INDUSTRIAL ARTS AS A SELECTIVE AGENCY
FOR ENTERING VOCATIONAL TRADES TRAINING
With Special Reference to the Needs of Students
in the W. W. Ross High School, Fremont, Ohio

A Thesis Presented for the
Degree of Master of Arts

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INDUSTRIAL ARTS
AS A SELECTIVE AGENCY
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W.W. ROSS HIGH SCHOOL
FREMONT, OHIO
ACKNOWLEDGMENTS

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Chapter I

THE PROBLEM

The problem under consideration in this thesis deals with the enrollment of students in the vocational trades courses at the W. W. Ross High School, Fremont, Ohio. Many of the students who are enrolling enter without preliminary qualifications, and lack of proper guidance seems to be evidenced by the large number of withdrawals.

As academic courses are planned for those who go to a liberal arts college, so other courses need to be available to students which will lead in the direction of vocational choice and finally preparation for it. Most industrial arts courses are so planned that there is wide opportunity for exploration with materials, and processes of modern social life, and therefore are in position to offer excellent backgrounds upon which to base future vocational choices, and in addition promote many other desirable outcomes of living.

There is satisfaction in discovering abilities to create with one's own hands and to implement one's own ideas. Similar ideas are reflected in an article by Ashley,¹ who says:

There is opportunity in industrial arts classes to acquire a respect for one's fellows as problems which arise in the shop are seen to be mutual, and as different views on solving them are compared. Most industrial arts courses lend themselves to any degree of ability which the child may possess or which his physique may require. . . . Psychologically, the child develops his interests and abilities through many years of exploratory experience with nature and

¹Lawrence F. Ashley, "Interrelationships of Industrial Arts and Vocational Education," Industrial Arts and Vocational Education, (January, 1942) p. 4.
with man-made materials and processes. During these years experiences in industrial arts are very important in furnishing firsthand information about the world of the grownup . . . . They give the child a chance to discover vocational interests and abilities and give him some training preliminary to more specific preparation for the employment he may finally desire to undertake.

Industrial arts and vocational education have a common relationship. They accomplish their objectives through the use of common equipment. Similar supplies and laboratory provisions may serve both. In fact, specific vocational training frequently uses the same school set-up for some of the areas one finds common to industrial arts. It may be said that the difference between the two types of training lies in method and in emphasis rather than in the basic subject matter. Their common goal is that of preparing boys and girls to live and to earn their living and to be happy and efficient citizens.

Purposes.

The purposes of this thesis are: (1) to establish criteria which the instructors in the industrial arts and vocational education departments may use for the selection of students wishing to enter vocational education classes in the W. W. Ross High School, Fremont, Ohio; (2) to show how industrial arts can contribute as a selective agency; and, (3) to establish an active relationship between industrial arts and vocational education.

Need for Such a Study.

Information received from the vocational coordinator of Ross High School and observations during the past five years
of teaching in the same school convince the writer that there is a definite need for this study.

In the last several years the students of Ross High School wishing to enroll in the three-year trades course have been admitted into the department indiscriminately; some with an appreciation of the trades and the world of industry which industrial arts has provided them. Others are without this general background. As a result, some students with insufficient preparation have been unable satisfactorily to carry on the work required in the vocational trades department and many failed the courses. Some of those students who fell by the wayside in the vocational work changed to other courses in the school curriculum while others discouraged by their failure dropped out of school. Figures pertaining to the failures will be given in a later chapter.

The premise for this thesis is to set forth the idea that through a year of experience in industrial arts the instructors in this department should be able to make a fair evaluation of the students' work at the end of the freshman year and to determine who among the group is capable of carrying on the more difficult work of the vocational trades course. Those not judged capable of carrying on the work in the vocational education department could, by staying in industrial arts, continue to gain experiences helpful to adjustment in an industrial society.

It must be remembered that every student in industrial arts does not necessarily wish to enter the vocational department. Thus, only those students desiring to enroll in the
course would be evaluated with the exception of students showing particular abilities who might be encouraged to do so. A considerable number of the youth should be so trained that the first ranking phase of the national economy—the manufacturing industries—can be served, continued, and further developed. The vocational education department can function more efficiently if it is supplied students whose abilities have been already recognized and whose mechanical aptitudes have been quickened through a year's experience in industrial arts.

Limitations.

This study is not a comparison of similar studies in various schools, but is limited to a study of the problems of the industrial arts and vocational education departments of Ross High School, Fremont, Ohio.

Sources of Data.

Data used in this study were taken from the following sources:

1. Fremont Ross High School files and records.
   2. Fremont Vocational Trade and Industrial Program, a survey developed by the vocational department faculty of Fremont Ross High School in 1939.
   3. Selected articles from the magazine Industrial Arts and Vocational Education.
   4. Faculty members of the Fremont Ross High School vocational and industrial arts departments who aided the writer in formulating the criteria for the evaluation of work done
by students in industrial arts as a pre-requisite for entering the vocational trades course.


Data secured from the afore-mentioned sources plus an analysis of community factors relating to the problem will be presented in subsequent chapters.
Chapter II
COMMUNITY

According to the 1940 United States Census, Fremont, Ohio has a population of 14,710. The city is located midway between Detroit and Cleveland, seventeen miles from Lake Erie, on the Sandusky River. It is the county seat of Sandusky County, and, being located in a rich agricultural region of the state, it is a natural marketing center for a surrounding population of 40,000 people. Its many and varied industries make it a thriving industrial community.

The principal cities within a hundred miles are:
Cleveland, 90; Akron, 100; Columbus, 100; Canton, 100; Toledo, 30; Detroit, 85.

Fremont's prevailing racial extractions are German and Irish with the population composed of ninety and six-tenths per cent native white; eight and two-tenths per cent foreign (largely Polish); and one and two-tenths per cent negro.¹ The foreign and the negro residents are segregated by their own choice.

Community Services.

Fremont has many attractive residential sections. The community has ample facilities for recreational activities, including a golf course, supervised playgrounds and a swimming pool. Its educational needs are served by a school system which embraces five modern grade schools, three parochial schools, and one large public high school. Libraries, service

¹Fremont Vocational Trade and Industrial Program, p. 6.
and study clubs further provide for the intellectual needs of the community while many churches serve the spiritual needs.

A well-equipped municipal hospital, a small private hospital, and city and county health departments, and Sandusky County's progressive Red Cross chapter, located in Fremont, serve the medical needs of the community.

Fremont has modern fire protection and efficient city and county police departments. The latter is aided by the Ohio State Highway Patrol which maintains a sub-station at Bellevue, sixteen miles east of the city.

**Power and Utilities.**

The Ohio Power Company, serving the entire state of Ohio, furnishes Fremont electricity, produced largely by steam power. Gas is furnished by the Ohio Fuel Gas Company; fuel oil is received from the surrounding cities of Toledo, Findlay, and Lima; while all grades and kinds of coal are shipped into Fremont from mines in Kentucky, West Virginia, Pennsylvania, and Ohio.

The Sandusky River is the source of supply for Fremont's water system. The quality is excellent and there is no question about fulfillment of demands made by domestic and industrial users. Seasonal requirements are estimated at 1,300,000 gallons daily.

**Transportation and Communication.**

The New York Central, Nickle Plate, and Wheeling and Lake Erie Railroads connect Fremont with such points as Toledo, Fostoria, Cleveland, and Sandusky. Railroads join lake traffic at Sandusky, Toledo, and Cleveland, Ohio.
Two federal coast-to-coast highways, United States Route 20 and United States Route 6, pass through the main section of the city, as well as State Routes 53, 12, and 19.

Truck transportation and bus service operate on regular schedules to and from the city with a privately-owned airport furnishing landing facilities for private and commercial planes.

Communication needs of the community are served by the Ohio Bell Telephone Company. A license has been secured authorizing the establishment of a radio station as soon as materials are available.

One daily newspaper, the Fremont News-Messenger, has a circulation of 10,722. No Sunday edition is published.

Natural Resources.

Fremont is situated in a fertile farming section which produces an abundance of grain, livestock, dairy products, fruit, sugar beets, and tomatoes. Oil, sand, and clay deposits surround the city, as well as a large field of limestone which is made into dolomite.

Fremont's Leading Industries and Their Products.

