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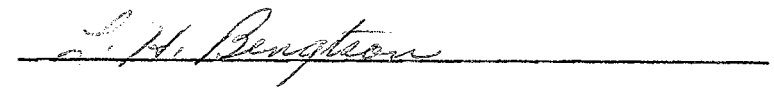
Major Field: Industrial Arts Education

Purpose of the Study: The purpose of this study is to formulate a desirable industrial arts program of shopwork for the Cushing Junior High School in Cushing, Oklahoma.

Method of Research: Interviews of teachers and supervisors in the Cushing school system gave evidence of the need for this study. Most of the historical information was taken from school records and term reports of the Cushing High School. The results of this study are based on review of books, magazines, and pamphlets, and similar reports found in the Oklahoma State University library.

Findings and Conclusions: Today it is recognized that a general shop program is better suited for the junior high school and the small high school. Students can become acquainted with many industries through this program and have a variety of industrial experiences. The general shop program should be developed in the Cushing Junior High School including from four to six subjects, which would include; (1) Drawing, (2) Woodwork, (3) General Metals, (4) Electricity, (5) Printing, and (6) Crafts.

ADVISOR'S APPROVAL 

A PROPOSED GENERAL SHOP PROGRAM, FOR THE JUNIOR HIGH SCHOOL OF CUSHING, OKLAHOMA

By

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Bachelor of Science

Oklahoma State University

Stillwater, Oklahoma

1956

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MASTER OF SCIENCE

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CHAPTER I

INTRODUCTORY STATEMENT

Today it is recognized that a general shop provides more experience than the unit shop and is better suited to the junior high school and the small high school. The general shop gives students experiences with a variety of industrial trades. This will give a greater choice if the student wishes to learn about a trade, and if the student wishes to learn a profession these experiences will help in everyday life.

Purpose of the Study. This study was made by the writer to obtain information to assist in organizing a shop program for the Cushing Junior High School. At the present time no industrial arts is being offered to the junior high students. A need for an industrial arts program has been recognized by the junior high principal, Rex Moore. He has talked with the writer of this report about what should be offered in the junior high program.

Expected Use of This Study. This plan of study is expected to be used by the Cushing Junior High School within the next few years. The junior high building will be built in three phases. The first phase has been completed. Although the shop room is in this portion, it is now being

used as a classroom. As soon as enough classrooms are available, it is expected the shoproom will be equipped. This report contains a shop layout, the equipment required, and the plan of study.

Extent of the Study. This report not only organizes the course outline, but also the plan of study for Cushing Junior High School. The fact that the room was built with the first phase of the junior high building makes it possible to draw the shop layout which is part of this report. Also each subject outline is planned to include what will be studied, and the amount of time necessary for covering the material.

Method of Research. Part of this report was obtained through the study of magazines, books, and pamphlets from the Oklahoma State University library. Part A of Chapter II on the history of the general shop was taken from books written by leaders in industrial education. Part B of Chapter II on the history of industrial education in Cushing was taken from both permament individual records and term reports of the Cushing High School. The information about the needs of the Cushing Junior High School was obtained by the writer of this report through interviews with teachers and supervisors.

Study of Similar Reports. Three similar studies concerned with general shop planning were of great help in

preparing this report. These studies are listed in the following paragraphs.

Hunter, Zebedee, A Proposed General Shop Program On The Junior High School Level In The Attucks Separate School, Ponca City, Oklahoma, a master's report completed at Oklahoma Agricultural and Mechanical College (now Oklahoma State University), Stillwater, Oklahoma, 1955.

Davis, William Alfred, A Proposed General Shop For The Junior High School Of Miami, Oklahoma, a master's report completed at Oklahoma Agricultural and Mechanical College (now Oklahoma State University), Stillwater, Oklahoma, 1956.

Gibson, Hubert R., A Proposed General Shop Program For A Small High School, a master's report completed at Oklahoma Agricultural and Mechanical College (now Oklahoma State University), Stillwater, Oklahoma.

Plan of Study. The findings and recommendations of this study will be presented in four chapters. Chapter II is a history in two parts. The first part of chapter II gives a short history of the general shop's growth. The second part of chapter II is the history of industrial education in Cushing, Oklahoma. Chapter III is the plan of study for the Cushing Junior High School, presented in three parts. The first part lists the subject, justifies it, and states in general what is included. The second part presents a time schedule, breakdown of the subject, and some lesson plan

examples. The third part is a list of needed tools and equipment, and includes the general shop floor plan. Chapter IV, the conclusion, includes a summary and recommendations.

Although the general shop in the junior high school today is a relatively new movement the idea began with the earliest of handwork in the schools. The first part of the next chapter begins with this early history.

CHAPTER II

HISTORY INTRODUCES GENERAL SHOP

A study of the history of any subject is enlightening. A study of the history of the industrial education movement will give more meaning and understanding to present day trends. The first part of this chapter is a history of the general shop. The second part is the history of industrial education in Cushing, Oklahoma.

Part A

History of the General Shop

It is impressing to study the change and growth of industrial arts from its beginning to the present day. The general shop is popular in the junior high school and the smaller high schools. High schools that are large enough usually have a number of unit shops from which the students may choose. The trend seems to be that the student should be offered as many subjects as possible.

Early History. Comenius (1592-1670) is credited with being the father of the development of the general shop. The methods first used in American schools were similar to those he advocated. His methods provided the student with experiences through which they discovered themselves.

Pestalozzi (1746-1827) established an educational system which also gave a variety of experiences to the students. He believed that students gain experience through work with natural objects. Froebel (1783-1852) worked with Pestalozzi and published a book, The Education of Man, which could be credited with being the first to point the way for the general shop movement. He advocated using the morning for theory and the afternoon for related physical activities.

The making of small useful articles by father and son during the winter months was known as home Sloyd. As the factory system grew, Finland sent Uno Cygaeus (1810-1888) to study the work of Pestalozzi and Froebel. He had been selected to take the leadership in the study of the folk schools of France, Germany, and Switzerland. Schools were established to teach youth how to make articles that were to be produced for the market.

