4</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>5-4-3</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>No report</td>
<td>3</td>
<td>8.5</td>
</tr>
</tbody>
</table>

**Extent of Industrial Arts Courses.** The survey disclosed the fact that there are thirty-three industrial arts activities taught in the schools of Oklahoma.

Franklin (6 pages 17 and 18) found in 1931, twenty-eight subjects listed. Activities given in his list that were not reported this time are: battery work, building trades, radio, and occupations.

Singleterry (16 pages 8 and 9) in 1934 listed twenty-seven activities. Those that were included in his list that are not listed here are: blueprint reading, plaster of paris moulding, cement work, pattern making, forging, soap and wood carving, etching, costume making and occupational study.

The list for this study has the following activities which had not been named in previous studies: architectural drawing, industrial and commercial art, arc welding, technical drafting, elementary civil engineering, petroleum engineering drawing, stage craft, book binding, surveying, industrial arts for girls, and diesel engineering.

Table VIII, page 490, gives a list of the industrial arts activities taught in the schools of Oklahoma, the number of pupils, the percent of the total enrollment, number of school offering, the number of classes, and the average class size of each activity. Bench woodwork is first in the list of
activities; ninety-one schools having an enrollment of 5,840, or 45.98 percent of the total pupils. There are 267 classes of woodwork, with an average class enrollment of 21.1 percent. One activity that was listed is composed of two parts, mechanical drawing and bench woodwork. The amount of time devoted to each of these activities was not determined from the study, however, they are usually composed of one-third or one-fourth drawing and two-thirds or three-fourths woodwork. This would increase the first item considerably if it were added to it, since there are 854 or 6.41 percent of the total number in this combination, offered by eleven schools with fifty-three classes, which have an average enrollment of 27.8 pupils. Mechanical drawing and general shop rank second and third respectively. The rank and importance of other activities can be determined from the table. The table also discloses 12,839 pupils enrolled in junior and senior high schools reporting.

Grade Distribution of Enrollment. To determine where the industrial arts courses are being offered in the school systems was one of the purposes of this study. Table VI shows the number of pupils in each grade. It also indicates one school offering the activities in grade six, while at the bottom of the table is shown seventeen graduates continuing more classes in this field. The table shows that there are more pupils in the eighth grades and there is 60.72 percent of the total enrollment in grades six to nine. Column one represents the grade in school, while column two gives the number of pupils in each of these grades, and column three shows the percent of the total enrollment in each grade.
TABLE VI
DISTRIBUTION OF PUPILS BY GRADES IN INDUSTRIAL ARTS

<table>
<thead>
<tr>
<th>Grade</th>
<th>No. of Pupils</th>
<th>Percent of total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th</td>
<td>17</td>
<td>.12</td>
</tr>
<tr>
<td>7th</td>
<td>2805</td>
<td>20.46</td>
</tr>
<tr>
<td>8th</td>
<td>3118</td>
<td>22.67</td>
</tr>
<tr>
<td>9th</td>
<td>2395</td>
<td>17.47</td>
</tr>
<tr>
<td>10th</td>
<td>2189</td>
<td>15.97</td>
</tr>
<tr>
<td>11th</td>
<td>1656</td>
<td>12.08</td>
</tr>
<tr>
<td>12th</td>
<td>1508</td>
<td>11.00</td>
</tr>
<tr>
<td>Graduates</td>
<td>17</td>
<td>.12</td>
</tr>
</tbody>
</table>

Pupil Distribution by Periods of the Day. The greatest enrollment is for the second and fifth periods of the day, while the eighth period enrollment was only fifty for all schools. Table VII shows how the enrollment is divided throughout the day. Column one gives the periods of the day, column two the number of pupils enrolled at each period, and column three the percent of the total enrollment represented in each period. The table shows 2,480, or 17.04 percent of the total number of pupils enrolled the fifth period. There were only