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<th>Company</th>
<th>Products</th>
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<td>Advance Lumber Company</td>
<td>Lumber and mill work</td>
</tr>
<tr>
<td>W. V.-B. Ames Company</td>
<td>Dental supplies</td>
</tr>
<tr>
<td>Arrow Cutlery Company</td>
<td>Cutlery</td>
</tr>
<tr>
<td>Burkett Lightning Rod Company</td>
<td>Lightning Rods</td>
</tr>
<tr>
<td>Carbo Tool and Die</td>
<td>Forgings and tools</td>
</tr>
<tr>
<td>Case-Smiley Corporation</td>
<td>Cutlery</td>
</tr>
<tr>
<td>Christy Razor Company</td>
<td>Razor blades and surgical instruments</td>
</tr>
</tbody>
</table>
Clyde Castings Company  Cutlery
Crescent Mfg. Company  Razor blades and surgical instruments
Crown Battery Company  Auto batteries
Crown Rubber Company  Chemical treatment of raw rubber
George Derry Mfg. Company  Castings - aluminum and brass
Flexible File Company  Cutlery
Fremont Concrete Block Company  Concrete blocks
Fremont Flask Company  Foundry equipment
Fremont Foundry  Castings - gray iron
Fremont Kraut Company  Kraut and fruit canners
Fremont Mattress Company  Mattresses
Fremont Paper Box Company  Boxes and paper
Fremont Rubber Products Company  Processing synthetic rubber
Fremont Tool and Die Company  Forgings and tools
Henry G. Frey Company  Stuffed dolls
Fur Fame Bait Company  Artificial fishing and animal bait manufacturers
Great Lakes Sugar Company  Beet sugar
Gordon Lumber Company  Lumber and mill work
H. J. Heinz Company  Chili sauce
Henkel-Clauss Company  Cutlery
Herbrand Corporation  Drop forgings and tools
Hollinger Cutlery Company  Cutlery
S. E. Hyman Company  Auto accessories and seat covers
Imperial Plating Company
Loose-Wiles Biscuit Company
National Carbon Company
Price Lumber Company
Rhoda Lumber Company
Smith Novelty Company
Wahl Refractory Products
Robert F. Wolfe Company
Yerges Mfg. Company
Zeifang Machine Company
Howard Zink Corporation

Metal plating and polishing
Cheese for biscuits
Batteries
Lumber and mill work
Lumber and mill work
Wooden novelties and toys
Insulating materials
Paper products
Cloth buffing wheels
General machine shop service
Auto accessories and seat covers

As can be seen readily from checking the above lists of industries, the manufacturing activities in Fremont are extremely varied. Thus employment is less subject to extreme fluctuations as frequently is the case where a community's entire industrial life is centered around one or two large industries.

The solution of the problem of this study will have its effect not only on the school program but also indirectly on the community, in as much as the school's vocational program attempts to fill the needs of the community for trained industrial personnel. In order that the solution of the problem may be in accord with the basic educational philosophy
accepted by the school a consideration of that philosophy and likewise the aims and objectives of the two departments involved in this study will be undertaken in the next chapter.
Chapter III
PHILOSOPHY AND OBJECTIVES OF INDUSTRIAL ARTS AND VOCATIONAL TRADES FOR ROSS HIGH SCHOOL

The basic criteria to be applied in considering the problem of this thesis will be the fundamental philosophy accepted concerning the whole of life's processes in their educational, social, and vocational aspects. Because, a philosophy should give tone, color, or atmosphere to whatever is done.

**Philosophy of Education.**

Educational philosophy attempts to lay a foundation broad enough to bring about the balanced development of attitudes, knowledge, appreciations, and skills that are essential, not only in the preservation of our ideals, but also in their progressive development. To be democratic, education must provide methods and controls that will provide the necessary stimuli and the opportunities for development of all normal citizens, yet respect their personal differences. In an industrial democracy it must provide for the development of society as a whole as well as of the individual. All education should be for current living, as well as a preparation for future activities of life. It must also be democratic in its purpose and control, as well as in its content, in order that young people and adults have experiences in living together.

Philosophy is the necessary first step in the evolutionary development which lifts individuals to continually higher levels. Procedures are tried out to see if they
appear to achieve the ends that have been set up. If there is reasonable evidence that they do, they are accepted provisionally as a part of general practice, but await the time when experimental or other evidence shows that they are sound and that they can be classified as principles. Webster defines principle as, "a conscious belief that exercises a directing influence upon our dealings with various particular situations."

**Aim of Education.**

To lay and strengthen the foundations for the democratic way of life is the important aim of education, but no one aim of education in school is enough to do the whole "job" at a particular time or place. John Dewey has this to say concerning the matter:

> We have indicated that some general aims are but prospective points of view from which to survey the existing conditions and estimate their possibilities; we might have any number of them, all consistent with one another. As a matter of fact, a large number of them have been stated at different times, all having great local value. For the statement of aim is a matter of emphasis at a given time. And we do not emphasize things which do not require emphasis, that is, such things as are taking care of themselves fairly well. We tend rather to frame our statement on the basis of the defects and needs of the contemporary situation; we take for granted, without explicit statement which would be of no use, whatever is right or approximately so. We frame our explicit aims in terms of some alternative to be brought about.1

**Function of School.**

The school should be an institution where individual initiative, co-operative enterprise, moral teachings, and character training join in making it a place where children

1John Dewey, *Democracy and Education*, p. 130.
and teachers meet and deal with life and life situations. It should meet human needs, as these needs are determined in part by the group of individuals concerned and their cultures. The school should also be instrumental in meeting the important needs of individuals that are not otherwise being met and which the school can meet better, or more effectively, than other organizations.

**Curriculum.**

The curriculum of a school includes the whole range of experiences for which the school takes responsibility. A good curriculum is one which helps to enrich the life of students by offering a wide and varied range of experiences, which will help in accomplishing the needs and functions of the school.

**Philosophy and Purpose of Ross High School.**

In view of what has been said it is evident that a school system should accept the responsibility of formulating a statement of its philosophy and its purpose. The following is the overall purpose of Ross High School:

THE PURPOSE OF ROSS HIGH SCHOOL IS TO ASSIST IN THE DEVELOPMENT OF THE INDIVIDUAL STUDENT, SO THAT HE MAY LIVE MORE SUCCESSFULLY IN THE DEMOCRATIC FORM OF GOVERNMENT.

IT RECOGNIZES ITS DUAL RESPONSIBILITY TO THE STUDENT AND COMMUNITY BY ATTEMPTING TO PERPETUATE AND CONSERVE THOSE PAST VALUES WHICH HAVE PROVED NECESSARY TO THE INDIVIDUAL STUDENT AND AS SERVANT TO THE INDIVIDUAL STUDENT TO PROMOTE THE PROGRESS OF THE COMMUNITY.

REALIZING THE RAPIDLY CHANGING CONDITIONS IN THE SOCIAL AND ECONOMIC FIELDS OF OUR SOCIETY, IT IS ATTEMPTING TO REORGANIZE ITS OFFERINGS AND SERVICES TO BETTER ACCOMMODATE THESE CONDITIONS.
Thus the school seeks to provide a rich challenging environment in which each pupil through actual participation in social living will gain experiences which will aid him to adapt himself to a constantly changing way of life.

High school students upon graduation find themselves in a workaday world, and employers everywhere want youth who are honest, dependable, thorough, and willing to learn. In the school curriculum, industrial arts when effectively taught provides situations and experiences which are effective and economical means of developing these and other desirable personal and social traits. They learn neatness, accuracy, and a workmanlike approach to the solution of problems, as well as completing in every detail purposeful tasks that have been carefully planned. Creative thought is essential to man's progress; creative doing is essential to his life and comfort; experiences in industrial arts provide both occasion and opportunity for many types of creative activity. Furthermore, industrial arts can contribute to a worthy use of leisure time and to vocational interests.

A Philosophy of Industrial Arts Education.

A study of the literature seems to justify a conception of industrial arts as follows:

I. Learning and developmental experiences in industrial arts, through types of experiences not otherwise available, are essential in the complete social education of every boy in an industrial democracy.

A. Industrial arts is a great social leveler and all participants get some insight into how more than one half of the wage earners work.
B. Explorations provide a way of laying the foundation of all vocational and educational guidance.

C. Consumer appreciations of industrial things can be fostered in industrial arts.

D. Studies of social, economic, and related occupational problems of industry have found a place in the course of study of progressive teachers who interpret industrial arts as being more than just manual skills and technical knowledge.

II. The industrial arts constitute a group of school experiences which embrace the most fundamental procedure in education, namely, learning through a combination of seeing, hearing, thinking, and doing. Providing real life situations, or something closely approaching them, is one of the chief reasons that students take an interest in industrial arts education.

III. Industrial arts is a convenient and natural agency for educational correlation. Correlation is the first step in integration and it would be difficult to find a group of subjects or pupil experiences wherein there are so many opportunities to show interrelationships as is found in experiences in industrial arts.

IV. The vehicle of learning, the job, problem, or educational project, is the physical expression of
a pupil's educative experience and growth. Operations alone do not tell what a boy has learned through an educative work experience.

V. Industrial arts provides a ready avenue of self-expression for large numbers of persons who find many other avenues for such experiences closed. For boys, and in many cases for girls, industrial arts frequently is the one place where they may experience the pleasure of creativeness.

VI. Industrial arts is fundamentally and naturally child centered in its concepts and in its practice of methods, use of subject matter, and control. The craftsman method of production is generally employed rather than the quantity-production method, except as the latter is used to give an insight into what industrial mass production is like, for purposes of guidance and development of social sensitivity. The craftsman procedure is based upon the individual and his doing of the complete job. In the informative aspects of industrial arts, the teacher provides opportunities for the individual student to follow his interest in investigations, readings, observation, and reports.

VII. Many phases of industrial arts are applicable to girls as well as boys. It is just as important for them to have a working knowledge of adjustments and simple repairs on electrical, mechanical, plumbing, and structural devices, materials,
arrangements, and assembling as it is for boys to learn certain fundamental things about home sanitation, health, budget, selection of clothing, diet, preparation of food, furniture, and interior decoration.

VIII. The writer subscribes to the theory of Guy M. Whipple regarding transfer of training, namely, that in industrial arts, as in other school activities, what little carryover value or transfer of training occurs takes place more as a result of the methods of teaching employed than through the particular significance of subject matter. The important thing in connection with transfer is to recall that the way a teacher teaches industrial arts is more important than what he teaches. He must also consciously direct pupils' attention to the procedures that they use in solving a problem.