Otto Salomon, of Sweden, refined the educational Sloyd system and was a great influence in other countries. This Swedish Sloyd system was used in the first American school to try hand work as part of its teaching. Credit is given to Frederick G. Bonser and his colleagues for conducting the first general shop at State Teachers College, Macomb, Illinois, in 1906.

Changes Up to Date. The general shop was being used some in small schools prior to the advent of the junior

high school, but has experienced its greatest growth since that time. The growth of industry was accompanied by a comparable growth in urban living which necessitated more challenging subjects to keep students interested in school. This caused the general shop program to expand since this was the way to offer courses in more industrial trades in small schools. General shop organization and content was offered to a larger number of communities.

Today's Trends. Today there are many trends in industrial arts. Due to the fact that some schools still have a single unit shop, the most important trend is the organization of general shops. The work in the shop is being related to present day activities plus "Worthy home membership, and worthy use of leisure time". The number of activities in the shop are continually being increased. Students are being taught how to become intelligent consumers of industrial products. There are many trends which help the growth of industrial arts such as increased enrollment, better qualified teachers, and improved facilities.

The second part of this chapter is devoted to the history of industrial education in the schools.

Part B

History of Industrial Education in Cushing, Oklahoma

A variety of subjects has been taught for many years in Cushing. Both trade classes and industrial arts subjects have been offered from as early as 1914, and possibly

before this, in the Cushing schools. The following table will give a list of the subjects, and the teachers who taught them. Most of this information was taken from school records of Cushing High School. Both permanent individual records and term reports were used. Some of the information was found in A History of Industrial Education in Oklahoma Up to 1950, by Marion Edmund Franklin.

TABLE I

TEACHERS AND SUBJECTS OF CUSHING SCHOOLS

DATE	TEACHER	SUBJECT TAUGHT
1914-1916		Drawing Woodwork
1916-1917		Drawing Woodwork
1919-1920	A. B. Harris	Drawing Woodwork
1930-1931	L. E. Elledge	Drawing Woodwork
	G. D. Alexander (BTW)	Manual training
1938-1939	W. Oneal Cook	Carpentry (T) Woodwork (IA) Drawing (IA)
	R. Z. Simmons	Printing (T & IA)
	Alice Streeter	Art
	A. S. Pyles (BTW)	Woodwork Drawing
1940-1941	W. Oneal Cook	Carpentry (T) Woodwork (IA)
	George Ross	Drawing (IA)
	Orville Pote	Printing (T & IA)
	Ruth Belchvist	Handicraft
	Alice Streeter	Art Design
	A. S. Pyles (BTW)	Woodwork Drawing

(TABLE I CON'T)

DATE	TEACHER	SUBJECT TAUGHT
1941-1942	W. Oneal Cook	Carpentry (T)
		Woodwork (IA)
	George Ross	Drawing (IA)
	Orville Pote	Printing (T & IA)
	Mary Heilmah	Art
	A. S. Pyles (BTW)	Woodwork
		Drawing
1942-1943	W. Oneal Cook	Carpentry (T)
		Woodwork (IA)
	George Ross	Drawing (IA)
	Mary Reiff	Printing (T & IA)
	Emily Martin	Art
	A. S. Pyles (BTW)	Woodwork
		Drawing
1943-1944	W. Oneal Cook	Carpentry (T)
		Woodwork (IA)
		Printing (IA)
		Drawing (IA)
	Emily Martin	Art
	L. D. Hemphill (BTW)	Woodwork
		Drawing
1944-1945	W. Oneal Cook	Carpentry (T)
		Woodwork (IA)
		Drawing (IA)
	Orville Pote	Printing (T & IA)
	Emily Martin	Art
	L. D. Hemphill (BTW)	Woodwork
		Drawing
		Leather craft
1945-1946	S. L. Harris	Carpentry (T)
		Woodwork (IA)
	George Ross	Drawing (IA)
	Orville Pote	Printing (T & IA)
	L. D. Hemphill (BTW)	Woodwork
		Drawing
		Leather craft
1946-1947	Charles Godfrey	Cabinetmaking (T)
		Woodwork (IA)
	George Ross	Drawing (IA)
	Orville Pote	Printing (T & IA)
	L. D. Hemphill (BTW)	Woodwork
		Drawing
		Leather craft

(TABLE I CON'T)

DATE	TEACHER	SUBJECT TAUGHT
1947-1957 (10 yr)	Charles Godfrey	Cabinetmaking (T) Woodwork (IA)
	Orville Pote	Printing (T & IA)
	L. D. Hemphill (BTW)	Woodwork Drawing Leather craft
1957-1958	Charles Godfrey	Woodwork (IA) Drawing (IA)
	Orville Pote	Printing (T & IA)
1958- 1959	Charles Godfrey	Diversified Occupations
	Orville Pote	Printing (T & IA)
	Richard A. Cobb	Woodwork (IA) Drawing (IA)
1959-1961	Charles Godfrey	Diversified Occupations
	Orville Pote	Printing (T & IA)
	Richard A. Cobb	Woodwork (IA) Drawing (IA)

(T) Trade
(IA) Industrial Arts
(BTW) Booker T. Washington School

Sometime late in the 1930's the term industrial arts was being used for some of the classes which had been called manual training. The manual training classes which were taught on an industrial basis of three continuous hours were termed as trade classes.

In the early 1940's Oneal Cook did most of the instruction in the woodwork shop. At that time the objective was to offer trade training classes involving work in all phases of woodworking, established on a productive basis, and group work. In 1943 Oneal Cook stressed carpentry

and much of the work was done outside of the woodwork shop. After World War II when Orville Pote returned to teaching in Cushing and again instructed printing, his objective was to introduce the art of printing with stress on skill in typesetting, in addition to teaching an appreciation of the many fields into which printing is divided. His objectives as stated in the term report for the vocational printing class were: (1) printing on a productive basis with value of printing as a vocation stressed, and (2) the actual production of school paper, school forms, and school annuals.