TABLE VII
PUPIL DISTRIBUTION BY PERIODS OF THE DAY

<table>
<thead>
<tr>
<th>Period of Day</th>
<th>No. of Pupils</th>
<th>Percent of Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>2332</td>
<td>16.02</td>
</tr>
<tr>
<td>2nd</td>
<td>2474</td>
<td>17.00</td>
</tr>
<tr>
<td>3rd</td>
<td>2421</td>
<td>16.64</td>
</tr>
<tr>
<td>4th</td>
<td>2403</td>
<td>16.51</td>
</tr>
<tr>
<td>5th</td>
<td>2480</td>
<td>17.04</td>
</tr>
<tr>
<td>6th</td>
<td>1952</td>
<td>13.41</td>
</tr>
<tr>
<td>7th</td>
<td>359</td>
<td>2.33</td>
</tr>
<tr>
<td>8th</td>
<td>50</td>
<td>.34</td>
</tr>
</tbody>
</table>

ten of the teachers to report seventh hour classes, while only four had classes the eighth hour. This accounts for the small enrollment of the last two hours of the day.
## TABLE VIII

### SIZE AND DISTRIBUTION OF INDUSTRIAL ARTS CLASSES

<table>
<thead>
<tr>
<th>Name of Activity</th>
<th>Number of Pupils</th>
<th>Percent of Total</th>
<th>Number of Schools Offering</th>
<th>Number of Classes</th>
<th>Average Class Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Bench Woodwork</td>
<td>5840</td>
<td>45.98</td>
<td>91</td>
<td>267</td>
<td>21.1</td>
</tr>
<tr>
<td>2 Mechanical Drawing</td>
<td>1085</td>
<td>12.54</td>
<td>38</td>
<td>72</td>
<td>22.0</td>
</tr>
<tr>
<td>3 General Shop</td>
<td>1426</td>
<td>11.01</td>
<td>18</td>
<td>53</td>
<td>26.9</td>
</tr>
<tr>
<td>4 Drawing and Woodwork</td>
<td>834</td>
<td>6.11</td>
<td>11</td>
<td>30</td>
<td>27.3</td>
</tr>
<tr>
<td>5 General Metal</td>
<td>696</td>
<td>5.42</td>
<td>11</td>
<td>45</td>
<td>15.4</td>
</tr>
<tr>
<td>6 Machine Woodwork</td>
<td>573</td>
<td>4.51</td>
<td>22</td>
<td>34</td>
<td>17.0</td>
</tr>
<tr>
<td>7 Printing</td>
<td>455</td>
<td>3.52</td>
<td>7</td>
<td>20</td>
<td>22.6</td>
</tr>
<tr>
<td>8 Auto Mechanics</td>
<td>325</td>
<td>2.53</td>
<td>4</td>
<td>13</td>
<td>25.1</td>
</tr>
<tr>
<td>9 Home Mechanics</td>
<td>187</td>
<td>1.45</td>
<td>4</td>
<td>6</td>
<td>31.1</td>
</tr>
<tr>
<td>10 Architectural Drawing</td>
<td>161</td>
<td>1.22</td>
<td>3</td>
<td>5</td>
<td>36.2</td>
</tr>
<tr>
<td>11 Electricity</td>
<td>108</td>
<td>0.82</td>
<td>1</td>
<td>4</td>
<td>22.0</td>
</tr>
<tr>
<td>12 Industrial &amp; Commercial Art</td>
<td>84</td>
<td>0.63</td>
<td>2</td>
<td>4</td>
<td>21.0</td>
</tr>
<tr>
<td>13 Machine Shop</td>
<td>80</td>
<td>0.62</td>
<td>1</td>
<td>2</td>
<td>40.0</td>
</tr>
<tr>
<td>14 Machine Drawing</td>
<td>54</td>
<td>0.42</td>
<td>2</td>
<td>2</td>
<td>27.0</td>
</tr>
<tr>
<td>15 Arc and Acetylene Welding</td>
