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HIGH SCHOOL LEVEL IN THE ATTUCKS SEPARATE SCHOOL,  
PONCA CITY, OKLAHOMA

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Statement of Problem: The scope of the problem is to formulate a desirable industrial arts program on a junior high school level in a general shop program in the Attucks Separate School in Ponca City that will help boys and girls find themselves.

Methods of Procedure: The results of this study are based primarily on material studied on industrial arts in junior high schools of Oklahoma in Industrial Arts Education 572. Further library study has included current literature, periodicals, and books pertaining to junior high schools, and to industrial arts in the general shop in particular. The writer has also visited several junior high schools over the state, and discussed general shops as to organization. This was done in order to make the study more complete.

Findings and Conclusions: Industrial arts in the junior high schools are changing constantly; only much slower at present than they have in the past, because it is a fact that most of the imperfections have been worked out. However, just as junior high schools began to operate smoothly, the school populations increased and the senior high schools introduced a general shop program which more or less disturbed the junior high school industrial arts program. This junior high school industrial arts course must be flexible and exploratory. After several conferences with the Attucks School principal and state department officials, it was decided that the following courses should be offered in grades seven, eight, and nine: (1) applied drawing, (2) woodworking, (3) elementary electricity, (4) leathercraft and shoe repair, and (5) home mechanics for girls.

ADVISER'S APPROVAL

*C. L. Hill*

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THE ATTUCKS SEPARATE SCHOOL, PONCA CITY, OKLAHOMA

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By

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Langston University

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THE JUNIOR HIGH SCHOOL LEVEL IN  
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MASTER OF SCIENCE  
1955

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Z.H.

I BELIEVE IN THE UNITED STATES OF AMERICA

It is my home, my country; it is my hope, my concern.  
Here I work and rest.  
Here I build and dream.

Here is security for my loved ones.  
Here my toil is rewarded with an  
unmatched abundance for my  
well-being.

Here freedom to live, to think, and to worship  
is mine, guaranteed by law and our constitution.

Here I am part of government, able to vote, to serve,  
and to carry my share of the common load.

God grant me wisdom and strength to safeguard my  
country's welfare with devotion great enough  
to measure up to her greatness.

Richard J. Hoffman, Chairman  
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## CHAPTER I

### A PREFATORY STATEMENT OF PURPOSE

There must be a felt need for a problem before a worker becomes sufficiently urged to work toward a solution. The worker, as he begins to work, must see evidences of progress or he soon becomes discouraged. There have been two major purposes of industrial arts in the junior high school: (1) exploration of pupil interest, aptitude, and capacity; and (2) to broaden and extend the experiences and understandings of youth in this area as a part of their general education.

Emphasis placed on crafts at grades seven, eight, and nine should make industrial arts more exploratory. This has motivated the study of industrial arts on this level.

Purpose of the Study. This study was selected by the writer because of the lack of information concerning industrial arts in the separate schools of Oklahoma on the junior high school level. This study may also help those who some day may establish general shops on this level. The writer believes studies of this kind should be made regularly because of the universal progress that is rapidly taking place.

The Problem Stated. The scope of the problem is to work out a more suitable industrial arts program for the Attucks Separate Junior High School. To do this in the general shop program, a solution must be found that would not destroy the foundation for industrial arts in the

Attucks Separate Senior High School, and yet be able to take care of boys and girls who are unable to go beyond the junior high school level.

Research Techniques Used. The information obtained on this subject was found in books, magazines, and pamphlets located in the Oklahoma Agricultural and Mechanical College Library. Also the writer had a personal interview with Mr. Orlando Nelson who is a shop teacher at the F. D. Moon Junior High School in Oklahoma City, Oklahoma. Until last year, this was a senior high school which had become over-crowded and a new school was constructed to remedy this condition.

Definitions. Terms used in industrial arts have many different meanings; therefore, it is necessary to define some of the terms used in this study. Definitions that are not those of the writer will be properly annotated.

Industrial Education. A general term including all educational activities concerned with modern industry, its raw materials, products, machines, personnel, and problems. It, therefore, includes both industrial arts, the general education, or introduction to industrial-vocation education. (6, page 7)

Industrial Arts. Industrial arts is the study of materials and of the desirable changes made by hand or by the several manufacturing processes from the raw state into products designed to meet the consumer's needs and comforts for daily living. (11, page 5)

General Education. General education aims to develop general intelligence, the power of appreciation in all common fields of utilization, and the ability to use languages, mathematics, scientific methods, etc., without reference to any specific calling. (4, page 2)

Mechanic Arts. Practical arts instruction applied to both industrial and assembling and building trades. (12, page 105)

Manual Arts. A term used to describe such subjects as wood-working, mechanical drawing, metal work, printing, leather work, clay work, book binding, jewelry making, etc., when taught as a form of general education having for its chief purpose that of developing the pupil, through work in the school shops, manual skill and appreciation of good design and structure by practice with a variety of exercises and practical projects of personal value. (14, page 29)

Manual Training. Any form of constructive work that serves to develop the power of the pupil thru spontaneous and intelligent self-activity. The power of observation is developed thru exacting demands upon the senses; the reason, by constant necessity for thought before action; and the will, by the formation of habits and patience, and careful application. (7, page 15)

General Shop. A shop that is planned and equipped to teach two or more distinct types of shopwork at the same time under one teacher is a general shop. (10, page 15)

Practical Arts. Includes those phases of general education devoted to manual arts, and the homemaking, agricultural, and business arts. (12, page 105)

Trade and Industrial Education. This term is used in referring to all subsidized vocational industrial education courses taught under subsidy of the Federal Vocational Education Act beginning with the Smith-Hughes Act and including later related acts. (Hunt)

Vocational Education. A generic term whose scope embraces all kinds of vocationally purposeful education such as industrial, homemaking, agricultural, commercial, mining, etc. (6, page 7)

Vocational-Industrial Education. Vocational-industrial education courses are to train workers for the skilled and semi-skilled occupations which are a part of the modern industrial world. (14, page 15)

Limitations. The writer has used three junior high school programs in the separate schools of Oklahoma that conform to the size of the Attucks School in Ponca City to get some of the material for this study. Additional material was gathered from magazine articles and textbooks written on the junior high school level.

Study of Similar Reports. These studies were very helpful in the preparation of this report. In further reading of various reports and studies, it became very conclusive why some of the most fertile minds educationally were at work with the developing of junior high school programs.

The Eades' Study. Jerry Eades completed a thesis in partial fulfillment for the requirements for the Master of Science degree at Oklahoma Agricultural and Mechanical College in 1950 entitled, Industrial Arts in Oklahoma Junior High Schools, to indicate what was being done in the field during the year 1949-1950, and to determine current conditions of industrial arts in the junior high school. The findings of the study provided statistical data and summarized information on which predictions for future developments may be based.