When Charles Godfrey moved to Cushing to instruct the woodwork class, he changed the vocational class from carpentry to cabinetmaking. Class attendance was about the same in 1948-1949 as in 1940-1941. Charles Godfrey had 51 students in beginning woodwork, 31 students in advanced woodwork, and 12 students in vocational cabinetmaking.

In 1956-1957 the Cushing schools were integrated. During the summer months of 1958 most of the woodwork and mechanical drawing equipment at Booker T. Washington was moved into the Cushing High School woodwork shop and the drawing classroom.

This short history was to show the present need for the junior high industrial course. The next chapter outlines a general shop plan which would work well in Cushing. The next chapter also contains a list of equipment

required and a shop floor plan for the arrangement of the equipment. It contains a course outline for each subject planned and general information for the supervision of the class.

CHAPTER III

GENERAL SHOP COURSE OUTLINE, EQUIPMENT, AND ARRANGEMENT

The best type of general shop organization for the Cushing Junior High School would be for a number of groups engaged in several activities at the same time. This chapter includes course outlines for six units of shop work and also suggests the necessary equipment and its arrangement. Three units could be taken each semester by dividing the class into three groups and rotating after each six weeks. During the year all six units would be stuied by each student.

Part A

General Information

There are many items in a course outline for a general shop which apply to all the units being offered. This part of the chapter suggests the objectives for the general shop. It also gives the plans and methods that could be used to obtain these objectives.

Objectives. These objectives of the general shop in Cushing Junior High School are set forth to clarify the meanings so commonly used for the general shop. Goals for the teacher to work toward in guiding the student are:

1. To give exploratory industrial experiences from which the student will become acquainted with

materials, tools and processes of industry and discover his own interest, abilities and attitudes toward industrial occupation.

2. To provide an opportunity to develop and evaluate special interest and increase knowledge of these interests.

3. To provide the student with experience and information which will help him as a consumer in the selection and care of industrial products.

4. To develop an interest in an activity as a hobby for constructive use of leisure time.

5. To give an opportunity for creative expression and problem solving by constructing useful projects.

6. To increase citizenship and social understanding through class organization.

7. To correlate industrial arts and other school subjects through study and problem solving.

8. To develop enough ability in the use of tools to complete the projects desired by the student and to do small tasks around the house.

9. To make the student safety conscious enough that he recognizes common hazards and forms habits of safety at school, home and in the community.

10. To develop an appreciation for fine workmanship and good design.

Records of Progress. It is important to Keep definite records of a student's progress. Good records can be used in counseling students. To get a true evaluation of the student the teacher must consider many things.

One of the most important items which should be recorded is the student's attendance and tardiness. If a student is absent or tardy often, there may be some way the instructor could help him. In any case requiring good attendance

should build good character and citizenship. Many times the student's attitude will show in his attendance. Attitude is another item along with work habits which should in some manner be recorded. It is best to try finding the cause of poor attitudes and, if possible, eliminate them. Poor work habits are learned. It is important that the teacher teaches good work habits to counteract any poor work habits the students may have developed. Records of attitudes and work habits will be helpful to the school counselor as well as to the teacher.

The teacher should record grades for tests given over the information the students are assigned to study. This could be a numerical grade accumulative for the six week period. This grade could indicate many things such as; the student did not study; the student did not understand; the information was too difficult, and many other such items. This type of record will show the progress of the student's knowledge of information.

The record which will allow the instructor to keep a good evaluation of the student's progress is that of project grades. The student should be graded on quality of the project to teach him to do a good job. He should also be graded on the number of projects completed according to their difficulty. This quantity grade will teach him to use all of his ability rather than just "getting by" with the least possible effort.

Each student should keep a planning folder for general shop. This folder is to be continuous until graduation from junior high school and should be kept on file until then. It will show individual progress and plans, drawings and material bills of all projects made. On the following page is an example of a progress chart for woodwork.

Project. The project is a vehicle of instruction. It could be considered as any article made in the shop if it was purposefully selected by the student or instructor. Each unit in the Cushing Junior High School general shop should begin with control projects. That is a project planned by the instructor and selected to give the student desired operations in steps designed for learning. As the student finishes the control projects, he should choose from a list of projects selected to further his information and ability. He then advances into the choice and planning of projects for himself. The first projects should be small and basic after which the teacher should lead the students into a sequence of more difficult problems to overcome and new processes to be learned. Before leaving each unit the student should be planning and executing projects which test his creative ability. One group project in which the students must work together should be included with each unit of the general shop.

Organization and Management. Student participation in the shop management develops responsibility in the students.

TABLE II

WOODWORK PROGRESS CHART

Name_____ Projects 1. 2. 3. 4. 5.	Ruler	Try square	T bevel	Marking gauge	Dividers	Crosscut saw	Rip saw	Back saw	Coping saw	Compass saw	Miter box	Jack plane	Router plane	Wood file	Brace & bit	Hand drill	Screw driver	Counter sink	Wood chisel	Framing square	Hammer	Glue clamps	Cabinet scraper	Hand scraper	Burnisher	Garnet paper	Steel wool
Square stock																										
Planing																										
Sawing																										
Cut curves																										
Layout hexagon																										
Layout octagon																										
Chamfer																										
Bevel																										
Boring																										
Drilling																										
Fastening, nails																										
Fastening, screws																										
Fastening, joints																										
Butt																										
Cross lap																										
Dado																										
Rabbit																										
Miter																										
Glue joints																										
Sharpen scraper																										
Finishing																										
Sanding																										
Staining																										
Filling																										
Shellac																										
Varnish																										
Cleaning brushes																										
Refinishing																										
Material bill																										

The conditions under which work is done in the shop gives very good opportunity for an organization by students for the supervision and care of the shop. It gives training of leadership, respect for others, and better human relations. A good organization can achieve good care of tools and materials, a clean shop with orderliness, and promote safety.