<td>45</td>
<td>0.35</td>
<td>4</td>
<td>4</td>
<td>11.2</td>
</tr>
<tr>
<td>16 Technical Drafting</td>
<td>41</td>
<td>0.32</td>
<td>1</td>
<td>1</td>
<td>41.0</td>
</tr>
<tr>
<td>17 Wood Turning</td>
<td>40</td>
<td>0.31</td>
<td>4</td>
<td>3</td>
<td>15.3</td>
</tr>
<tr>
<td>18 Engineering Drawing</td>
<td>30</td>
<td>0.23</td>
<td>1</td>
<td>1</td>
<td>30.0</td>
</tr>
<tr>
<td>19 Elementary Civil Engineer</td>
<td>30</td>
<td>0.23</td>
<td>1</td>
<td>1</td>
<td>30.0</td>
</tr>
<tr>
<td>20 Petroleum Engineering Drawing</td>
<td>30</td>
<td>0.23</td>
<td>1</td>
<td>1</td>
<td>30.0</td>
</tr>
<tr>
<td>21 Leather Craft</td>
<td>23</td>
<td>0.18</td>
<td>1</td>
<td>2</td>
<td>11.5</td>
</tr>
<tr>
<td>22 Trade Drafting</td>
<td>23</td>
<td>0.18</td>
<td>1</td>
<td>1</td>
<td>11.0</td>
</tr>
<tr>
<td>23 Art Metal</td>
<td>22</td>
<td>0.17</td>
<td>1</td>
<td>1</td>
<td>22.0</td>
</tr>
<tr>
<td>24 Sheet Metal</td>
<td>20</td>
<td>0.15</td>
<td>1</td>
<td>1</td>
<td>20.0</td>
</tr>
<tr>
<td>25 Aeronautics</td>
<td>17</td>
<td>0.13</td>
<td>1</td>
<td>1</td>
<td>17.0</td>
</tr>
<tr>
<td>26 Aeronautical Drawing</td>
<td>15</td>
<td>0.12</td>
<td>1</td>
<td>1</td>
<td>15.0</td>
</tr>
<tr>
<td>27 Junior Handcraft</td>
<td>15</td>
<td>0.12</td>
<td>1</td>
<td>1</td>
<td>15.0</td>
</tr>
<tr>
<td>28 Trade Dressmaking</td>
<td>14</td>
<td>0.11</td>
<td>1</td>
<td>1</td>
<td>14.0</td>
</tr>
<tr>
<td>29 Stage Craft</td>
<td>11</td>
<td>0.08</td>
<td>1</td>
<td>1</td>
<td>11.0</td>
</tr>
<tr>
<td>30 Book binding</td>
<td>11</td>
<td>0.08</td>
<td>1</td>
<td>1</td>
<td>11.0</td>
</tr>
<tr>
<td>31 Surveying</td>
<td>11</td>
<td>0.08</td>
<td>1</td>
<td>1</td>
<td>11.0</td>
</tr>
<tr>
<td>32 Industrial Arts for Girls</td>
<td>8</td>
<td>0.06</td>
<td>1</td>
<td>1</td>
<td>8.0</td>
</tr>
<tr>
<td>33 Diesel Engineering</td>
<td>2</td>
<td>0.01</td>
<td>1</td>
<td>1</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Total: 12,639
Size of Classes. Size of classes in industrial arts are from one extreme to the other; in one class there is one pupil, while in another there are fifty-nine enrolled in a drawing class. A class of more than thirty is, no doubt, much too large. Fifty minutes in each period will only allow one minute forty seconds for individual instruction for each pupil, allowing no time for demonstration or recitations. When classes are any larger than this, the lack of sufficient supervision becomes apparent. Over crowded conditions have improved during the last four years as can be noted by tables IX and X.