The new education is defined in terms of meaningful activities and rich experiences based upon adult insight and children's interests and needs which result in reflective thinking. "Be not the first by whom the new is tried nor yet the last to lay the old aside." This statement made by Lester K. Ade in an address, "The New Education," might well be the final admonition in stating the philosophy of industrial arts.


3Lester K. Ade, Superintendent of Public Instruction, Pennsylvania.
Objectives of Industrial Arts.

In the report prepared by the Committee on Standards of Attainment in Industrial Arts Teaching of the American Vocational Association the following statement is made concerning industrial arts objectives:

Objectives should be stated as the teacher's objectives, and not as the objectives of industrial arts or of general education. Such statements are far too impersonal to be effective. Objectives are the standards which we wish to attain, and the experiences which we provide, of whatever nature, should be selected because of the contribution they will make to one or more of the objectives. The objectives are the attitudes, habits, and accomplishments which the pupil is expected to acquire, in some measure, as a result of the experiences provided for him in the field of industrial arts, and which we believe will aid in making him a happy, useful, and successful citizen.

The objectives as stated by this same Committee are as follows:

I. To develop in each pupil an active interest in industrial life and in the methods of production and distribution.

II. To develop in each pupil the ability to select wisely, care for, and use properly the things he buys or uses.

III. To develop in each pupil an appreciation of good workmanship and good design.

IV. To develop in each pupil an attitude of pride or interest in his ability to do useful things.


5Ibid., p. 12.
V. To develop in each pupil a feeling of self-reliance and confidence in his ability to deal with people and to care for himself in an unusual or unfamiliar situation.

VI. To develop in each pupil the habit of an orderly method of procedure in the performance of any task.

VII. To develop in each pupil the habit of self-discipline which requires one to do a thing when it should be done, whether it is a pleasant task or not.

VIII. To develop in each pupil the habit of careful, thoughtful work without loitering or wasting time (industry).

IX. To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others.

X. To develop in each pupil an attitude of readiness to assist others when they need help and to join in group undertakings (cooperation).

XI. To develop in each pupil a knowledge and understanding of mechanical drawing, the interpretation of the conventions in drawings and working diagrams, and the ability to express his ideas by means of a drawing.

XII. To develop in each pupil elementary skills in the use of the more common tools and machines, and a knowledge of the methods of procedure in tasks frequently encountered by the average man, together with a knowledge of the working qualities and characteristics of some of our most used materials.
These objectives cover what generally is found in any comprehensive statement of purposes for a school. They would be less open to criticism had there been a slight difference in wording. As stated they tend to leave the impression that education is a pouring in process. A better statement would have been, for example, "To aid each pupil to develop elementary skills, etc., etc." After all, learning is the task and a responsibility of the pupil.

Five of the above listed objectives, numbers I, II, III, XI, and XII, deal with skills and knowledge while the other seven relate to attitudes. Aiding students to develop skills, attitudes, knowledge, sensitivities and appreciation should be the ultimate aim of an effective industrial arts program. Vocational trades education, on the other hand, seeks to prepare students for specific endeavors and emphasizes skills. The student taking a course in industrial arts before entering vocational trades education will find that he can more fully achieve the vocational trades objectives because he has experienced a wide acquaintance with materials, tools, and processes of industry and in addition has achieved desirable and effective attitudes and habits.

Objectives of Vocational Trades Education.

Following is the list of objectives as set up by the Vocational Trades Department of Ross High School:

Machine Shop Practice Course.

I. General Aims.

A. To develop a pride of workmanship.

B. To develop a desire to become a skilled mechanic.
C. To be able to enter industry with acceptable skills and related knowledge.
D. To recognize the importance of the machinist trade.
E. To become a self-supporting citizen.

II. Specific Aims.
A. To know the machines. Parts, etc.
B. To know the value of machine tools.
C. To be able to repair machine tools.
D. To be able to operate machine tools successfully and safely.
E. To be able to grind tools correctly.
F. To understand safety precautions and devices.
G. To develop skill as an operator of machine tools.

Machine Drafting.
I. Objectives.
A. The primary aim of these courses in machine drafting is not to turn out finished draftsmen, but to give each student enough working knowledge of the subject so that he may be able to read and handle a blue print or drawing intelligently, when he goes into the industrial world.
B. Through these lessons, the instructor hopes to teach accuracy, speed and neatness, with the incidental hand and eye training that should come from the solution of the various problems set before the students.
C. To teach the student obedience in following instructions carefully.
D. To teach the student cooperation.
E. To teach the student skill in lettering.
F. To teach the student habits of neatness.
G. To teach the student how to make drawings.
H. To arouse in the student an interest in drawing.
I. To teach the student how to use instruments correctly.
J. To teach the student how to think in terms of mechanical drawing.
K. To teach the student how to read drawings.
L. To teach the student to take pride in his work.
M. To teach the student self control.
N. To teach the student the conventions commonly used in drafting work.
O. To aid the boy in seeing things as they are, or to visualize, seeing proper proportions.
P. To teach the difference between a picture and the actual appearance of things.

Related Machine Mathematics.

I. General Objectives.

A. To create an interest in the mathematics related to the machinist's trade.
B. To prepare the student to enter the trade with a thorough understanding of its mathematical requirements.
C. To develop self-reliance and confidence in shop practice by acquainting the student with the necessary mathematical computations that make the shop work efficient.

D. To develop habits of accuracy and precision.

II. Specific Objectives.

A. To review the arithmetical fundamentals as they apply to shop computations.

B. To be able to measure accurately with scale and calipers.

C. To be able to calculate gearing.

D. To be able to apply and solve formulas used in machinist's trade.

E. To be able to make trigonometric computations necessary in layout work and measuring.

F. To be able to use a micrometer efficiently.

G. To be able to compute areas and volumes encountered in shop work.

H. To gain a thorough working knowledge of simple machines through laboratory experiments.

Industrial Organization for Machinists.

I. General Objectives.

A. To acquaint the student with a comprehensive viewpoint of modern industry.

B. To study up-to-date machine shop management.

C. To enable the student to fit into the modern industrial organization.
II. Specific Objectives.

A. To study equipment - modern.

B. To study trade terms and their applications.

C. To study instructional analysis and its uses.

In offering the respective programs of industrial arts and vocational trades, the instructors in both groups strive to attain the aims and objectives previously presented and use them as guides in the selection of appropriate subject matter and methods. Experiences with a wide variety of materials, equipment, and operations are further aids in achieving the purposes of the programs.
Chapter IV
PRESENT PROGRAM

The Fremont school system is organized on a 6-6 plan, the upper six grades of which are housed in the W. W. Ross High School.

The class schedule for the junior and senior high school provides for six one hour periods daily. Laboratory classes as well as academic classes follow this schedule with the exception of the third year vocational trades machine shop class which meets daily for three hours.

Industrial Arts Program.

The industrial arts program includes a junior high school department with one full time instructor, a senior high school drawing department with one full time instructor, and a senior high school general shop or laboratory with two full time instructors.

Junior High School.

All boys in the junior high school are required to enroll in the industrial arts course. Both seventh grade and eighth grade classes meet twice a week.

The seventh grade classes during the first semester are taught drawing. Here the student is acquainted with drawing instruments and their proper use and care. After free hand sketching and lettering is accomplished, the principles and problems in drawing in orthographic projection are undertaken. These experiences enable the student to read simple drawings and blue prints and aid him in visualizing the construction of elementary projects.
The second semester work for the seventh grade deals with woodworking. Here instruction in the proper use of hand woodworking tools enables the student to construct neatly, simple wood projects following correct analysis and interpretation of a drawing or blue print. The proper care of tools and finishing equipment is stressed.

During the eighth grade year the class work is not divided by semesters. Demonstrations and instructions are given for elementary work in sheet metal where patterns are provided, soldering, the cutting and polishing of plastics, hand woodworking, and finishing of wood. Every student in this grade has working experiences in each area.

Only a grading record is kept of the junior high school industrial arts students. After passing the eighth grade the student with the aid of the senior high school guidance department makes out his schedule for work in the ninth grade. No evidence was found that either the grading records or the instructor of the junior high school industrial arts department is consulted in assigning students to ninth grade classes.

Senior High School.

The senior high school industrial arts program includes drawing I and II and general shop I, II, and III.

Drawing I is offered to assist the student in the development of a plan for the work which he carries on or is about to carry on in the general shop, and to give those students who are planning to take up engineering in college an introduction to mechanical drawing. Experiences in
lettering, orthographic projection, auxiliary views, pictorial representation, developments, and intersections are provided at this level.

Drawing II is offered to students who have a desire to pursue drawing I further and wish to secure a minor in drawing. Building plans, including working drawings of elevations, floor plans, details, and isometrics are included. Emphasis is placed upon architectural drawing.

General shop I serves an exploratory purpose with requirements to be met by the students in the areas of hand and machine cabinet-making and finishing, sheet metal, foundry practices and pattern-making, elementary electricity, and cold metal. Opportunities are also offered the student to work in crafts and upholstery with no specific requirements.

General shop II permits the student to explore, under teacher guidance, one or more of the areas in which he became interested in general shop I.

General shop III provides opportunity for specialization in anyone of the areas involved in general shop I and demands initiative and creative thinking on the part of the student in organizing and performing his work.