The teacher should retain the duties of keeping records, dismissing class and other administrative duties of such nature. The student organization should have the following duties which will be rotated:

> Shop Foreman - More advanced student directs and assists other foremen. Supervises the clean-up of the shop at the end of each period. Greets and assists visitors.
>
> Assistant Shop Foreman - Assists the shop foreman and takes over his duties when he is absent.
>
> Unit Foreman - (3) Supervises the work and clean-up of their unit area.
>
> Safety Foreman - Keeps safety slogans and posters on the bulletin board and all safety equipment in its place. Advises the teacher of any unsafe condition caused by the students which is unknown to the teacher.

Shop Safety. It is the obligation of all teachers to promote safety. Complete and definite rules should be worked out for the shop. These rules should be posted in the areas concerned as a reminder to the students. The general shop should have a first aid kit and fire extinguishers available at all times. The students should be instructed in the use of these items. The students should learn which activities involve hazards and convert safe practices into habits. These safety practices will be

carried into the home. The teacher should teach as much safety related to home and community as possible. Following you will find some general safety rules, procedure for handling accidents and suggested accident report form, personal protective equipment, and suggested safety signs and posters.

GENERAL RULES FOR HAVING A SAFE SHOP

1. Students will remain in the unit area in which they are working and not walk around talking to students in other parts of the shop.

2. There will not be any excessive talking, yelling, whistling, or singing.

3. At no time will there be any "horse-play" or "clowning" in the school shop.

4. Never run in the school shop.

5. Students will have passed the machine test and be checked out by the teacher before using any machine.

6. Wear proper safety equipment and observe all safety rules while operating equipment at all times.

7. If you break or damage any type of equipment report it at once to the teacher.

8. Never talk to anyone while operating, or to anyone who is operating power equipment.

9. Stay out of machine area unless you are using a machine.

10. Do not wear loose fitting clothing, gloves, or coats while operating a machine.

Procedure for Handling an Accident

1. First Aid - There should be a first aid kit in its place near the teacher's desk. The teacher will give first aid to the injury.

2. There is no report required in the Cushing school system. The following page is a sample report form for the shop record.

ACCIDENT REPORT FORM (sample)

1. Name_____Address_____

2. School_____Sex:___Age___Grade_____

3. Time of accident:Hr____A.M.__P.M.__Date_____

4. Place of accident_____

5. Part and nature of injury;_____

6.Decription of how it happened; how, what, where, unsafe acts, tools or machines._____

7. Witnesses and statements

8. First aid

9. Physician_____

10. Time out of school_____

11. Remarks; who was notified, degree of injury, etc.

3. There is no school physician so the student's physician is called if medical care is needed. The student must pay the doctor bill unless he has school insurance. School insurance should be offered to all students at the beginning of the school term. Individual insurance is up to the student.

Personal Protective Equipment

1. Aprons for all students.
2. Dust type respirator at the sander.
3. Gloves at the crucible furnace.
4. Cup type goggles for the grinder.
5. Face shield for the grinder and lathe.

Safety Signs

Examples of signs that can be made in the shop of the machanical type letters are:

A SHARP TOOL is a CUTTING TOOL (For grinder)

CLEAN HANDS HELP DEFEAT GERMS (Over wash basin)

A LITTLE KNOWLEDGE CAN'T HURT YOU (Over library)

DON'T EAT DUST * USE DUST MASK (Over sander)

The bulletin board could also be used for the placement of slogans. They should be changed each week. An example of a good slogan is:

THE ONLY PLACE THAT LAZINESS AND SUCCESS CAN BE FOUND TOGETHER IS IN THE DICTIONARY.

Safety Posters

1960 Directory of Occupational Safety Posters
National Safety Council
425 North Michigan Avenue
Chicago 11, Illiniois

Safety Series, Atlas Press Company

Inspection Program. Each unit foreman is responsible

to check the condition of tools in his area and particularly those used during each class period and notify the teacher of any tools in need of repair. The student organization will check all areas in use each day to see that all tools are in place and not broken. Any hazards or tools and machines in need of repair should be reported to the teacher either directly or through the student organization.

The teacher should make a check of the shop before leaving at the end of each day. He should make a complete inspection weekly of all machines and tools to see that maintenance is up to date and no guard or safety device is becoming hazardous. An inspection record should be kept showing dates of inspections. It should show all deficiencies and date corrected or if there are no deficiencies, it will state "no deficiencies".

Interrelation with Other Subjects. Many aspects of English, mathematics, science, and social studies can be integrated into the general shop. At every opportunity, projects, study, and experiences should be related to mathematics. Oral and written reports about craftsmen, construction of projects, and industrial information could be related to the language arts. The history of the development of tools and machines, sources of raw materials, and economic values can be related to social studies. Science can be related to many things in the shop. Some of these would be preservation of wood by use of finishes,

seasoning of lumber, chemistry of paint, etc. The teacher should cooperate with the teachers of academic subjects to integrate the general shop work as much as possible.

Thus far the writer has given general items which concern all units of the shop. The next part of this chapter is an outline of the units and also the time schedule of the units.

Part B

General Shop Course

Six units around which the general shop could be organized are crafts, drawing, printing, woodwork, general metals, and electricity. The course should be required for the seventh grade students and elective to the eighth grade. This report will be concerned with the seventh grade only. Each eighth grade student will be able to take the unit of his choice for the full semester. This part of chapter IV will give a proposed schedule for the seventh grade of these six units and a proposed outline of the scope of each unit.

Schedule of Courses. The seventh grade classes should consist of twenty-four students to be divided into three groups of eight each. During the first semester each group will be rotated through crafts, drawing, and printing. During the second semester each group will be rotated through woodwork, general metals, and electricity.