The Cox Study. Phillip Cox suggested that a home mechanics course for both boys and girls be required of seventh and eighth grade pupils. In 1943, exchange classes in shopwork and home economics were started in Baltimore, Maryland. The boys took home economics and the girls took shopwork in one of the junior high schools as an experiment. Since it proved satisfactory, the practice was extended to other junior high schools in the city. (4, page 41)

Since 1950, in Attucks School the seventh and eighth grade boys and girls have pursued shop and home economics courses for one semester each year. The girls take pride in making home projects which are placed in the annual Parent-Teacher Association Open House Exhibit. The boys in home economics display their handmade aprons and culinary art in the

annual spring style show.

History of the Junior High School. The first junior high school was organized during the first six months of the school year 1909-1910 in Columbus, Ohio. The Board of Education approved a resolution on July 9 for the reorganization of the city schools and provided for the organization of a new unit made up of the seventh, eighth, and ninth grades, which was to be organized and administered as a separate school unit. Berkeley, California, was credited with the second junior high school in the United States. This gave the movement the needed publicity and within a short time junior high schools were organized in many of the large cities.

Since 1920 the movement has been more gradual, but there is an increasing tendency to replace the traditional 8-4 organization with the 6-3-3 plan of grade separation. The extent of this movement by 1930 had affected 5,000 of the 20,000 high schools in the United States.

In Oklahoma an approved junior high school is required to offer industrial arts. There are approximately 287 junior high schools in the state and as this number increases the industrial arts program also expands.

In order to adequately develop an industrial arts program for separate schools on the junior high school level, it will be necessary to present a brief history and philosophy of industrial arts. This background material is contained in Chapter II of this study.

## CHAPTER II

### HISTORY AND OBJECTIVES OF INDUSTRIAL ARTS

Before one can do justice to the industrial arts program in America, he must first become familiar with the background or history of industrial arts and bring it up to the present day levels now existing. It is to one's advantage to study the factors that have influenced the direction of industrial arts in America. In the formulation of any program of as great a magnitude as the evolution of industrial arts in America, one starts with what is known and attempts to develop better programs in the field. There are many records of movements, philosophies, and people who have influenced industrial arts in the early stages of its development.

#### Part A

##### Early History of Industrial Arts

If one is to have an appreciation for the industrial arts program, he will have to know something of its origin and development. In primitive education, the objective was almost exclusively vocational or economic efficiency for the purpose of self-preservation. The parents were the teachers; the method was "on-the-job" training. School was always in session and the penalty for failure to learn the lesson was death. It was the parent's duty to teach his sons the law and also a trade. During these primitive times, men learned how to use hand tools in the conquest of food and shelter. These crude tools were the first step in the changing of raw materials into more useful articles.

Egyptian Civilization. History reveals that the Egyptians were one of the first peoples to change their savage ways and take on civilization. Very early records, dating 2,000 years before the Christian era, showed that these people possessed great skill in certain phases of human endeavor. Certain members of the Egyptian race began to render specialized services such as carpentry, cobbling, and baking. At first, boys learned the trade of their fathers or other members of the family. Later, young people agreed to work for several years for certain individuals if they would teach the boys a trade. The earliest form of industrial education, however, was probably centered around such problems as securing food, providing shelter, and making clothing. The Egyptians were without books or literature except in a limited sense, therefore what they knew of physical and natural sciences could not have been organized for the purpose of instruction.

There seems to be only one way that these people could have been educated. The skills that they acquired must have come about as a means of satisfying their everyday needs and desires. Manual occupation and industrial education must have been important factors in the development of the Egyptian civilization.

Apprenticeship. Apprenticeship dates back to antiquity. During the Dark Ages that followed the Fall of Rome, apprenticeship was the main source of education for the masses. The craft guilds did much to raise the standards of workmanship. The "pick-up" method, such as is commonly used by helpers today, is somewhat different from the method of supervised training for beginners known as apprenticeship.

Industry is interested in individuals who learn a job through an

apprenticeship rather than the "pick-up" method. By apprenticeship is commonly meant an understanding, written or implied, between an employer and an employee, whereby the latter is to receive instruction in a specified trade, craft, or business. (9, page 522)

The apprentice's compensation is in two forms: (1) instructions, and (2) wages. This may be arranged so that the learners may earn while they learn the trade. This time is usually extended to such a period that it will not be too short or intensive. In England, a term of seven years was required for apprenticeship in all the staple trades, although the rule was by no means universally enforced.

History of the Middle Centuries. The tradesmen in the medieval towns were artisans and merchants; they not only made but offered for sale the articles which they produced in their shops. In addition to the original guild of merchants which helped the towns to gain and preserve their privileges, many new corporations of tradesmen grew up and formed guilds. The oldest statues of a guild in Paris are those of the candle makers, which are dated 1061.

The guild system in France was about the oldest in Europe; but in England, shops carrying on a particular trade, such as tailoring, shoemaking, baking, tanning, book binding, hair cutting, or the making of knives, hats, artificial flowers, swords, and wigs, were organized into guilds. The main object of these guilds was to prevent all other citizens from making or selling the articles in which the members of the guilds dealt. This also established a crude form of standards for the different articles and encouraged good quality and workmanship.



Martin Luther. Martin Luther (1483-1546), the great religious reformer in the beginning of the Sixteenth Century, strongly urged the introduction of training in manual occupations in the schools as a means of economic and moral development.

Johann Amos Comenius. Comenius (1592-1670) was one of the first to believe in systematic industrial education for children. Comenius thought that children should master the most important principles of what goes on in the world around them in order that any special inclination toward things of this type might assert itself with greater ease later in life.

The Swiss teacher, Heinrich Pestalozzi, who is usually referred to as the "Father of Manual Training", emphasized the object method in his writings. He believed that the child develops mentally through experiences and impressions. He demanded that the individual be acquainted with ideas through sense perception, through the observation and handling of the objects themselves. He advocated the linking of power to perform with knowledge.

Uno Cygnaeus was appointed by the Emperor of Russia, in 1858, to reorganize the primary grades in the schools of Finland. He reorganized the schools along the Froebelian lines. He proposed courses in manual training, including woodwork, metal work, pottery, and basketry, with strict reference to the universal aims of education.

American History. The development of industrial arts education in America was influenced by the important changes that took place in Europe. The establishing of schools was much easier in America than in Europe because the basic principles had been determined and free schools

to provide education for all children were already established in many sections of the country.

Early Developments. The first introduction of industrial arts in the United States was in the form of industrial drawing in the public schools of Massachusetts in the year 1817. This subject was introduced by law into the school system.