The proper use and care of equipment, use of materials at hand, development of new materials, consumer education, proper procedures in manipulative processes, and applied shop mathematics are presented to the students and/or used throughout the general shop courses.
The shop teacher recommends that senior high school industrial arts students precede general shop I with drawing I. This procedure facilitates work in the shop and provides opportunity for application of principles learned in drawing I. If such schedule is not possible for every student, it is recommended he take drawing during the same year in which he is enrolled in general shop I. Under the present practice of scheduling many students are enrolled by the guidance department in the general shop courses who have not previously taken drawing I and are not at the time of their shop work taking it.

At the present time seventeen students from country grade schools, who are attending Ross High School for their first year, are enrolled in general shop I. Eight of these seventeen and sixteen other students who did attend Ross High School last year and who are also enrolled in general shop I are not taking drawing I. This number constitutes thirty-two per cent of the total enrollment of seventy-seven in general shop I.

Evidently there is no organized plan followed at the present time in the guidance of students to the vocational trades department. After one year of industrial arts some students have been entering the vocational trades department without recommendations from the industrial arts department. Those students who do not satisfactorily meet the requirements of the vocational trades courses drop out of this department and thereby lose a year's credit.
Basic Data Regarding Enrollment.

Junior High School.
Number of seventh grade pupils 187
Number of seventh grade boys 89
Number of eighth grade pupils 214
Number of eighth grade boys 109
Enrollment of boys in junior high school industrial arts 198

Senior High School.
Number of students enrolled in Fremont Ross High School 830
Number of boys in Fremont Ross High School 399
Number of boys taking industrial arts
General shop I 77
General shop II 51
General shop III 22
Enrollment of boys in high school industrial arts 150

The total number of boys enrolled in industrial arts constitutes thirty-seven per cent of the boys enrolled in the high school.
Number of boys taking industrial arts
Drawing I 81
Drawing II 32
Enrollment of boys in industrial arts drawing 113
Number of boys taking trades machine shop I 22
Number of boys taking trades machine shop II 8
Number of boys taking trades machine shop III 11
Enrollment of boys in trades machine shop 41
Number of boys enrolled in trades drawing I 15
Number of boys enrolled in trades drawing II 3
Number of boys enrolled in trades drawing III 8
Enrollment of boys in trades drawing 26
Number of boys taking trades mathematics I 12
Number of boys taking trades mathematics II 2
Enrollment of boys in trades mathematics 14

Vocational Trades Program.

The vocational trades department occupies two rooms full time, one for machine drafting and related mathematics and another for machine shop practice. Two full time instructors are employed. This department is subject to Smith-Hughes regulations.

Ninth grade students desiring to follow the three year vocational trades program indicate such preference when they make out their tentative four year high school schedule under the supervision of the guidance department. However, students are not permitted to enter the department until their sophomore year. The reasons for this are (1) students of ninth grade age have not been sure of the field or vocation they wish to follow; (2) the Smith-Hughes program does not reimburse the school for the extra time the instructors must devote to a program including ninth grade students; and (3) this plan eliminates mid-year revision of schedules for those students whose attitudes change in regard to their preference for vocational training.
The sophomore entering the vocational trades department is given a draftsman's qualifications test, the results of which furnish the instructor primarily with an idea of the student's attitudes toward drafting both as a subject and as a vocation, and a general mathematics test, which measures the student's ability to solve simple practical problems.

The results of these tests together with the student's intelligence quotient are recorded on a personal record card which the student fills out upon entering the department. Samples of these tests and of the personal record card are illustrated on succeeding pages.
TEST YOUR QUALIFICATIONS FOR THE VOCATION OF DRAFTSMAN

Many of these questions are not easy to answer, because they require you to take stock of personal qualities that are hard to measure—but those are the qualities that determine success as a draftsman. Take plenty of time to make your self-analysis as accurate as possible. Score 4 for each question answered "Yes"; no credit for "No" answers.

Do you have a very strong liking for mathematics?

Is it easy for you to understand blueprints, diagrams, and mechanical drawings?

Can you follow a clear set of directions without getting mixed up?

Do you have a keen interest in natural sciences—physics, chemistry, etc.?

Would you rather deal with objects and material things than abstractions?

Do you have a practical turn of mind combined with imagination (devise small improvements, inventions, see new uses for things)?

Is your general health good, particularly your eyesight?

Do you work well under supervision, take orders without "losing face"?

Have you an education at least equivalent to one year of high school?

Is it easy for you to learn from books, do "paper work"?

Are you neat and orderly in habits (handwritten letters not blurred or blotted, workshop tools and belongings usually in place)?

Do you accept responsibility readily; "take the rap" for your errors?

Do you like machinery and have a fair amount of mechanical ability?

Are you a good team worker, getting along well with people?

Can you visualize and think in three dimensions?
Do you invariably plan things in logical fashion before going ahead?

Would you rather take twice as long to turn out a perfect job, than to finish a piece of work only ninety-eight per cent perfect in half the time?

Do you like to work in the same room with many other people?

When you understand the career, opportunities and income of a draftsman, does it satisfy you as a life work?

Do you like to work with your hands as well as your head?
TEST YOURSELF

How good are you at arithmetic?
The test below will help you find out.

Would you like to find out more about yourself?
Specifically, would you like to take some short, simple tests
that may help you to discover what some of your strong and
weak points are?

The test helps you to measure your ability to handle
everyday problems in arithmetic. There are ten problems in
the test, arranged in order of difficulty. Allow yourself
twenty minutes to complete the test. If you are not finished
when time is up, stop.

QUESTIONS

1. What is 5 percent of $98.00?

2. If Mary spends half of her allowance for a bracelet,
a fourth for movies, and has a fourth or 15¢ left, what
is her allowance?

3. A bowling alley uses 12,000 watts of electricity per hour.
All the lights have 250 watt bulbs. How many are burning?

4. Johnny broke a window pane measuring 18" x 24". How much
did his Dad deduct from his allowance if glass costs 20¢
a square foot?

5. Bill and Henry won a prize of $21.00 which they had agreed
to divide in the ratio of 4 to 3, the smaller share to be
Bill's. How much should each receive?

6. If it takes two pounds of apples to make a pie for six
people, how many pounds will be needed to serve 210 people?

7. A five-gallon container of ice cream costs $6.00. How
much per quart should the dealer charge to make a profit
of 33 1/3 percent on his cost?

8. If golf club A pays its caddies $1.50 for 18 holes and
golf club B pays 60¢ an hour, how much more does a caddy
make in a day at club B working 36 holes if it takes
3 hours to play 18 holes?
9. There are four bundles of shingles in a "square" and a square will cover 100 square feet. How many bundles are needed to cover a roof area 50' by 40'? 

10. How many coats of varnish can you give the top of a desk 30" by 48" using a pint of varnish which covers 50 square feet?
1. Name........................Address........................Date of birth.........Age...
   Last First Middle
2. Nationality.............Sex...........Changed Address.........Phone...........Date.....
3. Weight.............Height........Complexion........Hair.................Health...........
4. Physical Handicaps..............................................

5. Father or Guardian.............................................
   Last First Middle Address Nationality Occupation

6. Mother..............................................................
   Last First Middle Address Nationality Occupation

7. No. of children in family...Brothers...Younger...Older...In School...Working........
   At Home...........
   Sisters...Younger...Older...In School...Working........
   At Home...........

8. Parent's attitude................Toward school................Toward child...........

9. Do you own an auto........Make........Down Payment........Monthly Payts........No. to pay....
10. Do your parents own an auto.........................Make..............................
11. Do your parents own their home...........................
12. How much do houses rent for per month in your neighborhood...........................

FIG. 1. VOCATIONAL TRADES DEPARTMENT PERSONAL RECORD CARD.
<table>
<thead>
<tr>
<th>Type of job</th>
<th>Firm</th>
<th>Address</th>
<th>Employment Mgr.</th>
<th>Date Started</th>
<th>Wages</th>
<th>Date Left</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
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<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>(In order held)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Last grade school attended</td>
<td>Last grade completed</td>
<td>Date of leaving</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>High school</td>
<td>Course</td>
<td>Last grade completed</td>
<td>Date leaving</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Do you expect to finish course</td>
<td>If not, how many years do you expect to attend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Subjects liked best</td>
<td>Disliked</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>List grades with subjects which you failed in school</td>
<td>Why did you fail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Present educational activities (Not regular day school)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Do you like to read</td>
<td>List books and magazines you read</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>How many times have you moved since you started to school</td>
<td>In this city</td>
<td>Elsewhere</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Do you work after school</td>
<td>At what</td>
<td>Afternoon</td>
<td>Evenings</td>
<td>Saturday</td>
<td>Total Hours</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>To what clubs or organizations do you belong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>25.</td>
<td>How do you spend most of your leisure time</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>26.</td>
<td>What church do you attend</td>
<td>Religion</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>27.</td>
<td>Teacher's estimate</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Along with academic studies the tenth grade student enrolled in vocational trades spends five hours per week for one credit in mathematics, five hours per week for one-half credit in drafting, and five hours per week for one-half credit in machine shop practice. The remainder of the school day is spent in the regular academic classes or activities. The junior year student spends five hours per week for one credit in mathematics, fifteen hours per week for one and one-half credits in machine shop practice, and five hours for one-half credit in drafting. The senior student does not take mathematics. The machine shop practice and drafting hours and credits are the same as during the junior year. However, the senior vocational trades student is required to take academic courses in machine science (physics) and political science.