TABLE III

SCHEDULE OF COURSES

Subject	Six week term			Group		
	1st	2nd	3rd	one	two	three
Crafts	x			x		
		x			x	
			x			x
Drawing		x		x		
			x		x	
	x					x
Printing			x	x		
	x				x	
		x				x
	3rd	4th	5th			
Woodwork	x			x		
		x			x	
			x			x
General Metals		x		x		
			x		x	
	x					x
Electricity			x	x		
	x				x	
		x				x

Text. Olson, Delmar W., Industrial Arts for the General Shop. Prentice-hall, Inc., Englewood Cliffs, N. J., 1958, 307 pages

Crafts. For the student of seventh grade age, both leather and plastics are good craft subjects. Each of these will make good hobbies for use of leisure time and also could make the student a small amount of money. Projects from these crafts make fine gifts. The best method to teach these together would be to choose good control projects in each craft. After the completion of these projects, the student could work further in the one of his choice. The following are a few objectives which should be realized from these crafts:

1. To give the student knowledge of plastic industry and uses of plastic today.

2. To provide the opportunity for the student to manipulate plastic and construct projects and to learn the characteristics of various plastics.

3. To provide the student with the knowledge and ability to use plastic work as a leisure-time activity.

4. To provide the student an opportunity to work with the simple tools of leathercraft.

5. To give the student an opportunity to become acquainted with the place of leather in industry today.

6. To provide the student with the knowledge and ability to use leather work as a leisure-time activity.

7. To develop an appreciation of good materials, workmanship and design.

8. To assist the student in finding his own interest.

Drawing. In the seventh grade the basic drawing principles should be learned. This would give a foundation for advanced drawing. If the student does not intend to take more drawing, this basic drawing is almost a necessity of life. To work in any industrial occupation will require the reading of drawings. Everyday life also requires the reading of drawings. The knowledge of how to read a drawing is essential in many contacts of life, and the reading of drawings is learned through the making of them. The objectives should be:

1. To develop the student's freehand drawing.

2. To develop the student's visualization of orthographic projection.

3. To teach the usage of the basic drawing instruments and materials.

4. To develop the student's ability to dimension and letter.

5. To provide understanding of the opportunities in the field of drawing.

6. To develop an appreciation of good materials, workmanship, and design.

7. To assist the student in finding his own interest.

Printing. Printing is the graphic arts industry that produces our newspapers, magazines, books, and pamphlets, as well as reproducing drawings, pictures, photographs, and such illustrations. It is important that the students learn something about how the newspapers are printed. The student can print items for the school's use or for home use. The objectives would be:

1. To give the students manipulative experience with printing equipment and materials.

2. To acquaint the student with the occupational opportunity of printing.

3. To give the student an understanding of the importance of graphic arts in the communication of knowledge and its preservation.

4. To develop the student's appreciation of good materials, design, and workmanship in graphic arts.

5. To assist the student in finding his own interests.

Woodwork. In the seventh grade a woodworking course would include only hand tools and the safest of the small machines used in industries using wood as basic material.

Woodwork is the most commom shop course in our schools today for many reasons. The many things that can be made from wood that fit so well in the home is only the beginning of its uses. Wood is much less expensive than most materials. Also there is much the student can help to do around the home, working with wood, one need not go into industry to benefit from such a subject. The objectives should be:

1. To acquaint the student with the woodwork industries and their occupational opportunity.

2. To give the student the ability to use the woodworking tools and materials well.

3. To encourage leisure time activities in woodworking as a hobby.

4. To teach the safe handling and good care of the woodworking tools.

5. To develop an appreciation of good material, workmanship and design in woodworking.

6. To assist the student in finding his own interest.

General Metals. At the seventh grade level general metals could include a large variety of industrial processes. Metal has the largest industrial use of the subject areas offered. There can be foundry, bench metal, sheet metal, and art metal. Many desirable things can be made by the student. This teaches the student many processes of the metal industry. Even if the student does not go into industry, he must be a consumer; and there are many things made of metal in everyday use. Some of the objectives are:

1. To provide the student with a knowledge of the metal industry from mining to the many products of metal.

2. To give the student the ability to use and care for metalworking tools and materials.

3. To encourage the use of art metal as a hobby for a useful leisure time activity.

4. To give the student a knowledge of good metals and processes so he can be an intelligent consumer.

5. To develop an appreciation of good workmanship, materials, and design in metalwork.

6. To assist the student in finding his own interest.

Electricity. The place that electricity occupies today is very important to everyone. Without electricity we would be retarded many years. So much electricity is used today that everyone should know as much as possible about it. In the study of electricity the following objectives should be realized:

1. To cause the student to realize the importance of electricity today.

2. To give the student an opportunity to learn about the electrical trade and the possibilities for employment.

3. To give the students the ability to use the simple electrical tools and appliances and their maintenance.

4. To teach the student the elementary and fundamental principles of electrical equipment.

5. To give the student knowledge of electrical products so he may be an intelligent consumer.

6. To assist the student in finding his own interest.

CRAFTS COURSE OUTLINE (leather)

Project	Operations, Processes, Skills	Related Information
Book Mark	Cutting leather	General:
	Preparing leather	Where the leather comes from and how it is processed.
	Designing and applying designs to leather	Grades of leather
	Embossing and Modeling	Use of different kinds of leather
	Stamping	Good design for leather projects
Choice of:	Carving	
Comb case Key case Coin purse	Tooling	Technical:
	Skiving	Sharpening leather tools
	Cementing	
	Punching	Various methods of sewing or lacing pieces together
	Lacing	
	Dyeing	Principles of dyeing, coloring, cleaning, polishing, and finishing objects
Free Choice (guided)	Practice of all operations and processes to gain skill	

CRAFTS COURSE OUTLINE (plastics)