Ineffective methods were the cause of long delays in accepting or actually doing the work with the actual tools needed. The long-sought method was discovered at the Russian exhibit at the Centennial held in Philadelphia in 1876. Not only was it at once introduced into colleges of mechanical engineering, but it was readily adopted by those who were seeking to introduce handwork in the schools as a means of liberal culture.

Calvin Milton Woodard. Woodard was responsible for the introduction of instruction in handwork into the secondary schools as a part of the general education program for all boys. He made his program vocational so that he would be able to secure funds for the purpose of erecting a building. The funds were secured from private individuals. Woodard was greatly inspired from the contributions Russia had made to the manual training movement. Woodard and others contributed to the establishment of manual training schools during the first half of the 1880's in Baltimore, Chicago, Cleveland, Philadelphia, and Toledo. In all the cities mentioned, with the exception of Baltimore, schools were established by private means, furnished mainly by wealthy businessmen desirous of promoting a more practical and efficient system of education.

The initiative of incorporating manual training into the work of the public schools was taken in the establishment of the Baltimore Public Manual Training School in 1883-84. Other Americans had not been able to work out a systematic method of presenting tool instructions, but Woodward, Runkle, and others gladly welcomed the Russian system.

John D. Runkle. Runkle was President of the Massachusetts Institute of Technology when he visited the Centennial at Philadelphia in 1876. He was not disappointed. The system for which he was looking was presented in the exhibit of the Imperial Technical School at Moscow. Runkle was confronted with the problem similar to the one that had confronted Woodward. He had noticed that the small number of students who entered the School of Engineering course with a knowledge of shopwork readily secured positions upon graduation, while others with no shop experience were rather slow in obtaining employment. Runkle believed it was best not to train a person to master any particular trade in school, but to cultivate skill in "the elements which underlie all industrial pursuits".

Sloyd in the Boston Schools. While the rapid evolution of teachers colleges was taking place at New York City, another place for the training of teachers was developing in Boston. Gustaf Larsson gave instruction in 1888 at Boston to a class of public school teachers offering free lessons in sloyd. There were 160 teachers who responded to the notice. Classes were arranged after work hours and on Saturdays, but as the winter approached some teachers found they did not have the time to spare and others found the work became harder and harder. During the winter of 1890-91, it became necessary for teachers to acquire certificates of qualification to teach sloyd. The requirements for these

certificates were:

1. The satisfactory completion of twenty-five models (afterwards increased to thirty-one).
2. Proof of ability to make and use working drawings and proof of skill in the sharpening and care of tools.
3. Evidence of teaching ability.
4. A short essay on the theory and educational value of manual training written in class. (3, page 472)

During the autumn of 1891, it became necessary to limit the number of students entering the school. Graduates of normal schools were given first preference, and second preference to those who would give six hours weekly to the work. From this point on, the popularity and growth of the normal course at the Sloyd Training School continued.

Frederick G. Bonser. During the year of 1913, Bonser was a professor of education at Teachers College, Columbia University. He wrote an article for the School Arts Magazine which developed the conception of industrial arts in the elementary school.

Industrial arts was considered as a subject and a method of performance. Bonser thought much of Dewey's philosophy; therefore, he did much in reforming elementary education. In considering industrial arts as a school subject, Bonser tried to justify it on the basis as other subjects. He stated:

From this standpoint, it will at once appear that primary emphasis will not be placed upon the production of industrial commodities, but rather upon intelligence and cultivated taste in their choice and use. In no single field will all of the children function as producers, but from every field worthy of study they will all function as consumers. The largest problems are those of developing an appreciative understanding of industry as it is at the present time, realizing its social problems and cultivating intelligent judgment and appreciation in the selection and use of industrial products. (2, page 454)

Charles C. Richards. Richards became known because of an editorial published in a 1904 publication, The Manual Training Magazine, in which he suggested that the term "industrial arts" be used in place of or in preference to "manual training". His contention seemed to be that the present trend was to stress the phase of industrial fundamentals to civilization rather than the outmoded disciplinary thought of manual training. The following is a copy of Richard's editorial taken from William T. Bawden's book, Leaders in Industrial Education, which gives Richard's viewpoint.

As evidence of a change in our point of view, we are leaving behind the purely disciplinary thought of manual training. As long as constructive work represented an instrument to train the mental powers through the hand, manual training constituted a workable and fairly suggestive title, but now we realize that there is no such thing as a training of general powers through special exercises, and at the same time we are beginning to perceive the immense content meaning of our field. We are beginning to see that the scope of our work is nothing short of the elements of the industries fundamental to modern civilization. Instead of devoting our attention to miscellaneous and more or less meaningless projects, we seek in an orderly way to develop insight into the basic industries of our times, and knowledge of some of the steps through which these have reached their present form.

Behind every other subject in the curriculum is a body of ideas of fundamental meaning and importance. The industrial arts stand for one of the most vital and important phases of modern civilization. We should discard the term manual training, as both inappropriate and misleading.

In the hope of enlisting consideration and discussion the writer proposes the term Industrial Arts, which indicates a definite field of subject matter. The word "arts" is inclusive of both the technical and esthetic elements, and the qualifying word points specifically and comprehensively to the field of our material. (1, pages 23-24)

Newkirk and Johnson did much to stress the industrial arts program which is intended for everyone who is interested in the place and educational contribution of industrial arts in all of the junior and senior

high school levels. The shop plans, objectives, and content for industrial arts are very helpful. The photographs of pupils at work, the graded sample projects, as well as the statement of philosophy and methods of industrial arts, make this text an asset to any teacher.

Arthur B. Mays and Carl H. Casberg are authors of School Shop Administration. The study of their text was very important in organizing a junior high school program at Attucks School. Some of the chapters that meant a great deal to the writer were those on School Shop Planning, Selecting and Purchasing of Equipment, Shop Maintenance, Records and Inventories, Safety Administration, Shop Class Organization, Shop Discipline, and Public Relations.

William H. Johnson and Isadore M. Fenn have selected professional information important to a successful program of industrial arts and vocational education from leading authorities in American education, and have classified this information for convenient reference under History, Federal Aid, Philosophy, Curriculum, Administration, Psychology, Testing, Guidance, and Trends.

John F. Friese, author of Course Making in Industrial Arts, includes the "instruction manual" aspects which are concerned with problems of selecting and organizing the course materials which have much similarity in both divisions of industrial education.

C. C. Ashcroft and J. A. G. Easton are authors of a textbook on general shopwork which is helpful in that it includes in one volume instructional material for the general shop courses in grade nine. It deals with operations, processes, tools, and materials, rather than projects. Reading matter is reduced to a minimum where illustrations permit,

and in many cases most of the information is contained in the illustrations.