TABLE IX

SIZE OF AND NUMBER OF CLASSES

<table>
<thead>
<tr>
<th>Size of Class</th>
<th>Number of Classes</th>
<th>Percentage of Total No. Classes</th>
<th>Percentage in 1936</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 9</td>
<td>21</td>
<td>3.57</td>
<td>3.00</td>
</tr>
<tr>
<td>10 - 15</td>
<td>97</td>
<td>16.62</td>
<td>11.90</td>
</tr>
<tr>
<td>16 - 20</td>
<td>137</td>
<td>23.94</td>
<td>19.70</td>
</tr>
<tr>
<td>21 - 25</td>
<td>119</td>
<td>20.27</td>
<td>16.40</td>
</tr>
<tr>
<td>26 - 30</td>
<td>100</td>
<td>17.03</td>
<td>16.30</td>
</tr>
<tr>
<td>31 - 35</td>
<td>56</td>
<td>9.54</td>
<td></td>
</tr>
<tr>
<td>36 - 40</td>
<td>30</td>
<td>5.11</td>
<td>30.7</td>
</tr>
<tr>
<td>41 - 45</td>
<td>25</td>
<td>4.24</td>
<td>for</td>
</tr>
<tr>
<td>46 - 50</td>
<td>1</td>
<td>.17</td>
<td>range</td>
</tr>
<tr>
<td>51 - 55</td>
<td>0</td>
<td>.00</td>
<td>over</td>
</tr>
<tr>
<td>56 - 59</td>
<td>1</td>
<td>.17</td>
<td>30.</td>
</tr>
</tbody>
</table>

* This column is from Singleterry's Study in 1934. It is added here for comparative purposes. (18 page 14)

All of the table from Singleterry's study is given below for comparative purposes.

TABLE X

SIZE OF CLASSES

<table>
<thead>
<tr>
<th>Size of Class</th>
<th>Number of Classes</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 10</td>
<td>18</td>
<td>3.0</td>
</tr>
<tr>
<td>10 - 15</td>
<td>70</td>
<td>11.9</td>
</tr>
<tr>
<td>16 - 20</td>
<td>117</td>
<td>19.7</td>
</tr>
<tr>
<td>21 - 25</td>
<td>109</td>
<td>18.4</td>
</tr>
<tr>
<td>26 - 30</td>
<td>96</td>
<td>16.3</td>
</tr>
<tr>
<td>Over 30</td>
<td>182</td>
<td>30.7</td>
</tr>
</tbody>
</table>
Singleterry (18 page 14) reported 30.7 percent of the classes contained more than thirty pupils, while this study discloses the fact that there are now only 19.23 percent over this number. The number of classes of desirable size have increased over the same period of time. Singleterry showed only 19.7 percent in the range between sixteen and twenty, while this study shows an increase to 23.34 percent. This increase is gratifying, for a large percent of the classes have decreased in size. Other comparisons may be made by referring to Tables IX and X.

Table IX, page 51, gives the number of classes ranging between one and sixty in size by intervals of five. Column one gives the size of the class, column two the number of classes of this size, column three the percent of the total number of classes within this range, and column four shows, for comparative purposes, the percentage column from a like study of Singleterry's in 1934. The table reveals 119, or 20.27 percent, of the total pupils in classes ranging in size from twenty-one to twenty-five, while in 1934 Singleterry found 18.4 percent of the total classes in this range.

**Teacher Schedule of Enrollment.** The number of pupils in teacher's classes ranging from one to seven each day, is given in Table XI.