Project	Operations, Processes, Skills	Related Information
Letter opener	Design projects	General:
	Layout projects	History and development of plastics
	Cut plastic with coping saw	Difference in appearance and characteristics
	Drill hole in plastic	Use of plastic material in paint
	File sawed edges	
	Sand plastic surfaces by hand	Technical:
	Polish and buff surfaces	Chemicals used for bonding
Choice of:	Drill	Keeping tools sharp
Tie rack Letter opener Picture frame Paper weight	Cut plastic with jigsaw	
	Square plastic stock	
	Sand plastic surfaces on sander	
Free choice (guided)	Fasten joints by cementing	
	Heat and form thermoplastics	
	Carve plastic surfaces	
	Practice of all operations and processes to gain skill	

DRAWING COURSE OUTLINE

Plates	Skills & Operations	Related Information
Freehand picture of front of house across the street	Use of pencils	General:
Freehand block #1	Estimate of size and relation	Weight and thickness of lines
Freehand block #2	Straightness of lines	Hardness of leads
Orthographic freehand of block #3	Orthographic projection	Orthographic projection
Orthographic freehand of block #4		Different angles of triangles
Linework with drawing equipment	Use of T-square	Types and shapes of letters
Designs with drawing equipment	Use of triangles	Technical:
Orthographic with drawing equipment of block #5	Use of scale	How to use the T-square
Orthographic with drawing equipment of block #6 to include dimensions	Use of compass	How to use the triangles
Orthographic of Gear	Use of protractor	How to read the scale
Orthographic of stool		How to use the protractor
Lettering #1		How to use the lettering guide
Lettering #2	Use of lettering instrument	
Free choice (guided)		

PRINTING COURSE OUTLINE

Projects	Operations, Processes, Skills	Related Information
Memo pad	Cut paper with lever cutter	General:
	Pad making	History of printing
Letterhead	Setting type in a composing stick	Industry of paper-making
Envelope	Tying up type	Industry of type making
	Taking a proof	
	Lock type in chase	Technical:
School bulletin	Operating press	Cutting paper
Picture printing from linoleum block cuts; cards, napkins, blotters, etc.	Trace design on linoleum	Making a pad
	Cut linoleum	Setting up type
	Linoleum block printing	Operating press
Free choice (guided)		Making linoleum blocks and printing
		Care of equipment

WOODWORK COURSE OUTLINE

Projects	Operations, Processes, Skills	Related Information
Choice of:	Sawing	General:
Book end Tie rack Wall rack	Planing	Growth and processing of wood
	Nailing	Kind of wood
	Sanding	Composition of finish materials
	Applying finish	
Choice of:	Chamfering	Technical:
Stool Shoe shine box Wall shelf Magazine rack	Drilling holes	How to sharpen tools
	Making a joint with glue with screws	Use of saw
	Making a material bill	Use of plane
		Reading the rule
Free choice (guided)	Use of drill press, jig saw, and sanding machines	Types and manufacture of sandpaper
		Applying finish
		Type and use of drills
		Type and use of glues
		Type and use of screws
		How to make up a bill of materials

GENERAL METAL COURSE OUTLINE

Projects	Operations, Processes, Skills	Related Information
Choice of casting:	Preparing sand	General:
Paper weight Door knocker Wall plaque	Preparing flask	History of metal industry
	Preparing metal	Characteristics of metal
	Pouring metal	Machines of metal industry
	Cleaning castings	Technical:
Choice of:	Etching	Condition of sand
Aluminum tray Copper bowl	Forming	Equipment used preparing the flask
Choice of:	Layout	Temperature of metal
Funnel Mail box	Cutting	Gages of metal
	Bending	How to work copper
	Rolling	How to etch aluminum
	Soldering	How to cut sheet metal
Choice of:	Grinding	How to bend and roll sheet metal
Screw driver Center punch	Filing	Fluxing and soldering
Free choice (guided)	Drilling	Rules for grinder
	Riveting	Heat treatment
		How to drill metal
		How to sharpen and care for metal tools

ELECTRICITY COURSE OUTLINE

Projects	Operations, Processes, Skills	Related Information
Extension cord	Fasten plug to wire	General:
Panel board:	Bells and buzzers; Dry cells in series,	History of electricity
Bells & buzzers	Dry cells parallel,	What is electricity
	Transformer	Uses of electricity
Panel board:	Add 150 watt bulbs to a circuit to melt	Technical:
Circuits and fuses	fine copper wire, picture wire, and different fuses	Different types of plugs
	Wire a circuit with single pole switches	Different types and kinds of wire
	Wire a circuit with multiple pole switches	What makes the bell and buzzer work
Choice of:		Alternating and direct current
Burning pencil Electric soldering copper		What metals are better conductors
Electric motor	Winding wire to set up magnetic field	Types of fuses and circuit breakers
Free choice (guided)		Underwriters code
		Kinds of single pole switches
		Kinds of multiple pole switches

Field Trips and Audio-Visual Materials. Field trips and films are of value because the student may see things done which cannot be done in the general shop. They must be wisely selected, planned and carried out. Important features to look for should be pointed out before the trip is taken or the film is shown, and important features should be discussed afterward. A few suggested field trips and films are:

1. Jim's Leather Shop, 103 East Broadway, Cushing, could give the students demonstration in cutting and sewing, and the making of leather products.

2. Kingdom of Plastics, 10 minute color film, demonstrates and explains the properties and use of thermosetting and thermoplastic materials. Produced by the General Electric Company and available on free loan basis from General Electric Film Division, 840 South Canal Street, Chicago 80, Illinois.

3. A visit to Midland Refinery's drafting department in Cushing would give the students the opportunity to see large drawings in progress and large drawing instruments in use. They may also see the reproducing of drawings.

4. The Language of Drawing, 10 minute sound motion picture. This film attempts to stimulate the interest of beginning students in the subject through glimpses of actual jobs in factories, shipyards, and shops. Shape Description, Part I, 15 minute sound motion picture, and Shape Description, Part II, 10 minute motion picture describes the theory of orthographic drawings.