Early man had to learn how to live in a dangerous environment. Man had to learn how to make his own clothing and shelter, which were crude and difficult to make without a knowledge of tools and necessary implements with which to work.

Teaching industrial arts is difficult without a knowledge of the latest equipment and the processing of natural resources into usable goods. It is to the advantage of the teacher to have a broad background of the early history of industrial arts, and the men who helped industrial arts to gain its rightful place in the American schools.

## Part B

### Objectives of Industrial Arts

The writer has studied the objectives of several outstanding leaders in the field of industrial arts for the purpose of working out an adequate program of objectives for the junior high school. By starting with some of the objectives presented by the early leaders of industrial arts and following through to the present time, one may present a picture of the development of objectives from which may be developed objectives for a particular school or situation. The list of objectives which follow will be used to present this development or at least to show what the trend has been in establishing objectives.

#### Warner's Objectives, 1928.

1. Exploratory or findings value which relate to the detection, discovery, or tryout of interests and aptitudes.

2. General guidance, both educational and vocational, gained through broad contacts and studies of industrial vocations.
3. Household mechanics of the development of handyman abilities about the home.
4. Avocational opportunities for the development of hobbies, or a side-line interest.
5. Formation of desirable personal and social habits and insights which will influence conduct.
6. Consumers or utilizers knowledge and appreciations of the products of industry.
7. Development of a degree of skill with tools and in tool or machine processes commensurate with the ability of the pupil and incidental to the completion of a project or activity which seems to have "educational" value.
8. Correlation of integration with other studies and interests both in and out of school.
9. Vocational purpose in the definite preparation for a future industrial vocation. Applicable to from 0 to 16 per cent of the average junior high school group where the occasional boy has to drop out of school. (14, page 44)

Other leaders have summarized these objectives in the following brief terms which will apply in greater or less degree.

1. General guidance.
2. Further exploratory and avocational opportunities.
3. Vocational preparation for a specific industrial vocation.
4. Consumers or utilizers knowledge and appreciations of the products of industry.
5. Formation of desirable personal and social habits.
6. Development of a degree of skill with tools and in tool or machine processes commensurate with the ability of the pupil and incidental to the completion of a project or activity which seems to have "educational" value. (14, page 44)



These objectives do not imply that the process of education can be divided into separate fields. The directed efforts of all of these should constitute the principal aims in education.

Standards of Attainment in Industrial Arts, 1934. The objectives of the teacher may vary somewhat from the objectives of industrial arts as a whole, so the writer is listing a group of objectives taken from a bulletin issued by the American Vocational Association, Washington, D. C.

1. To develop in each pupil an active interest in industrial life and in the methods of production and distribution.
2. To develop in each pupil the ability to select wisely, care for, and use properly the things he buys or uses.
3. To develop in each pupil an appreciation of good workmanship and good design.
4. To develop in each pupil an attitude of pride or interest in his ability to do useful things.
5. 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.
6. To develop in each pupil the habit of an orderly method of procedure in the performance of any task.
7. 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.
8. To develop in each pupil the habit of careful, thoughtful work without loitering or wasting time (industry).
9. Vocational training of varying degrees may be a result.
10. To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others.

11. To develop in each pupil a knowledge and understanding of mechanical drawing, the interpretation of the conventions in drawing and working diagrams, and the ability to express his ideas by means of a drawing.
12. To develop in each pupil elementary skills in the use of the more common tools and machines in modifying and handling materials, and an undertaking of the more common construction problems.

The objectives, purposes or goals of general education are derived from the essential needs of the children and youth living in our society. Their emotional intellect and moral needs are usually satisfied by the school. There seems to be a bit of over-lapping in early objectives of some of the writers.

Newkirk's and Johnson's Objectives, 1948. The objectives of Newkirk and Johnson in industrial arts in grades seven and eight have the same general objectives as industrial arts in all other grades, but the objectives must be interpreted in the light of the needs and capacities of boys and girls at this educational level.

1. Develop the ability to plan and complete projects using a variety of tools and construction materials in a workmanlike manner.
2. Give experiences that will increase understanding of modern industry and that will lay the foundation for and help determine vocational interests.
3. Develop the ability to read and make working drawings, charts, and graphs.
4. Develop the ability to recognize quality and design in the products of industry.
5. Develop the ability to maintain and service in a safe and efficient manner the common products of industry.
6. Provide an objective medium for expression in mathematics, science, language, arts, and social sciences.

7. Develop an interest in crafts as a valuable medium for creative expression in leisure time.
8. Give experiences that will develop social understanding and ability to work efficiently with others either as a leader or as a member of the group.  
(11, pages 134-36)

John R. Ludington's Objectives, 1949. The aim of industrial arts is to see that a balanced program of secondary education provides industrial arts experiences designed to achieve the following:

Orientation and Common Understanding. Experiences in industrial arts should help youth become better oriented in an industrial society by exploring many types of tools, materials, processes, products, and occupations.

Technical Competency. Industrial arts programs should provide as many opportunities as possible for pupils to spend at least a year in a phase of work where initial orientation and exploration may help to define specialized interests that can be pursued with profit.

Consumer Education. Industrial arts experiences can help pupils develop intelligent attitudes, understandings, and skills involved in the selection and use of the products of industry.

Avocational Interests. Many pupils are interested in creative activities which involve the use of tools, simple machines, and materials as leisure-time pursuits or hobbies.

Social Responsibility. Because of the nature of industrial arts shop and laboratory activities, desirable social habits and attitudes can be developed. (8, pages 12-13)

The objectives of Ludington are based upon specialization, more than on generalization which may not be altogether acceptable for junior high school pupils.

A Guide to Improving Instruction in Industrial Arts, 1953. The nine objectives taken from this bulletin are the results of further

study by an industrial arts committee of the twelve objectives published several years earlier by the American Vocational Association. It is the opinion of the committee that there was too close a similarity of objectives; therefore, the objectives were combined into fewer numbers. They should be considered merely as suggestions, however, because each industrial arts teacher should develop his own objectives in light of his philosophy of general education, the needs of his students, and the available facilities.