Vocational Trades Follow-Up Program.

The Fremont Ross High School vocational trades department was organized September 1, 1920 and has been in operation continuously since that date. Records kept for the Division of Trades and Industries of the State Board of Vocational Education show annual placements, graduates, and withdrawals from this department. Figures contained in the following tables are taken from these records and cover a period of twenty-five years, from 1920 to 1945.
<table>
<thead>
<tr>
<th>Year</th>
<th>Sophomores Withdrawals</th>
<th>Juniors Withdrawals</th>
<th>Seniors Withdrawals</th>
<th>Number of Graduates</th>
<th>Number entering Industry</th>
<th>Percent graduates entering industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920-1921</td>
<td>18</td>
<td>*</td>
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<tr>
<td>1921-1922</td>
<td>20</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1922-1923</td>
<td>21</td>
<td>*</td>
<td>16</td>
<td>*</td>
<td>10</td>
<td>10</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td>1923-1924</td>
<td>11</td>
<td>*</td>
<td>17</td>
<td>*</td>
<td>11</td>
<td>10</td>
</tr>
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<td></td>
<td>50%</td>
</tr>
<tr>
<td>1924-1925</td>
<td>10</td>
<td>*</td>
<td>11</td>
<td>*</td>
<td>12</td>
<td>11</td>
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<td>6</td>
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<td></td>
<td></td>
<td></td>
<td>55%</td>
</tr>
<tr>
<td>1925-1926</td>
<td>17</td>
<td>-2</td>
<td>8</td>
<td>*</td>
<td>11</td>
<td>-1</td>
</tr>
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<td>1</td>
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<td></td>
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<td>10%</td>
</tr>
<tr>
<td>1926-1927</td>
<td>19</td>
<td>-5</td>
<td>12</td>
<td>-7</td>
<td>8</td>
<td>8</td>
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<td>1927-1928</td>
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<td>11</td>
<td>-8</td>
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<td>0%</td>
</tr>
<tr>
<td>1928-1929</td>
<td>18</td>
<td>-5</td>
<td>16</td>
<td>-2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>32%</td>
</tr>
<tr>
<td>1929-1930</td>
<td>22</td>
<td>-2</td>
<td>16</td>
<td>-4</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
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<td>42%</td>
</tr>
<tr>
<td>1930-1931</td>
<td>15</td>
<td>-9</td>
<td>13</td>
<td>-10</td>
<td>6</td>
<td>6</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>1931-1932</td>
<td>16</td>
<td>-2</td>
<td>13</td>
<td>-5</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
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<td></td>
<td>36%</td>
</tr>
<tr>
<td>1932-1933</td>
<td>14</td>
<td>-5</td>
<td>11</td>
<td>-3</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40%</td>
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*No record of withdrawals available.
<table>
<thead>
<tr>
<th>Year</th>
<th>Sophomores Withdrawals</th>
<th>Juniors Withdrawals</th>
<th>Seniors Withdrawals</th>
<th>Number of Number of</th>
<th>Percent graduates entering industry entering industry</th>
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</thead>
<tbody>
<tr>
<td>1933-1934</td>
<td>15</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-2</td>
<td></td>
<td>45%</td>
</tr>
<tr>
<td>1934-1935</td>
<td>12</td>
<td>14</td>
<td>9</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-1</td>
<td>-2</td>
<td>-2</td>
<td></td>
<td>67%</td>
</tr>
<tr>
<td>1935-1936</td>
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<td>12</td>
<td>10</td>
<td>6</td>
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<td></td>
<td>-2</td>
<td>-3</td>
<td>-2</td>
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<td>60%</td>
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<tr>
<td>1936-1937</td>
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<td>8</td>
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<td>3</td>
</tr>
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<td>-5</td>
<td>-3</td>
<td></td>
<td>3</td>
<td>43%</td>
</tr>
<tr>
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<td>5</td>
<td>7</td>
<td>3</td>
</tr>
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<td></td>
<td>-7</td>
<td>-4</td>
<td></td>
<td>4</td>
<td>43%</td>
</tr>
<tr>
<td>1938-1939</td>
<td>21</td>
<td>14</td>
<td>6</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>-13</td>
<td>-4</td>
<td></td>
<td>6</td>
<td>67%</td>
</tr>
<tr>
<td>1939-1940</td>
<td>16</td>
<td>8</td>
<td>11</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>-13</td>
<td>-3</td>
<td></td>
<td>7</td>
<td>64%</td>
</tr>
<tr>
<td>1940-1941</td>
<td>18</td>
<td>11</td>
<td>-1</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>-5</td>
<td></td>
<td></td>
<td>4</td>
<td>57%</td>
</tr>
<tr>
<td>1941-1942</td>
<td>19</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>-6</td>
<td></td>
<td></td>
<td>11</td>
<td>100%</td>
</tr>
<tr>
<td>1942-1943</td>
<td>18</td>
<td>15</td>
<td>10</td>
<td>-1</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>-4</td>
<td>-2</td>
<td></td>
<td>2</td>
<td>22%</td>
</tr>
<tr>
<td>1943-1944</td>
<td>23</td>
<td>12</td>
<td>7</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>-6</td>
<td>-8</td>
<td></td>
<td>2</td>
<td>33%</td>
</tr>
<tr>
<td>1944-1945</td>
<td>4</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>419</td>
<td>110</td>
<td>294</td>
<td>69</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>88</td>
</tr>
<tr>
<td>Year</td>
<td>Graduates</td>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>-------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1925-1926</td>
<td>10</td>
<td>1 machine industry; 3 moved; 1 deceased; 1 clerk; 1 heat treater; 2 electricians; 1 sales.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1926-1927</td>
<td>8</td>
<td>1 machine industry; 1 deceased; 1 tinner; 1 packer; 1 engineer; 1 laborer; 1 farmer; 1 trimmer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1927-1928</td>
<td>5</td>
<td>1 engineer; 1 teacher; 1 heater; 1 clerk 1 shear inspector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1928-1929</td>
<td>6</td>
<td>2 machine industry; 1 clerk; 1 tinner 2 auto mechanics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1929-1930</td>
<td>12</td>
<td>5 machine industry; 1 foreman; 2 moved 1 laborer; 1 electrician; 1 aviator 1 timekeeper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1930-1931</td>
<td>6</td>
<td>1 machine industry; 1 clerk; 1 navy; 1 secretary; 1 shear operator; 1 news</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1931-1932</td>
<td>11</td>
<td>4 machine industry; 3 moved; 2 clerks 1 farmer; 1 truck driver</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1932-1933</td>
<td>10</td>
<td>4 machine industry; 1 auto mechanic 1 auto parts; 1 carpenter; 1 student 1 teacher; 1 stockroom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933-1934</td>
<td>11</td>
<td>5 machine industry; 1 printer; 1 service station; 2 factory; 2 clerks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1934-1935</td>
<td>9</td>
<td>6 machine industry; 1 auto mechanic 1 factory; 1 moved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1935-1936</td>
<td>10</td>
<td>6 machine industry; 1 tinner; 1 clerk 1 service station; 1 auto mechanic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1936-1937</td>
<td>7</td>
<td>3 machine industry; 1 clerk; 1 cobbler 1 plater; 1 brickmason</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1937-1938</td>
<td>4</td>
<td>3 machine industry; 1 navy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1938-1939</td>
<td>6</td>
<td>4 machine industry; 1 clerk; 1 navy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1939-1940</td>
<td>11</td>
<td>7 machine industry; 2 clerks; 2 army</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1940-1941</td>
<td>7</td>
<td>4 machine industry; 2 clerks; 1 filling station attendant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1941-1942</td>
<td>11</td>
<td>11 machine industry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1942-1943</td>
<td>9</td>
<td>2 machine industry; 7 U. S. Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1943-1944</td>
<td>6</td>
<td>2 machine industry; 7 U. S. Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1944-1945</td>
<td>2</td>
<td>2 U. S. Service</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE III. STATUS OF WITHDRAWALS