**TABLE XI**

<table>
<thead>
<tr>
<th>(1) No. Classes Per Day in Ind. Arts</th>
<th>(2) Average No. Pupils Per Period</th>
<th>(3) No. of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>15.35</td>
<td>14</td>
</tr>
<tr>
<td>Two</td>
<td>13.93</td>
<td>15</td>
</tr>
<tr>
<td>Three</td>
<td>21.25</td>
<td>13</td>
</tr>
<tr>
<td>Four</td>
<td>19.53</td>
<td>24</td>
</tr>
<tr>
<td>Five</td>
<td>23.87</td>
<td>43</td>
</tr>
<tr>
<td>Six</td>
<td>26.73</td>
<td>30</td>
</tr>
<tr>
<td>Seven</td>
<td>22.00</td>
<td>2</td>
</tr>
<tr>
<td>For all Teachers</td>
<td>22.74</td>
<td>141</td>
</tr>
</tbody>
</table>

Column one gives the number of classes the teachers have each day in industrial arts, column two the average number of pupils per period, and column three the number of teachers who teach for the various number of periods per
day. The table discloses forty-three teachers teaching industrial arts five periods each day and their average enrollment is 23.87 pupils per period. The last line gives the average number of pupils per period for all teachers regardless of the number of classes taught each day.

Length of Periods. Periods of seven different lengths are being used, as was disclosed by the survey. Double forty-five minute periods are still being used in ten schools whose regular periods are forty-five minutes in length. One school uses periods of seventy-five minutes, two use sixty-five minutes, seventy-five use the hour period, twenty-one use fifty minutes, twenty-five use fifty-five minutes, and eight use forty-five minutes.

**TABLE XII**

LENGTH OF PERIODS

<table>
<thead>
<tr>
<th>(1) Length of Periods</th>
<th>(2) Number of Schools</th>
<th>(3) Percentage of Total Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 min. (2-45 min.)</td>
<td>10</td>
<td>7.04</td>
</tr>
<tr>
<td>75 min.</td>
<td>1</td>
<td>0.71</td>
</tr>
<tr>
<td>65 min.</td>
<td>2</td>
<td>1.41</td>
</tr>
<tr>
<td>60 min.</td>
<td>75</td>
<td>52.81</td>
</tr>
<tr>
<td>55 min.</td>
<td>25</td>
<td>17.61</td>
</tr>
<tr>
<td>50 min.</td>
<td>21</td>
<td>14.79</td>
</tr>
<tr>
<td>45 min.</td>
<td>8</td>
<td>5.63</td>
</tr>
</tbody>
</table>

Table XII gives the number and percent of the total number of schools using the various length periods. Column one gives the length of the periods in minutes, column two the number of schools using this length period, and column three the percent of the total number of schools using the various length periods.

General Shop. Table VIII, page 50, shows general shop, listed as such, ranks third in total enrollment, with eighteen schools offering the course. This classification does not include general metal shop, which is closely related to this type of training. By adding the enrollment in general metal, 696, to that of the general shop, 1426, the total is 2122, or 16.52 percent of the total enrollment in all subjects of industrial arts, which would place
the general shop, including both types, in second place. After a period of five years it should rank first, if the objectives of industrial arts are to be accomplished.

TABLE XIII

GENERAL SHOP ACTIVITIES

<table>
<thead>
<tr>
<th></th>
<th>Name of Activity</th>
<th>Number of Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bench Woodwork</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>Electricity</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Drawing</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Wood Turning</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>General Metal</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>Leather Craft</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Art Metal</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>Printing</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>Plumbing</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>Auto Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>Forging</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>Weaving</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>Welding</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Foundry</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Concrete</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>Celluloid</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Plastics</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>Wood Carving</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>Book Binding</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>Barbering</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>Sheet Metal</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>Metal Lathe</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>Vocational Guidance</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>Carpentry</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>Farm Mechanics</td>
<td>1</td>
</tr>
</tbody>
</table>

Table XIII lists twenty-five activities included in the general shop programs in Oklahoma, with the number of schools offering these units. Two schools offer general shop in the sixth grade, ten in the seventh, fifteen in the eighth, eleven in the ninth and two in each of the tenth, eleventh, and twelfth grades.