5. Arrangements should be made with the Cushing High School printing teacher for the students to visit one of the advanced printing classes during a period of work.

6. A visit to the newspaper, Cushing Daily Citizen, in Cushing, would allow the students to see linotype machines in use and the complete processing of the paper from the point of collection of information until the papers come from the printing press.

7. Arrangement should be made with one of the building contractors in Cushing to visit a building which is at a stage of construction where the students can see the carpenters at work.

8. Arrangements should be made with the Cushing High School woodwork teacher for the students to visit one of the advanced woodwork classes during a period of work.

9. A B C of Hand Tools, 33 minute color film, Teaches many things about the use and care of hand tools. The film is in two parts. Part I covers the handling of hammer, screw driver, pliers and wrench. Part II includes files, saws, chisels, planes and punches. General Motors Corporation, Film Division, Detroit, Michigan.

10. Wright's Sheet Metal Shop, 400 East Main Street, Cushing, could show the use of sheet metal in the building trades.

11. Towne's Machine Shop, 400 East Greenlee Street, Cushing, could show the use of large metal working machines. Large metal lathes can be seen in operation.

Part III includes the floor plan of the room available for the general shop in the junior high building. It gives a list of the equipment needed for such a shop and the placement of most major equipment is shown in a floor plan.

Part C

Layout, Tools, and Equipment

This chapter gives a suggested plan for arranging a general shop in the Cushing Junior High School. It also gives a complete list of the tools and equipment needed for a general shop such as is planned in this report.

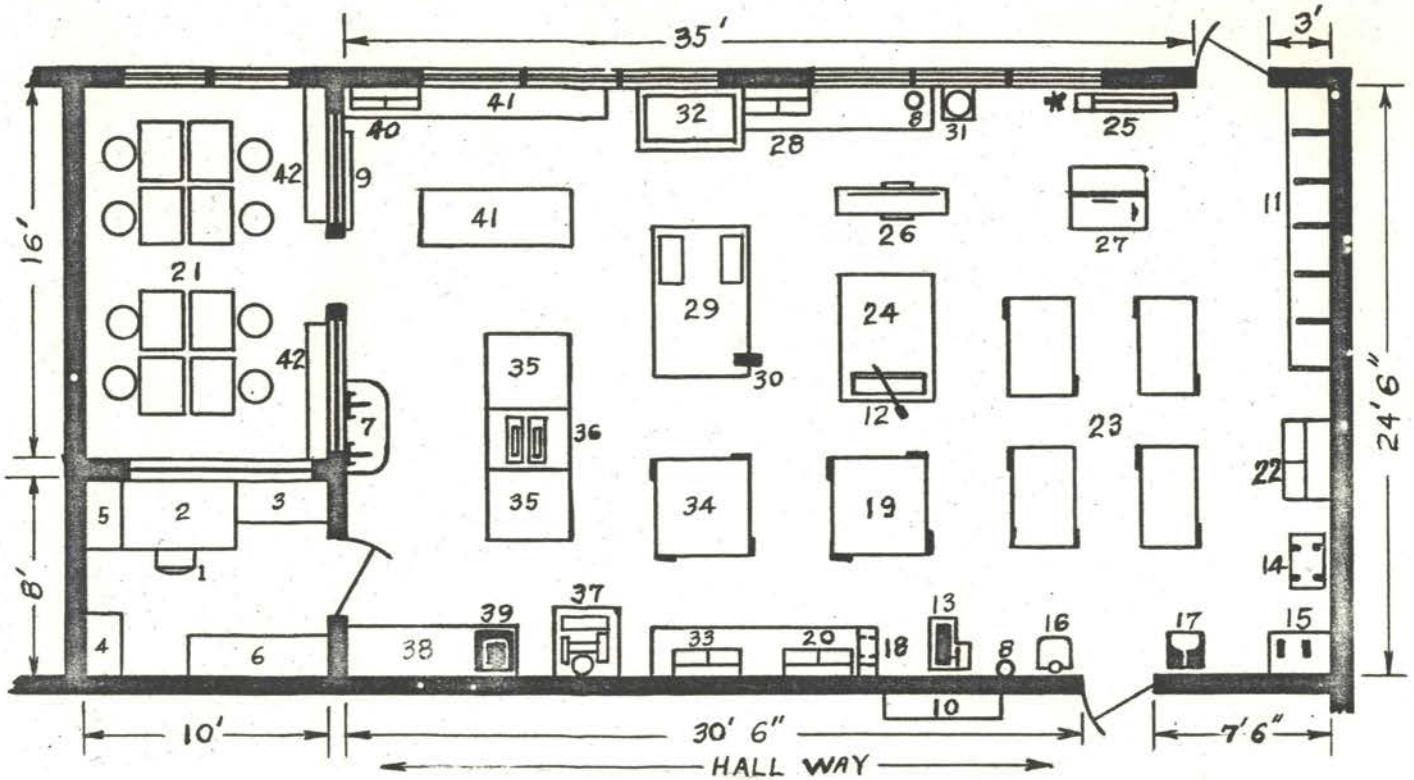
Available Space. The Cushing Junior High School building when planned was to be built in three phases. The shop room is in the first phase of building which is completed. It is now in use as a classroom for other subjects. It is available at any time the Cushing Board of Education decides to add shopwork to the junior high program. The room is twenty-four and one half feet wide and forty-two feet long. There are two small rooms at one end of the large room, one eight feet by ten feet, the other ten feet by sixteen feet. The shop room was built for a woodwork unit shop and the smaller rooms were to be used as a tool room and a finishing room. The tool room could be used to store materials and also used as the teacher's office. The finishing room could be used as a drawing room. The large room contains all other unit areas with adequate space for each.

Lighting. The lighting consists of fluorescent over head type. There are sufficient lights except for the drawing room. It would be advisable to have a small shade type light at the machines across the room from the windows to use on dark days.