<table>
<thead>
<tr>
<th>Year</th>
<th>Withdrawals</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925-1926</td>
<td>2 sophomores</td>
<td>1 factory; 1 moved</td>
</tr>
<tr>
<td></td>
<td>1 senior</td>
<td>1 foundry</td>
</tr>
<tr>
<td>1926-1927</td>
<td>5 sophomores</td>
<td>1 foreman; 1 farmer; 1 baker; 1 moved</td>
</tr>
<tr>
<td>1927-1928</td>
<td>8 sophomores</td>
<td>2 clerks; 1 farmer; 3 moved; 1 auto mechanic; 1 punch press</td>
</tr>
<tr>
<td></td>
<td>7 juniors</td>
<td>2 moved; 1 foreman; 1 auto; 1 laborer; 1 clerk; 1 delivery</td>
</tr>
<tr>
<td>1928-1929</td>
<td>8 sophomores</td>
<td>1 factory; 1 clerk; 2 moved</td>
</tr>
<tr>
<td></td>
<td>5 juniors</td>
<td>4 transfer HS*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 machine; 1 heat treat; 1 moved</td>
</tr>
<tr>
<td>1929-1930</td>
<td>2 sophomores</td>
<td>1 farmer; 1 truck driver</td>
</tr>
<tr>
<td></td>
<td>4 juniors</td>
<td>1 factory; 1 clerk; 1 moulder</td>
</tr>
<tr>
<td>1930-1931</td>
<td>9 sophomores</td>
<td>1 garage; 4 moved; 1 baker; 1 butcher; 1 farmer; 1 factory</td>
</tr>
<tr>
<td></td>
<td>10 juniors</td>
<td>2 clerks; 2 moved; 3 factory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 laborer; 1 delivery; 1 service station</td>
</tr>
<tr>
<td>1931-1932</td>
<td>2 sophomores</td>
<td>1 factory; 1 shoe repair</td>
</tr>
<tr>
<td></td>
<td>2 juniors</td>
<td>1 shear finisher; 1 sales</td>
</tr>
<tr>
<td>1932-1933</td>
<td>5 sophomores</td>
<td>1 taxi; 2 factory; 1 secretary</td>
</tr>
<tr>
<td></td>
<td>3 juniors</td>
<td>2 machine; 1 moved</td>
</tr>
<tr>
<td>1933-1934</td>
<td>3 sophomores</td>
<td>1 shear operator; 1 clerk; 1 moved</td>
</tr>
<tr>
<td>1934-1935</td>
<td>1 sophomore</td>
<td>1 moved</td>
</tr>
<tr>
<td></td>
<td>2 juniors</td>
<td>1 machine; 1 moved</td>
</tr>
<tr>
<td>1935-1936</td>
<td>2 sophomores</td>
<td>1 laborer; 1 deceased</td>
</tr>
<tr>
<td></td>
<td>2 juniors</td>
<td>2 farmers</td>
</tr>
<tr>
<td></td>
<td>2 seniors</td>
<td>1 machine; 1 laborer</td>
</tr>
<tr>
<td>1936-1937</td>
<td>6 sophomores</td>
<td>1 CCC; 3 laborers; 1 farmer</td>
</tr>
<tr>
<td></td>
<td>3 juniors</td>
<td>1 cafe helper; 1 bowling; 1 clerk</td>
</tr>
<tr>
<td>1937-1938</td>
<td>4 sophomores</td>
<td>3 clerks; 1 sign painter</td>
</tr>
<tr>
<td></td>
<td>3 juniors</td>
<td>1 cutter; 1 navy; 1 clerk</td>
</tr>
<tr>
<td></td>
<td>1 senior</td>
<td>1 laborer</td>
</tr>
<tr>
<td>1938-1939</td>
<td>7 sophomores</td>
<td>3 factory; 1 chauffeur; 1 university</td>
</tr>
<tr>
<td></td>
<td>4 juniors</td>
<td>1 army; 3 out-of-town</td>
</tr>
<tr>
<td>1939-1940</td>
<td>13 sophomores</td>
<td>12 transfers HS*; 1 service station</td>
</tr>
<tr>
<td></td>
<td>3 juniors</td>
<td>2 clerks; 1 army</td>
</tr>
</tbody>
</table>

*Transferred to other high school subjects.
<table>
<thead>
<tr>
<th>Year</th>
<th>Withdrawals</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940-1941</td>
<td>5 sophomores</td>
<td>5 transfers HS</td>
</tr>
<tr>
<td></td>
<td>1 junior</td>
<td>1 transfer HS</td>
</tr>
<tr>
<td>1941-1942</td>
<td>6 sophomores</td>
<td>6 transfers HS</td>
</tr>
<tr>
<td>1942-1943</td>
<td>4 sophomores</td>
<td>2 transfers HS; 1 laborer; 1 navy</td>
</tr>
<tr>
<td></td>
<td>2 juniors</td>
<td>1 transfer HS; 1 laborer</td>
</tr>
<tr>
<td></td>
<td>1 senior</td>
<td>1 transfer HS</td>
</tr>
<tr>
<td>1943-1944</td>
<td>6 sophomores</td>
<td>1 out-of-town; 2 quit school;</td>
</tr>
<tr>
<td></td>
<td>8 juniors</td>
<td>3 U. S. Service; 2 factory;</td>
</tr>
<tr>
<td></td>
<td>1 senior</td>
<td>2 transfer; 1 plumber</td>
</tr>
<tr>
<td>1944-1945</td>
<td>13 sophomores</td>
<td>13 transfers HS</td>
</tr>
<tr>
<td></td>
<td>10 juniors</td>
<td>8 transfers HS; 2 U. S. Service</td>
</tr>
<tr>
<td>1945-1946</td>
<td>2 sophomores</td>
<td>1 working; 1 transfer HS</td>
</tr>
<tr>
<td></td>
<td>1 junior</td>
<td>1 changed course</td>
</tr>
</tbody>
</table>
Table I shows the enrollment each year by grades. The number of withdrawals is represented by a minus figure, thus making it necessary to read the succeeding year's enrollment by grade on a slanting scale. Table I also shows the number of graduates and the number and per cent of those graduates who enter industry. Table II presents figures indicating distribution of employment among each year's graduates.

It is interesting to note from Table III the number of transfers and withdrawals. School records show that ninety-nine of those students who withdrew or transferred to other courses were either failing in the vocational trades work, or were advised by the trades coordinator to transfer to other courses when it became apparent that they could not successfully complete the work.

Since there was no plan of selecting the students for the vocational trades course, other than voluntary expression of interest, it is probable that had they been selected on the basis of their accomplishments and abilities, there would have been a marked decrease in withdrawals and a saving of time on the part of both students and instructors. Data given in Tables II and III indicate that students who withdrew might have used their time more profitably in industrial arts if they desired shop practice, or in some other type of course for which their abilities and preparation better fitted them.

As the program is now, withdrawing and transferring students lose at least one credit. The time lost is really
double since the first year trades students work two hours per day for this credit.

To alleviate the present situation, the writer proposes the use of data available through the instructors of industrial arts and class records as the selective agency for vocational trades students. This plan is set forth in the following chapter.
Chapter V

THE PROPOSED PROGRAM

As a result of data collected and studied a program of guidance for the eighth grade and for senior high school industrial arts students and methods of selecting students for specialized training in the trades department are presented in this chapter. The proposal has the endorsement of the instructors of the three departments involved and has been approved by the principal of the school.

To eliminate any suspicion or confusion it should be stated that it is not the wish of any of the instructors to deprive any student of the opportunity and desire of experiencing and acquiring the educational values derived from the industrial arts courses. The instructors firmly believe in accepting any student, and that the student, regardless of scholastic standing, will gain information that will aid him in living in an industrialized world of ever changing processes and the development of new materials.

Six weeks before the close of the school year all of the high school students are given subject election blanks to fill out for their next year's schedule. These blanks are returned to the principal's office where they are used during the summer in making up class schedules for the next school year. The guidance department counsels only the eighth grade students going into the ninth grade in filling out their election blanks.
The New Program.

Under this plan of operation the industrial arts instructor of the junior high school, after two school years of careful supervision and class room or shop relationship with the students, will recommend to the guidance department those eighth grade boys who are adapted to and can successfully carry on advance work in the senior high school industrial arts program. This instructor will make a list in triplicate of those he recommends and also a list of those he does not recommend. One copy will be kept for his files, one will be given to the senior high school industrial arts instructors, and one to the guidance department. This list is to be made up during the last six weeks of the school year and before the election blanks are filled out by the students for the following year's schedules.

There will probably be students on the recommended list who will have no desire to pursue industrial arts work any further. However, from this list the guidance department can help the eighth grade student in choosing the subjects and making his schedule for the first year of high school without any other checking on the students who wish to take industrial arts. Likewise the guidance department will be helped in schedule-making for those students who wish work in the senior high school industrial arts department but who are on the non-recommended list by noting on the student's election blank which must be sent to the principal's office, like all other election sheets for class assignments, that this student was not recommended for industrial arts and is
to be assigned to the class made up of similar students. That will apply to general shop I and drawing I students. In this way the better students will be in a class of individuals with comparable potentialities where progress will not be retarded by the slower-learning or physically-handicapped students. A class of slower learners or the non-recommended students will be asked to meet fewer requirements than are now expected of all industrial arts I classes. The ninth grade industrial arts students will carry general shop I, drawing I, and English for one credit each and guidance and science for one-half credit each.

Before the election blanks are filled out for students in industrial arts I the high school industrial arts department will find the number of students and the name of each one at that level who is desirous of being admitted to the three year vocational trades course for specialized training. The three instructors in a meeting will then rate these students according to the grading scale used by both the industrial arts and vocational trades departments which is discussed later in this chapter. The trades department instructors prefer that the average grade of any candidate for the vocational trades course shall be "C" or above.

After the rating of the students has taken place the names of those students approved for entering the vocational trades course will be submitted to the instructors of that department for approval and for reference when school is started the following year.
The industrial arts instructors will then inform those approved students to fill out their election blanks accordingly. Those students not on the approved list will be encouraged to continue their work in the industrial arts courses. Anyone who is not so inclined will be referred to the class counselor for help in completing his election blank.

There may be students who are capable of doing vocational trades work who do not have the inclination to enter this field of specialized training. The writer believes that the industrial arts instructors can help in counseling by investigating the factors influencing the student's choice and possibly aid him in arriving at a wise decision, but without any idea of coercion.