1. Interest in Industry. To develop in each pupil an active interest in industrial life and in the methods and problems of production and exchange.
2. Appreciation and Use. To develop in each pupil the appreciation of good design and workmanship and the ability to select, care for, and use industrial products wisely.
3. Self-realization and Initiative. To develop in each pupil the habits of self-reliance and resourcefulness in meeting practical situations.
4. Cooperative Attitudes. To develop in each pupil a readiness to assist others and to join happily in group undertakings.
5. Health and Safety. To develop in each pupil desirable attitudes and practices with respect to health and safety.
6. Interest in Achievement. To develop in each pupil a feeling of pride in his ability to do useful things and to develop worthy leisure-time interests.
7. Orderly Performance. To develop in each pupil the habit of an orderly, complete, and efficient performance of any task.
8. Drawing and Design. To develop in each pupil an understanding of drawings and the ability to express ideas by means of drawing.
9. Shop Skills and Knowledge. To develop in each pupil a measure of skill in the use of common tools and machines and an understanding of the problems involved in common types of construction and repair.

These objectives center around the school as a behavior changing situation. That is, school experiences make pupils different from the way they would be if they lacked these experiences. The direction of behavior change is determined by the ideals and traditions of the culture. The areas of change are derived through the needs approach as described previously. The specific behavior changes may be classified for convenience as knowledges, skills, attitudes, appreciations, and special abilities.

Attucks School Philosophy. It might be well, at this point, to present a statement of philosophy which was established by the faculty and administration for the separate schools of Ponca City, Oklahoma.

Before the Attucks Separate School could be accredited by the North Central Association, it was necessary that a general statement of philosophy for the school be formulated, consequently a faculty committee was named to study and recommend statements which were later discussed, and finally accepted by the entire staff. These statements of philosophy for Attucks School were worked out for the pupils with regard to community, grade level, educational competency, social and economic conditions.

A tentative statement of this philosophy follows:

We believe that the program of the secondary school should reflect the social ideals of the culture out of which it grows. Since our culture is democratic in nature, the school should be an example of democratic living at its best, providing for the needs of boys and girls in such a way that they may become more competent to live in the democratic community.

1. The curriculum is regarded as all the educative experiences sponsored by the school to promote the growth and development of the individual. Since we view education in terms of meeting needs of a democratic and hence a challenging society, the curriculum must be

examined continuously, and revised when necessary in the light of changing demands.

2. The child is a totality composed of emotional, physical, and mental characteristics. These characteristics cannot be looked at in isolation because the "child is a living, unified whole, each part of which is interdependent upon other parts". This means, of course, "that the function of the whole child cannot be determined by analyzing the function of each of various parts".
3. We regard method as a way of getting things done. However, we believe method should be flexible and adapted to the needs of the individual child.
4. The staff of the American secondary school should be composed of individuals who, in addition to possessing sound preparation, should possess such qualities as: willingness to cooperate in solving problems of common concern; ability to think critically; and competence in human relationships. Moreover, the teacher should show skill in discharging duties that develop upon her; exhibit a loyalty to the preservation and extension of democracy; and manifest the capacity for continuous growth while in service.
5. The over-all relation of the high school to the state and society is that of channeling good citizens into our communities.

The committee established these additional statements:

The Child as Learner. Learning is a process which involves continuous changes in the behavior patterns of the individual. It is characterized by "doing and undergoing" which proceeds optimally in real-life situations. This view rejects stimulus-response psychology, then, and views learning in terms of problem solving.

The Purpose of Attucks School. The purpose of Attucks School is to meet the needs, develop the capacities, satisfy the interests and concerns, and work toward the solutions to the problems of the children by:

1. Developing within the child a knowledge of, and a loyalty to democratic living.
2. Teaching the child to become increasingly more self-directive through the clarification of his values.

3. Developing "desirable skills, habits, knowledge, understanding, abilities, tastes and appreciations, in terms of present-day and probable future needs".
4. Providing various types of guidance services including educational, vocational, health, social, civic, personal, and others.

Purposes or Aims.

1. Develop personal integrity, self-respect, face reality.
2. Respect for personality.
3. Scientific attitude.
4. Constructive social participation.
5. Appreciation for artistic.

Objectives of Industrial Arts for Attucks Junior High School. After a thorough study of the foregoing objectives, and keeping in mind the statements of philosophy, the writer has established the following objectives for the Attucks Junior High School. These objectives have been drawn up in the light of the philosophy of general education, the needs of the students, and the available facilities.

1. To provide basic industrial knowledge, usable and essential in everyday life.
2. Training in problem solving of the job analysis type, problems met in daily activities are similar.
3. To develop "home mechanics-handyman ability" so that a boy can make ordinary repairs in and around the home.
4. Exploration into basic trades, which will result in general educational values of a broadening nature.
5. Skill in use of tools develops attitudes of exactness and carefulness.

6. Consumers' knowledge and appreciations, useful in selecting, operating, and maintaining services and products of industry, will be gained.
7. Avocational training consisting of detecting and developing interests and abilities leading to a hobby, may be a product.
8. Guidance values should come from a knowledge of several crafts and trades. Discovery of mechanical aptitude is only possible in a shop setting. The discovery of lack of this aptitude is also helpful in some instances.
9. Vocational training of varying degrees may result.
10. Socializing values wherein the boy becomes skilled in personal and social relations are direct outcomes.
11. Provide an outlet for boy interests. These interests may be of brief duration, but should be given an opportunity of expression.
12. Health values are apparent in the opportunity provided for physical activities.
13. Provides basic attitudes and training in safety, which are valuable in surviving the dangers of the modern era.

Industrial arts objectives are concerned with the whole life training of boys and girls as they grow into manhood and womanhood. One of the objectives of all education is to develop social understanding and the ability to work effectively with others. In Chapter III, the concept of the general shop will be discussed.



## CHAPTER III

### THE GENERAL SHOP CONCEPT

The general shop is found in large and small cities and in large and small schools. There are several distinct types of general shop organizations. A plan of organization for group rotation of pupils in general industrial arts courses is necessary irrespective of whether the pupils are rotated within a single shop, two general shops, or several unit shops.

There are six types of general shop organization. These types of shop organization are designed to carry the general industrial arts concept. Some of them have advantages and limitations which should be recognized, and the teacher should be influenced by the kind of organization which is available. The six types are as follow:

1. A number of groups engaged in several activities at the same time.
2. The entire class is rotated as a unit through several unrelated industrial experiences, one activity at a time.
3. The individuals follow industrial arts activities based upon their individual problems.
4. A number of groups have experiences in each of several related trades, at the same time.
5. Rotate the entire class as a unit through experiences successively in each of several related shops or trades.
6. The entire class is rotated through several unit shops.

The writer has chosen to use type five, because it provides for excellent teaching of close occupational relationship and it can be administered almost as effectively as a unit shop.

Both the general shop and the unit shop are recommended for the industrial arts program. The general shop plan of organization is recommended for schools that have only one or two shops and a limited teaching staff. Shops that are equipped to teach two or more types of industrial arts work, for example, wood, metal, and electrical work, are general shops. It is the opinion of the writer that due to the large number of small high schools in existence, general shops have become very popular in meeting their needs.