General shop is offered most extensively in the seventh, eighth, and ninth grades. Table XIV shows the grades and the number of schools teaching general shop in these grades.
TABLE XIV
PLACE OF GENERAL SHOP
IN SCHOOL PROGRAM

<table>
<thead>
<tr>
<th>Grades</th>
<th>No. Schools Teaching in This Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th</td>
<td>2</td>
</tr>
<tr>
<td>7th</td>
<td>10</td>
</tr>
<tr>
<td>8th</td>
<td>15</td>
</tr>
<tr>
<td>9th</td>
<td>11</td>
</tr>
<tr>
<td>10th</td>
<td>2</td>
</tr>
<tr>
<td>11th</td>
<td>2</td>
</tr>
<tr>
<td>12th</td>
<td>2</td>
</tr>
</tbody>
</table>

Column one gives the grade in school in which the subject is taught, and column two gives the number of schools in which general shop is taught in these grades.

Number of Girls in Industrial Arts. Many girls in high school each year express a desire to take some form of industrial arts. They seem to think that this program is for boys only, as it is in some cases, but merely because the administration is unfavorable toward the practice of letting girls take part in the program or because of limited facilities and instructors. The survey revealed that there are one hundred six girls in industrial arts courses of various types. Some of the girls are in mechanical drawing, others in general shop, some in industrial and commercial art, and a few in trade dressmaking.
CHAPTER V
SUMMARY CONCLUSIONS AND RECOMMENDATIONS

Summary. There is a need for revising school curriculum; to make a course of study that will hold the interest of the pupils, and have an appeal to them as being useful.

There should be less emphasis placed on manipulative activity with more on the how and why of the industrial occupations.

A great deal of progress has been made in the industrial education program since its introduction about 1876, by Runkle and Woodward.

The State Advisory Committee for Industrial Arts in Oklahoma Schools was organized in Tulsa at the state meeting of the Oklahoma Education Association in 1937. The purpose of the committee is to promote and guide the industrial arts program to the desired goal.

One of the sub-committees formed a tentative list of statements of philosophy and objectives for industrial arts in Oklahoma schools. This list of statements was presented to a select jury of sixty-five school superintendents, and sixty-five leaders of industrial education, who were asked to state their opinions on each item in the list.

Out of a total of 130 statements mailed to the jury, eighty-seven, or 66.92 percent were returned. The jury voted to accept the list as submitted with the exception of the eighth, which stated that it is possible to organize one large general shop with two teachers conducting two classes of twenty to twenty-four pupils at the same time.

The jury agreed that the industrial activities should be ranked in importance as they are stated below:

1. Woodwork
2. Industrial Drawing
3. Electrical work
4. Sheetmetal work
5. Printing
6. Foundry
7. Art leather work
8. Ornamental Iron
9. Art Copper work
The objectives were listed by the jury in order of their importance as follows:

1. Problem Solution
2. Cooperation
3. Handy-man ability
4. Consumer knowledge
5. Interest outlet
6. Ability to draw and read drawings
7. Safety consciousness
8. Occupational guidance of manipulative activities
9. Orderliness and neatness
10. Vocational interest and training
11. Application of technical knowledge
12. Skill develops attitudes of exactness and carefulness
13. Knowledge of basic materials and products
14. Develops muscular coordination
15. Occupational guidance non-manipulative
16. Vocational training of varying degrees
17. Health values

A study of the progress being made in industrial arts instruction and organization was needed before recommendations for advancement could be made.

All teachers of industrial education in junior and senior high school were selected as a jury from which the desired information could be obtained.

It was found that 40 percent of the schools answering the questionnaire were smaller than three hundred in enrollment, while 2.9 percent were larger than 5,000. The number of schools below 100 in enrollment has increased from six to fourteen during the last four years.

There are seven different school plans being used in Oklahoma, with the 6-3-3 plan being the most prevalent in 33.8 percent of the schools, the 8-4 plan in 21.9 percent, the 6-2-4 plan in 21.9 percent, and the 5-3-4, 7-2-3, 7-1-4, and 5-4-3 being used in the remainder.