Since the guidance department does not counsel the students after they enter the ninth grade, the industrial arts instructors are in a position to--and should--offer help and advice. These instructors can best determine whether or not the student is fitted for the vocational training program, because these teachers more than any others are in position to evaluate their interests and attitudes as well as their ability to carry on in trade skills after observing the students' work and behavior. A laboratory course such as industrial arts frequently offers the opportunity for teachers to observe students at work in their natural manner rather than with the strained effort that sometimes arises when the student is aware that he is being observed and graded on his work, or when he is required to take subjects in which he has little interest.
The industrial arts II classes are made up of those industrial arts I students who do not desire vocational training and also of those who are not approved for the trades training as well as some students who after one year of industrial arts have dropped the course for one or two years and return to the department during their junior or senior school year.

The following figures from the 1944-1945 and 1945-1946 industrial arts enrollment will furnish an illustration of the way in which industrial arts I classes serve as a pre-training period for further industrial arts work or for vocational trades training.

The 1945-1946 class enrollment of fifty-one in industrial arts II included but fifty-one per cent of the previous year's industrial arts I class of one hundred one students. The large difference in enrollment is accounted for by twenty-two students who enrolled in vocational trades I, six who left school to enter United States services, one who transferred to another school, three who were seniors, and eighteen who were from the local parochial school and who carried only industrial arts I at Ross High School and did not return for industrial arts II.

The 1945-1946 industrial arts III class is forty-three per cent of the previous year's industrial arts II class of forty-four students plus three students who were seniors and who had industrial arts II work two years previously.

Twenty-nine per cent of this year's industrial arts I
students have indicated by raise of hand in class their desire to enter the vocational course next school year.

Bases for Selection.

Upon entering either department each first year student is given a copy of the aforementioned grading scale which is the basis for directing industrial arts students into vocational training as well as a grading basis within each department. For a sample of the grading scale the reader is referred to Fig. 2.

The grading system used throughout Ross High School is the one indicated by the numerical grade at the top of the chart and all written tests in all departments are graded according to this scale. The nine bases for the illustrated grading scale are the qualities that the instructors in the two departments have found desirable over a considerable period of observation and experience in working with students in industrial arts and vocational trades training. An individual in his first year of industrial arts, the pre-training period for vocational trades training, who does not measure up to the average of these qualities and who has not grasped the fundamental tool processes, according to past experience, has little chance of succeeding in the vocational trades program. This is attested by data given in Table I which shows the relatively small portion who graduate from this program. An unqualified individual uses the expensive materials and machinery and commands the attention of the vocational instructors which might be more profitably used by a more
### Standard Grading Scale for Trades and Industrial Arts Shop - Drawing

**Fremont Ross High School, Fremont, Ohio**

<table>
<thead>
<tr>
<th>Basis</th>
<th>A - 95 To 100</th>
<th>B - 89 To 94</th>
<th>C - 81 To 88</th>
<th>D - 75 To 80</th>
<th>F - Below 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attitude - Interest - Effort</td>
<td><strong>Excellent</strong></td>
<td>Wholesome - Above Average - In Interest And Degree Of Efforts</td>
<td>Good</td>
<td>Poor</td>
<td>Indifferent</td>
</tr>
<tr>
<td>2. Initiative - Problem Solving</td>
<td><strong>Superior</strong> - Willingness To Do Extra Work</td>
<td>Splendid - Tries-Succeeds Nearly All Problems Does More Than Is Required</td>
<td>Meets Assignments</td>
<td>Occasionally Meets Assignments</td>
<td>No Initiative - Requires Much Supervision</td>
</tr>
<tr>
<td>4. Accuracy - (Highest Degree)</td>
<td>Generally Better Than Standard</td>
<td>Standard</td>
<td>Below Standard Tries To Get By By Hook Or Crook Lacks Self-Confidence</td>
<td>Sloppy - Believes Anything Will Do</td>
<td></td>
</tr>
<tr>
<td>5. Quantity - (of Work)</td>
<td>Always More Than Required</td>
<td>Generally More Than Required</td>
<td>Meets Requirements</td>
<td>Less Than Required Afraid To Work</td>
<td>Always Behind Never Meets Requirements</td>
</tr>
<tr>
<td>6. Promptness - Reliability</td>
<td>Everything In On Time (Special Assignments Extra Work)</td>
<td>Assignments Always In On Time (Some Extra Work) (Special Assignments)</td>
<td>Generally In On Time (Extra Work Special Assignments Sometimes In)</td>
<td>Usually Fails To Get Assignments In On Time - Not Very Reliable</td>
<td>Cannot Be Relied On</td>
</tr>
<tr>
<td>7. Recitation -</td>
<td>Always Alert - Continually Contributing To Extra Assignments</td>
<td>Always Alert - Usually Contributes</td>
<td>Generally Alert - Frequently Contributes</td>
<td>Generally Dull - Occasionally Contributes</td>
<td>Always Dull - Seldom (If Ever) Contributes</td>
</tr>
<tr>
<td>9. Safety -</td>
<td>Always Careful AVOIDS Horse Play Warne Others</td>
<td>Always Careful (Of Himself)</td>
<td>Generally Careful</td>
<td>PHONE To &quot;Take A CHANCE&quot; No Interest In Self Or Others</td>
<td>Always CARELESS - Dangerous To Self And Others</td>
</tr>
</tbody>
</table>

**FIG. 2. SAMPLE GRADING SCALE**
capable person. This is supported by S. T. Hammond who states, "No student of low intelligence quotient should be allowed to practice on expensive equipment, when a resulting error of judgment may cause the ruination of expensive parts or apparatus, or may cause or create a hazard or danger to himself or other members of the class."

An advantage of this procedure is that a student knowing the bases on which he will be rated has ample opportunity to prove himself a worthy candidate for advanced training providing his elementary education has furnished him an adequate background.

For the purpose of recording personal information concerning the student, his IQ, and general interest and attitudes, as well as to furnish a method of summarizing the student's abilities, the instructors of the industrial arts department have devised a six by nine inch record card for reference purposes. The information recorded on this card serves as an aid in attempting to answer the certain problems which arise in the process of counseling. A sample of the record card is shown in Figs. 3 and 4.

One side of the card provides space for the junior high school industrial arts instructor to record achievements and for making recommendations to the guidance department. As is indicated on the card these recommendations are based on mechanical ability, neatness, and accuracy as well as the

---

<table>
<thead>
<tr>
<th>NAME</th>
<th>IQ</th>
<th>AGE</th>
<th>GRADE SCHOOL ATTENDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOME CONDITIONS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEVENTH</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| PARENTS OCCUPATION | |
| EIGHTH | |

<table>
<thead>
<tr>
<th>Grade</th>
<th>MECHANICAL ABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEATNESS</td>
<td></td>
</tr>
<tr>
<td>ACCURACY</td>
<td></td>
</tr>
<tr>
<td>RECOMMENDATIONS</td>
<td></td>
</tr>
</tbody>
</table>

Form 125, 500, 3-46, T.J.M.

**FIG. 3. SAMPLE JUNIOR HIGH SCHOOL RECORD CARD**
### RECORD CARD

<table>
<thead>
<tr>
<th>Name</th>
<th>IQ</th>
<th>Age</th>
<th>Grade School Attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>NINTH</td>
<td>TENTH</td>
<td>ELEVENTH</td>
<td>TWELFTH</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade</th>
<th>Grade</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing</td>
<td>Drawing</td>
<td>Drawing</td>
<td>Drawing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade</th>
<th>Grade</th>
<th>Grade</th>
</tr>
</thead>
</table>

**Vocational Ambitions:**

**Hobbies:**

**Initiative and Emotional Stability:**

**Recommendations:**

**After Graduation Occupation:**

**FIG. 4. SAMPLE SENIOR HIGH SCHOOL RECORD CARD**
student's final grade. The space above on the card is afforded for the recording of information regarding physical handicaps, general attitudes, and characteristics as the instructor deems pertinent.

These cards are to be transferred to the senior high school industrial arts department where the reverse side is used.

The instructors will also file cards for those students entering Ross High School from rural schools or from a school that does not include seventh and eighth grade industrial arts in its curriculum. Those students will be placed in a group recommended for industrial arts I, providing their academic record averages "C" or above.

With the information this card supplies from the junior high school a counseling interview is conducted with each student. By means of this interview the instructor is provided information that enables him to make an entry on the record card relative to vocational ambitions and hobbies. The interviewing instructor should diplomatically encourage the student to speak of any personal problems that may affect his future plans, both in school and out. Such an interview tends to establish better teacher-pupil relationship and better class rapport. The item of initiative and emotional stability will be recorded later by the instructors as a result of observing the student's behavior and work methods. The writer sees this item as an important factor in recommending students either for further advanced training or for industrial employment. A student may be above average in
carrying on manipulative processes, but his emotional instability may make him unfit for the responsibility of dealing with people and the handling of materials and equipment. Such cases are a problem demanding remedial treatment and should be considered a direct responsibility of the counselor and teachers. Because, unless the condition is remedied the person involved will be unemployable.

On the card, space is afforded for recording information by the general shop and drawing instructors for estimating and rating the student's personal characteristics and abilities. Rating personality traits is a difficult matter. It is therefore important that instructors observe carefully and record accurately the impressions or the qualities upon which these students will be rated. Of this difficulty Julius C. Neff in his Master's Thesis, "A Study of Devices and Methods Used by Industrial Arts Teachers for Vocational Guidance,"\(^2\) cites Walter D. Scott in his book, Personnel Management, as saying regarding the bases for estimating and rating personal characteristics and abilities:

1. Care should be used in selecting only important qualities that can be given a clear definition and which can be judged. It is difficult to set a measure upon the degree of accuracy that a person possesses, the degree of cooperativeness which he demonstrates in relation with others, and the degree of initiative with which he is endowed. It is difficult, furthermore, to think of a person in terms of one specific quality without letting our opinion of him in other qualities color our judgment of him in that quality.