This trend is further shown by a survey made by Maris Profitt.

If a single outstanding trend of the present were to be used to predict the future of industrial arts work, it would be most certainly the trend toward the organization of pupil experiences for instructional purposes around the central idea of the general shop. Probably nothing in industrial arts work has shown the growth on a country-wide basis as has the general shop, especially for the junior high school level. That this will continue seems to be beyond a shadow of a doubt. The reasons for this are obvious. The general shop form of organization:

1. Provides for a variety of media and consequently of activities for pupil experiences in manipulative work for self-expression and exploratory values;
2. Provides an excellent opportunity for acquiring, in a realistic way, information about industry and our industrial society;
3. Offers a large variety of activities that make it more nearly possible to provide pupils with experiences in accordance with their interests and development levels than does the unit shop;
4. Accords well with the educational objectives and principles underlying the organization of the junior high school, in which industrial arts work is now generally required in the first two years;

5. Makes it administratively possible, due to the form of organization and the content of instruction that characterizes the general shop, to offer industrial arts in a larger number of communities than would otherwise be possible. (13, page 14)

Advantages of the General Shop. For every advantage there will always be some disadvantages of the general shop, but with a good plan of organization the most of these disadvantages may be overcome. There are many ways that boys in a general shop may participate in the handling and checking of tools and supplies and serving as foremen of various departments. However, it is the belief of the writer that these responsibilities should be rotated among the boys as far as possible in order that they may gain compensating experiences.

There are many advantages offered in the general shop program which includes a broad study of industrial processes in the following areas: drafting, electricity, ceramics, home-mechanics, woodworking, and metal working. These broad industrial areas include basic fields of modern industry. The pupils are given an opportunity to explore their abilities with tools and materials typical of these industrial areas.

Louis V. Newkirk believes the following are advantages of the general shop.

1. It is well adapted to the organization of industrial arts content in the light of general education, exploration, and guidance aims of the junior high school.
2. It permits students to be treated as individuals with due respect for their differences in interest and capacity.
3. It enables a student to discover his abilities and aptitudes through manipulation of a wide range of materials, tools, and the processes that go with them.

4. It offers an economical way to gain experience in many activities.
5. It makes possible an adequate industrial arts program for the small school.
6. It stimulates the setting up of a well-planned shop and a carefully organized teaching content.
7. It increases the teacher efficiency. (10, page 19)

Relation of the General Shop to the Junior High School. The interest of boys in the seventh and eighth and ninth grades are very different. It is very difficult for them to give long continued periods of attention to any one thing; however, the general shop is well adapted for this level of instruction. Also, the general shop makes it possible to give a well-rounded program of shop instruction where the teaching staff, enrollment, and finances are limited.

The growth of the general shop has been continuous because it has proven itself as a finding course for boys that have had very little or no shop experiences. It is the writer's opinion that boys like to work with projects of their own interest and grade level.

In the industrial arts class there is a very close relationship between the teacher and the student. The industrial arts teacher has a better opportunity to know his pupils intimately and to learn about their problems. This is very necessary in the meeting of the needs of boys in the shop program. Due to the informal nature of class organization, more opportunities are afforded to develop those relationships which provide for the meeting of needs. For example, it is much easier for a boy in an industrial arts shop, where the students may work together, to feel that he is a member of the group and is being accepted by the other

members of the group than is the case in a formal classroom situation.

Teacher Preparation. Besides having an understanding of the principles of learning, the successful general shop teacher must know how to apply these principles. The general shop teachers need the same professional training that is required of academic teachers, plus specializing in several fields of industrial pursuits. General shop teachers must anticipate certain desirable student outcomes and then must chart definite means by which these objectives may be obtained.

The general shop teachers' preparation is divided into three categories: cultural, industrial, and professional. When people speak of culture in regard to industrial arts teachers, they are thinking in terms of the quality of their refinement which is a way of life, rather than the mere possession of a mass of knowledge. In addition to having a thorough training in the arts and sciences, the general shop teacher should have some intensive training in several trade courses, and a course in occupations and careers. The general shop teacher's professional training is not complete until he has had general education courses, such as principals of education, history and philosophy of education, curriculum construction, and educational psychology. Special methods courses will help in the organization of the general shop.

When only one industrial arts teacher is on the faculty, the program can be presented in a comprehensive general shop. A definite study has been made and it was found that such shops have increased rapidly in the past few years. However, unit shops also have a definite place in the American schools today. Although general shops may vary according to location and finances, they serve the same purpose and have very

definite advantages in the smaller schools.

The public schools, through industrial arts courses, are training boys, girls, and adults to make better adjustments to modern society, especially as it relates to the machine and to products of the machine. The industrial arts curriculum area emphasizes construction with tools and machines, understanding modern industry, drawing and design, consumer education, handyman abilities, manipulative learning, crafts for leisure time, and social understanding. These courses are successful in school because they meet a fundamental need, and like other curriculum offerings, contribute to the life adjustment of people in the modern industrial society by helping all students to prepare for living at home, at work, and at play. The industrial arts courses and shop equipment arrangement for the Attucks general shop will be developed in Chapter IV.

## CHAPTER IV

### THE GENERAL SHOP COURSES AND EQUIPMENT ARRANGEMENT

The general shop is a recent type of organization for teaching junior high school work in a number of shop activities under the direction and supervision of one individual. The content of the general shop is composed of large basic areas of instruction representative of groups of modern industry. Woodworking, metalworking, drafting, graphic arts, ceramics, electricity, plastics, transportation, and textiles are some of the instructional areas. The selection depends upon the grade level, type of school, and the specific objectives of the shop course.

Subjects to be Taught in the General Shop. Before one can develop an effective program in the general shop, consideration must be given to the number of subjects and their importance in the community. Many of the separate high schools of Oklahoma carry an industrial arts program in their curriculum and their subjects are usually applied drawing, woodworking, electricity, leathercraft and shoe repair, and home mechanics, although not necessarily in that order.

#### Part A

##### General Shop Courses

The following named courses are taught in the Attucks Separate School, Ponca City, Oklahoma, on the junior high school level.

Applied Drawing. Engineering and science enter into the affairs of everyday life to such an extent that it is impossible to be informed on events and progress without some facility in reading the language of industry, or mechanical drawing. The reading of drawings is as important as the making of these drawings. Objectives of applied drawing are:

1. To develop the power of visualization.
2. To strengthen the constructive imagination.
3. To train to exactness of thought.
4. To teach how to read and write the language of industry.
5. To give modern commercial practice in making working drawings.