It was found that industrial arts courses are taught from grades six to twelve, inclusive, and to graduate students. The larger number of pupils were in the seventh, eighth, and ninth grades.

The second and fifth periods of the day were found to have the largest enrollment, with the smallest being in the eighth. The study revealed that woodwork is still taught in more schools, with a larger enrollment than any other activity. Mechanical drawing and general shop were second and third in total enrollment. It was also shown that thirty-three activities are
taught in Oklahoma schools with a total enrollment of 12,839 pupils.

The classes of larger size are decreasing in number, with the average class being 22.74 pupils per period. Classes with more than thirty pupils have decreased from 30.7 percent to 19.23 percent during the last four years, while classes from sixteen to twenty have increased in number, from 19.7 percent to 23.34 percent during the same period of years.

It was learned that fourteen teachers teach only one industrial arts class each day, while there are two who teach eight periods. The largest number of teachers have five classes each day.

The periods for industrial arts vary in length from ninety to forty-five minutes. The hour period is used by 52.81 percent of the schools.

General shop is making progress in attaining its correct place in the list of industrial activities. It ranks third in the list with a total enrollment of 1,426. If the enrollment in the closely related activities general shop and general metal were added, together they would rank second. General shop is taught in grades six to twelve inclusive, with the large majority of the pupils being in grades seven, eight, and nine.

The number of girls in industrial arts classes is increasing as the need for their training is being met. It was found that there are 106 girls taking some form of industrial arts.

Conclusions. There is progress being made in the industrial arts program, and schools are revising their curriculums in many instances to hold the interest of the pupils, and to provide training that pupils feel they need. A select jury of leaders in industrial education and a like group of superintendents of schools agree that the statements of philosophy and objectives that were submitted to them should be recommended to the schools of Oklahoma, with the exception of the eighth, which is in regard to two teachers in one large general shop.

Industrial arts is being introduced and taught in more small schools than in previous years. It is being taught at the proper grade levels, with a reduction in the average size of the classes. Teachers are not heavily
burdened, in the average case, with a large average class enrollment and an excessive number of classes each day.

General shops are increasing in importance, which will assist in reaching the desired objectives in industrial arts education.

Recommendations for Further Study. A study similar to this one in content would be appropriate after a period of four or five years, to determine the progress that has been made.

Another study could well establish the necessary equipment for industrial arts classes by making a survey to determine what is now included in the shops.

Floor plans with location of equipment and properties would be of value.

The appeal could be made to the shop instructors to use the idea as a class project or for individual pupils.

Another study well worth while would be to determine the methods for caring for equipment and accessories in the shops. These are suggestive:

- Hand tools
- Machines
- Finishing supplies
- Sand paper
- Paint brushes
- Materials: lumber, paint, metal, etc.
- Clamps
- Glue table
- Scraps of stock
- Display cases
- Exhibits
- Furniture for School
- School Repairs
- Repair and maintenance of machines and tools
- Books and magazines
- "Clean-up" duties
- Shop supply purchases.
- Who has access to shop beside teacher and pupils?
- Many others.
APPENDIX A

A SELECTED BIBLIOGRAPHY


5. Crawford, Claude C. The Technique of Research in Education. The University of Southern California, Los Angeles, California. 1928.


HOW can I best serve you today?

I have reserved the summer months for a different purpose.

Since the winter has been so harsh, I would like to take advantage of these

We should sit down and have a talk.

I have a plan in mind.

I need your help to make it work.

Tell me your thoughts.

I will consider them.

I am looking for something that will bring us closer together.

Let's make it happen.

I am excited about this opportunity.

Thank you for your time.

I appreciate your interest.

TYPIST:

Winnifred Young
232 Knoblock Street
Stillwater, Oklahoma