2. Experience shows that it is faulty practice to define a quality with a single word or phrase. Too much latitude is given to the individual to interpret the phrase in his own way.

3. Select phrases or adjectives that indicate the degree to which a person possesses the quality.

**Employment Trends.**

Ralph W. Quisno, manager of the Fremont-Port Clinton Labor Market Area of the United States Employment Service, states that there is hardly any danger of flooding the industrial needs of employers insofar as concerns the number of employees needed within the next five to eight years. He also states that the following principal industries in the community are on the up-trend: cutlery, seat cover and other fabric auto accessories, drop tool and forge work, porcelain enameling on steel, and the production of flash light and storage batteries. A boom in construction work will demand many semi-skilled and non-skilled employees. These statements he bases on confidential United States Employment Service figures.

An indication of the employment trends in this community may also be found in the statement by Edward Daykin, plant manager of Henkel-Clauss Company, manufacturers of cutlery, that they expect gradually to increase the number of their employees from the present figure of two hundred eighteen to four hundred fifty. This situation is typical of the several cutlery plants in this community which find themselves with empty warehouses and depleted stocks in the face of an increasing demand.
From the Reports and Analysis of the Ohio Bureau of Unemployment Compensation for January 18, 1946, Table RS 200, Fremont office of the United States Employment Service paid the third lowest unemployment compensation or insurance benefit payments in Ohio from January through December, 1945. Bucyrus paid the lowest and Galion the second lowest.

These statements indicate the possibilities that vocationally trained boys have of being absorbed into local industry after graduating from Ross High School.
Chapter VI
SUMMARY

Interpretation of Data.

Since the organization of the vocational trades department of Ross High School in September, 1920, a follow-up record as complete as possible has been kept of all students in the department. These records are included in Tables I, II, and III. Table I is the Follow-Up Record; Table II, Placement of Graduates; Table III, Status of Withdrawals.

In Table I succeeding columns opposite the date of each school year furnish information concerning the number of sophomores entering the trades courses during that year, the number of sophomore withdrawals, and in like manner the number of juniors, junior withdrawals, seniors, senior withdrawals, and graduates. The number of graduates entering industry, as well as the percentage of those graduates entering industry is also given. To follow the record of a single class the reader must begin with the number of sophomores entering for the given year and read the table on a slanting scale for three consecutive years. Withdrawals are represented by the minus numbers.

The school year of 1937-1938 is offered to the reader as an example of how Table I is read. Twenty-one sophomores entered the vocational trades department and during that year there were seven withdrawals or thirty-three per cent of the beginning number of students. As a result of the withdrawals fourteen juniors started the next school year.
from which number there were three withdrawals or twenty-one percent of the juniors starting the year. Reading on a slanting scale the reader will note that these withdrawals left eleven seniors starting the school year of 1939-1940. The table shows no withdrawals during that year and all eleven graduated. Seven graduates or sixty-four per cent of the graduates of 1939-1940 entered industry. The total number of withdrawals during the three school years, 1938 to 1940, was ten or forty-eight per cent of the original twenty-one students entering the department as sophomores.

The figures referred to in Table I in the preceding paragraph do not represent the classes with the greatest number of withdrawals, nor those of the least.

Table II, Placement of Graduates, provides the reader with information representing the number of graduates from the vocational trades department for a given year and the type of employment each graduate entered after graduation.

Table III, Status of Withdrawals, provides a break-down of the number of withdrawals for each year as given in Table I into (1) employment classification of those withdrawals who left school, and (2) transfers from the vocational trades department into other high school courses.

The great number of withdrawals and transfers from the vocational trades department as shown by the figures in Tables I, II, and III shows the need for a solution of the problem. The writer has attempted to establish a program that will result in selecting through the industrial arts
department better prepared students to enter the vocational trades department and thereby to reduce to a minimum the number of withdrawals.

The industrial arts and vocational education instructors of the W. W. Ross High School, Fremont, Ohio, have established criteria to use for the selection of students wishing to enter vocational education classes. In the establishment of these criteria the contributing value of industrial arts as a selective agency has been shown. By formulating such criteria and attempting to insure to the vocational trades department better prepared students an active relationship between industrial arts and vocational education has been established.

Conclusions.

The following conclusions are based upon data taken from files and records kept by the vocational trades department instructors and from observations made by the writer and other faculty members of the two departments.

1. Students have been enrolling in the three year trades courses without discrimination in regard to preparation or background for the work.

2. As a result of this practice there has been a large percentage of withdrawals from the department.

3. This has led to a considerable loss of time and failure for the student, since he does not receive credit for work not satisfactorily completed.

4. The present guidance program can be improved.
(5) There is evidence that the purposes which the writer stated at the opening of this thesis have been accomplished in some measure. This is evidenced by the cooperative efforts now taking effect and the fact that certain proposals are now in operation.

Recommendations.

The aforementioned data have given the writer a basis for proposing a new program of guidance and method of selecting students for specialized training in the trades department. This program has the approval of the principal of the school.

All seventh and eighth grade boys are required to take work in industrial arts. The guidance program as organized starts at this level. The industrial arts instructor of the junior high school (seventh and eighth grades) is in a position to study the habits, attitudes, and abilities of the students in relationship to this type of work better than are the guidance advisors who help the eighth grade students make their election of courses to be carried in high school. Having this advantage the junior high school industrial arts instructor is in a position to recommend to the guidance department those eighth grade boys who should be capable of successfully carrying on advance work in the senior high school industrial arts program of general shop I and drawing I. However, recommended students will not be required to register for advanced work. The choice will be one of their own making. Those eighth grade students not on the recommended list may also choose to enter the high school industrial arts courses,
but they will be in a class made up of similar students whose abilities are on a lower level than those of the students of the recommended group as determined by their achievements in industrial arts. The requirements for this slower-learning group of students will be both fewer and lower. The lists of recommended and non-recommended students will be given to the high school guidance department during the last six weeks of the school year at which time all students are to make out their course of study for the next school year. Prospective ninth grade students are counseled by the guidance department.

After one year of experience in the senior high school industrial arts department students will be given an opportunity to express themselves with respect to the three year vocational trades department for specialized training. This desire must be made known before making out the course of study for the tenth grade so as to permit the three instructors of the industrial arts department the opportunity of approving or disapproving the choice. The three instructors during a meeting will rate these students according to the data assembled for this purpose.

Sources of data are: (1) Data or information taken from the grading scale shown in Fig. 2, which is to be used by both the industrial arts and vocational trades departments for rating students in their work; (2) Data secured through a personal interview with each student; (3) Data taken from the record cards shown in Figs. 3 and 4.
The grading scale to be used as a basis for directing industrial arts students into vocational training as well as a grading basis within each department included the nine qualities the instructors deem desirable in students and which they have accepted as criteria in making evaluation. A copy of the grading scale will be given each first year student in both departments so that he may know the bases on which he will be rated. The instructors of the vocational trades department request that an average grade of "C" or above be required as a pre-requisite for entering the department.

A personal interview with each beginning student in the industrial arts department will afford the instructors information relative to the general interests and attitudes of the student. This information and a summarizing statement concerning the student's abilities, initiative, emotional stability, behavior, and work methods will be recorded on the cumulative Record Card of each student. This information plus the student's grade on the scale, plus impressions gained through the interview serve as a basis for the decision.

The students receiving a favorable rating from the three instructors will be permitted to enter the vocational trades department. A list of those students recommended will be given the trades instructors for reference when school opens the following year.

Those industrial arts students not desiring to enter the vocational trades training courses and those students who
had desired admittance but who did not receive a favorable rating will be encouraged to continue their work in the industrial arts courses.

The carrying out of this proposed program, which is to be put into practice with the beginning of the 1946-1947 school year, will aid in fostering an active and constructive relationship between the industrial arts and the vocational trades departments. The industrial arts department attempts to help the student to develop certain shop skills, consumer appreciation, and personality traits which will be helpful to him in working with others, and to acquaint him with the world of industry in order that he will be in a better position to select his vocation. After having these experiences the student who decides to enter a trade should advance toward his goal with greater facility because of the background he has established.

In vocational courses the technological nature of the work necessitates greater precision and exactness in mastering the skills. Here the student develops the speed and accuracy which are assets in the world of industry.

An educational philosophy which leads to the optimal development of the individual to take his place in society should be the basic criteria for establishing any educational program. In accepting the responsibility for this educational philosophy the school attempts to provide the student with experiences which will enable him to live successfully in the community. The program proposed by the writer attempts
to exemplify this philosophy and sets up a plan whereby a greater number of students should successfully complete the vocational trades courses than has been the case when only random selection was made and no specified preparation was required. Both the vocational trades group and those students who have completed two or three years of work in the industrial arts department will find their training helpful, not only in earning a living, but also in finding their place in community life because of the emphasis given to the development of those personality traits which make for adjustment to social living. Specifically, those traits are, the ability to work harmoniously with others, ability, willingness, and desire to do an honest job of work and an honest day's work, maintain emotional stability, sensitive to the need for cooperative effort, and for assuming responsibilities.
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