Woodworking. Woodwork is a subject that is offered in most all industrial arts curriculums because of the universal use of wood and man's long knowledge of its processing and development. Teachers and students are more familiar with wood and its products than any other material used in shopwork. Wood is a very good natural resource that may be used for teaching aids in the shop, and the abundant amount of wood grown in this country makes it the most economical product with which to work in the shop.

Electricity. The fundamentals of electricity are made practical and interesting to the student by considering him as a future consumer. Practical work is done in repairing electrical appliances such as iron cords, switches, vacuum sweepers, wiring or bells, buzzers, three-way light switches, and general electrical operations done about the home. No attempt is made to train electrical engineers, electrical technicians, or electricians, therefore the more technical phases of electricity are omitted.



Leathercraft and Shoe Repairing. Students gain an understanding of the various types of shoes, their difference in construction, their care, and repair. Skills are developed by performing the operations involved in this trade. The students learn to apply half-soles, whole soles, rebuild heels, patch uppers, and general shoe rebuilding. In leathercraft, small articles are made; therefore, the leather is very easily provided and requires a small amount of equipment. Many beautiful and useful articles may be made from leather in this shop.

Home Mechanics. Work for seventh-grade girls in a home mechanics class may center around projects requiring the use of common tools and construction materials, and the selection, adjustment, and maintenance of products of industry used in the home and community. Emphasis is placed on safety in the home, and on employing the services of skilled labor for extensive installations or repair jobs where the services of an expert are needed.

The discussed subjects are thought to be the most important subjects for a general shop with one instructor. The selection of these subjects corresponds favorably with the size of the town, community interest, and the general needs of the boys and girls in this proposed program.

## Part B

### Shop Equipment Arrangement

Teaching in a general shop requires much tact and ingenuity on the part of the instructor. The floor plan of the general shop must be carefully laid out in order to provide the most convenient and efficient teaching facilities for the type of general shop course that is to be

presented. A proposed schedule for the general shop is found in Figure I. The shop is equipped to service twelve students per class adequately.

Figure I

## A Proposed Schedule for the General Shop

Industrial Arts Subjects	Grade 7	Grade 8	Grade 9	Periods Per Week	Number of Students Per Class
Applied Drawing	9 weeks	18 weeks	Elective	5	12
Woodwork	9 weeks		Elective	5	12
Electricity		9 weeks	Elective	5	12
Leathercraft & Shoe Repair	9 weeks	9 weeks	Elective	5	12
Home Mechanics	9 weeks			5	12

Accepted Shop Planning. Selected factors considered in good shop organization are: (1) location of departments; (2) lighting; (3) location of tool panels; (4) arrangement of equipment; and (5) storage. The floor plan on page 36 has been planned so as to use wall space for tool panels where needed and also for easy access to electric outlets located in the walls. The drawing section may accommodate eighteen students. This section is also used as a planning area.

Windows will supply some of the light needed, but since there are windows only on one side of the shop section, artificial light will be necessary to give the shop twelve to fifteen foot candles of illumination on work surfaces.

Tool cabinets or panels are located on the walls and placed in the areas where they are accessible to the workers in the different departments. The arrangement of work stations are such that there will be very little interference by students working too close together. Project storage is located in the table drawers. General supplies are located in the storage room and must be checked out as needed.

The applied drawing area consists of nine tables which will accommodate twelve students and there will be three tables available for six students to use for project planning. These tables have removable drawing boards that can be placed upon them and removed for storage when not needed. The drawing area is adequately lighted with approximately twenty-two foot candles of light. A representative from the Kay County Health Department makes a visit to the Attuck School each year to check illumination for the health of the students, especially in the drawing area.

The woodwork benches are located in such positions that woodworking machines are always near. These work benches or stations are very sturdy with a vise on opposite diagonal corners. These vises are the rapid action type. The work stations have enough room on lower shelves for most unassembled projects.

The electrical area is also included in the general shop of Attucks School. Electricity is a form of energy which may be changed to other forms of energy such as light, heat, and motion. In this area, the boys study the difference between bells and buzzers, simple circuits, dry cells and storage batteries. This area has a battery charger that is used to charge car batteries for the family car. The electrical department is one of the most interesting areas in the general shop program.

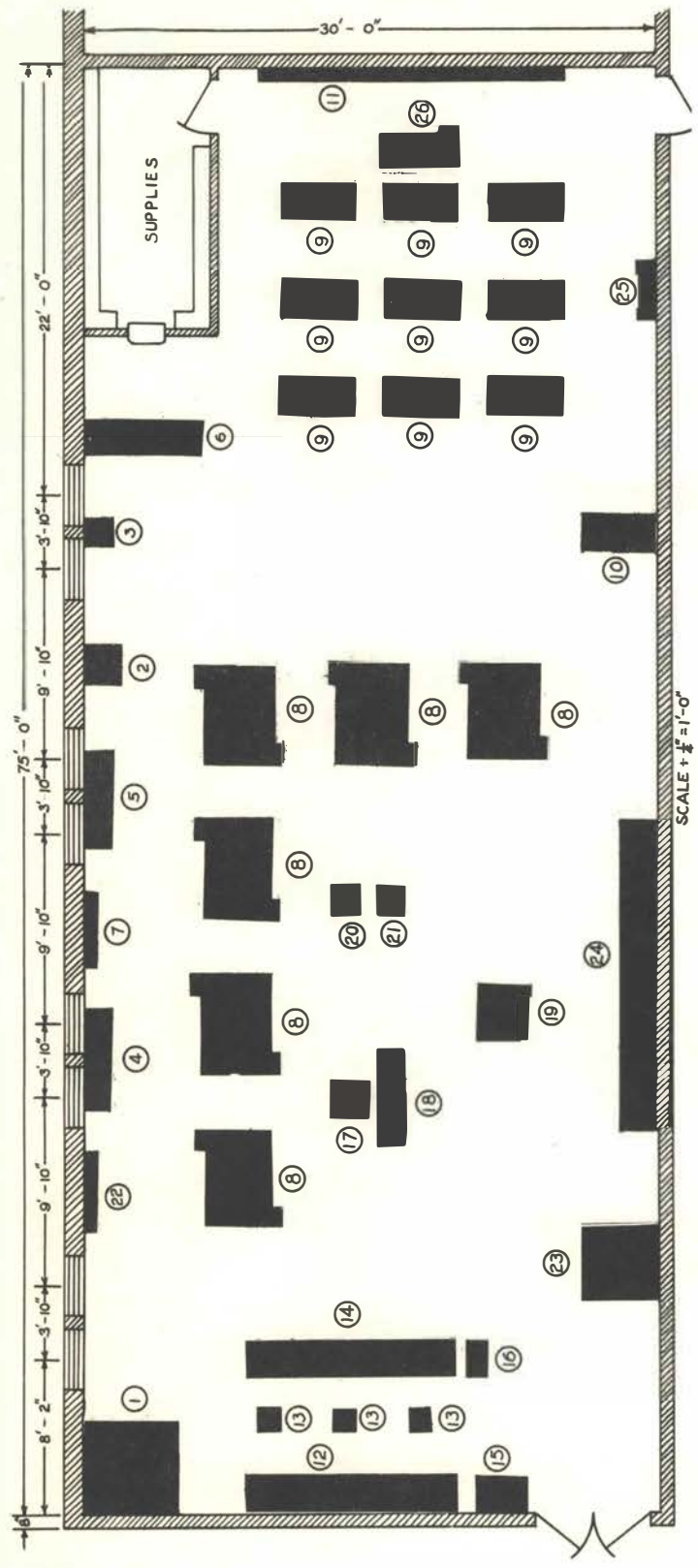


Figure 2. The Proposed Junior High School General Shop Plan

- |                    |                    |                      |                          |
|--------------------|--------------------|----------------------|--------------------------|
| 1. Restroom        | 8. Work benches    | 15. Stitcher         | 22. Tools                |
| 2. Shaper          | 9. Drawing tables  | 16. Patching machine | 23. Short lumber rack    |
| 3. Battery charger | 10. Teacher's desk | 17. Drill press      | 24. Lumber rack          |
| 4. Wood lathe      | 11. Blackboard     | 18. Joints           | 25. Book shelf           |
| 5. Wood lathe      | 12. Finisher       | 19. Circular saw     | 26. Teacher's work bench |
| 6. Testing Panel   | 13. Jacks          | 20. Scroll saw       |                          |
| 7. Tool Panel      | 14. Work table     | 21. Band saw         |                          |

The electrical workbench is located along the south wall of the shop. This workbench has house wiring diagrams and other wiring illustrations on the back panel for demonstration purposes.

The shoe repairing area is located on the east wall of the shop for two reasons: (1) as a safety measure to protect boys from exposed belts and moving machine parts; and (2) for securing the best lighting effects. The shoe repairing area has been very helpful in keeping the students' shoes in repair and making this phase of the program functional. In this same area, leathercraft is carried on with much interest and lively enthusiasm.

In the southeast corner of the shop is the plumbing area which is included in the home mechanics class. By home mechanics is meant a carefully validated group of projects taken from the home on the basis of social utility and the technical and related information they contain. This is not a general junk shop in which numerous articles from the home are repaired in a haphazard way with low standards of workmanship.

Other equipment found in the Attucks School shop are the machines shown on the floor plan (see page 36) which are placed so as to increase the efficiency of the operator. The bench saw is located near the lumber rack for processing stock, and the jointer is placed next to the saw so that it will be in position for the next operation in preparing the wood. The drill press is centrally located so that it is in easy reach of all students. The scroll saw is located close to the band saw because it is necessary for similar operations which sometimes depend upon each other. The shaper is located where long stock may be run through it conveniently. The lathes are placed where they receive the

maximum amount of natural light and take up the least amount of floor space. The tool grinder is placed nearby for ease in sharpening tools.

The author has found that from the standpoint of efficiency, economy, safety, and appearance, the arrangement of the shop equipment will greatly lessen the burden of the shop teacher and improve the discipline of shop students. In planning a shop, one should consider all factors involved.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

This research report includes the early beginning and development of industrial education and the development of the general shop from its inception up to the present time. This information is based upon facts that were gathered from textbooks and magazines which were the principal sources of information.

Summary. This study includes the progress of industrial arts from the time of its beginning in prehistoric days to the present time, wherein the Egyptian, European, and American developments have been discussed. This revision has been responsible for the high level of development of industrial arts in America.

After pursuing this study through the reading of books related to industrial arts, it is believed that industrial arts is a phase of general education, and that the content of the general shop is representative of industry. Courses offered in the general shop should be representative of community needs. However, there are many kinds of industrial arts subjects which may be offered in the general shop program. The general shop program has proven itself to be the best type of shop program for the junior high school.

The purpose of this study was to offer a better general shop program in the Attucks School, and also for other schools of like size and community conditions which are comparable in size and organization.

Recommendations. It is recommended that the general shop be more practical than theoretical. It is suggested by the writer that more current material be made available to teachers and administrators for the improving of instruction and the organizing of courses of study. However, shop programs will vary according to schools and locations, but basically there are fundamental principles that will remain the same in organizing a general shop program.



## A SELECTED BIBLIOGRAPHY

1. Bawden, William T., et al, Industrial Arts in Modern Education, The Manual Arts Press, Peoria, Illinois, 1934, 168 pages.
2. Bennett, Charles A., History of Manual and Industrial Education Up to 1870, Charles A. Bennett Co., Inc., Peoria, Illinois, 1926, 461 pages.
3. Bennett, Charles A., History of Manual and Industrial Education, 1870 to 1917, The Manual Arts Press, Peoria, Illinois, 1937, 566 pages.
4. Cox, Phillips W., The Junior High School and Its Curriculum, Charles Scribner and Sons, Dallas, Texas, 1929, 416 pages.
5. Dooley, William H., Principles and Methods of Industrial Education, Houghton Mifflin Co., Boston, Massachusetts, 1919, 257 pages.
6. Friese, John E., Course Making in Industrial Education, Manual Arts Press, Peoria, Illinois, 1946, 259 pages.
7. Leavitt, Jerome, "Safety and Education", Industrial Arts and Vocational Education, 42 (October, 1953), 254-255.
8. Ludington, John R., "Enrichment of Pupil Experiences Through Industrial Arts", School Life, 31 (May, 1949), 12-13.
9. Monroe, Paul, A Text Book in the History of Education, The Macmillan Co., New York, 1905, 772 pages.
10. Newkirk, Louis V., Organizing and Teaching the General Shop, Charles A. Bennett Co., Inc., Peoria, Illinois, 1947, 200 pages.
11. Newkirk, Louis V., and William H. Johnson, The Industrial Arts Program, The Macmillan Co., New York, 1948, 357 pages.
12. Novak, Benjamin, "What's Your Professional I.Q.?", Industrial Arts and Vocational Education, 41 (March, 1952), 104.
13. Profitt, Maris, Trends in Industrial Arts, United States Office of Education, Pamphlet No. 93, Government Printing Office, Washington, D. C., 1940.
14. Warner, William E., Policies in Industrial Arts Education, Ohio State University Press, Columbus, Ohio, 1928, 44 pages.

REPORT TITLE: A PROPOSED GENERAL SHOP PROGRAM ON THE JUNIOR HIGH SCHOOL  
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