Electrical Outlets. Since the room was constructed for a shop there will be no problem of not having enough electrical outlets. Both the north and south walls have an outlet panel with outlets about every eighteen inches.

Equipment Arrangement. The arrangement of equipment will need to be carefully planned. If the room had been built for a general shop a few things would be changed. Careful planning of the placement of unit areas and equipment will allow each of the six unit areas enough working space. The floor plan for the shop, on the following page, shows a suggested placement of the unit areas and the major equipment.

List of Equipment. The list of equipment is suggested for the six unit general shop planned. Many items could be added to this list to make a better shop. Also a few items could be removed without destroying the unit areas. A few of the major items on this list are presently stored in the Cushing High School woodwork shop.



1. Office chair
2. Instructor's desk
3. Storage cabinet
4. Utility cabinet
5. File cabinet
6. Special tool cabinet
7. Wash basin
8. Fire extinguisher
9. Bulletin board
10. Display case
11. Lumber bin and rack
12. Miter box and saw
13. Belt and disc sander
14. Grinder
15. Oil stones
16. Drill press
17. Jig saw
18. Buffer
19. Plastic bench
20. Plastic cabinet
21. Drawing tables
22. Woodwork cabinet
23. Woodwork benches
24. Glue and finish table
25. Lathe and stand
26. Jointer
27. Circular saw
28. Metal cabinet
29. Metal bench
30. Machinist vise
31. Crucible furnace
32. Sand bin
33. Leather cabinet
34. Leather bench
35. Composing table
36. Type case
37. Printing press
38. Paper table
39. Block press
40. Electricity cabinet
41. Electricity benches
42. Book cases

General Use and Special Equipment

1 each, saw, tilting arbor, 10"; with cover and splitter guard, miter gauge, 10" combination blade, and motor

1 each, blade, crosscut, 10"

1 each, blade, ripping, 10"

1 set, sawing washers, dado

1 each, saw, jig, complete with motor

1 each, jointer, 6", with swing guard, motor, and blades

1 each, sander, 37½" x 4" belt and 10" disc, with stand and motor

1 each, lathe 12" x 36" with bench

1 each, floor stand

1 each, face plate, 3"

1 set, chisels, lathe

1 each, chuck, universal

1 each, drill press, 15" floor model, with motor

1 each, mortising attachment, hold-down and guide, and bits and chisels

1 set, drills, twist, straight shank

1 each, grinder, bench, with guards and grinding wheels

1 each, router, electric

1 each, dovetail attachment

1 each, desk, steel

1 each, chair, office

1 each, cabinet, utility

1 each, cabinet, storage

1 each, cabinet, small parts

1 each, saw set

1 each, file, saw, slim taper

1 each, file, saw, extra slim taper

1 each, file, mill

1 each, file card

2 each, extinguishers, chemical fire

1 each, dispenser, boraxo

1 each, first aid kit

1 each, sharpener, pencil

1 each, oilstone, hard Arkansas

1 each, oilstone, soft Arkansas

1 each, slipstone

1 each, grinding wheel dresser

2 each, bench oilers

1 each, grease gun

1 each, fuse puller

8 each, dusters, counter

2 each, floor sweeps

Crafts, Leather.

1 each, bench 54" x 64" with 4 vises

1 set, snap fastener

2 each, skiving knives, bevel point

1 each, edge creaser

1 each, edge tool

1 each, knife, skife

1 each, draw gauge

1 each, shears, leather cutting

1 each, pliers, lacing

1 each, punch, "Lodi", 6 tube

2 each, chisels, thonging, single prong

2 each, chisels, thonging, four prong

2 each, brushes, die, small

12 each, needles, lacing

4 sets, leather tools, each with; modeling tool, swivel top cutter, beveler, pear shader, veiner, camouflage, small and large seeder, backgrounder, and rawhide mallet

Crafts, Plastics.

Plastic hand tools are with and in woodwork tool cabinet and listed under woodwork tools and equipment

1 each, bench 54" x 64" with 4 vises

1 each, hot plate, electric

1 each, oven, electric

1 each, flexible shaft machine with accessory set

1 each, buffer

1 each, buffing wheel, muslin

1 each, buffing wheel, cotton

Drawing.

8 each, tables, wooden drawing

8 each, stools, angler steel

8 sets, drawing equipment each with; rubkleen eraser, erasing shield, pencil pointer, h pencil, 2h pencil, duster, T-square, 30° x 60° transparent triangle, 45° x 45° transparent triangle, irregular curve, protractor, triangular hardwood scale, lettering instrument, penholder and pen, and beginner's drawing set

Printing.

1 each, portable press outfit, excelsior self-inking, 9" x 13", with furniture, type, cases, leads, composing sticks, tweezers, galleys, hand roller, gage pens, mallet, planer

1 each, excelsior case stand

1 each, cutter, card and paper, 18"

1 each, binder, staplfast

1 each, punch, universal

2 each, metal line gauge

1 each, brush, type cleaning

1 each, printing press, block

1 set, cutters, linoleum, speedball

1 set, knives, x-acto

Woodwork.

4 each, benches 28½" x 64" with 2 vises

1 each, bench 54" x 64"

8 each, stops, bench

12 each, clamps, Hargrave "I-Bar", 4'

6 each, clamps, "C", 4" opening

8 each, hand screws, "Jorgensen adjustable, jaws open 4½"

8 each, hand screws, "Jorgensen adjustable, jaws open 6"

1 each, miter and corner clamp

1 each, miter box with miter saw

1 each, saw, crosscut

1 each, saw, rip

2 each, backsaws

1 each, saw, compass

1 each, saw, coping

8 each, planes, "Junior" jack

1 each, plane, jack

1 each, plane, smooth

1 each, plane, fore

1 each, plane, block

1 each, plane, router, with 3 cutters

1 each, plane, rabbit

1 set, chisels, wood 1/8", 1/4", 3/8", 1/2", 5/8", 3/4", 1"

1 each, knife, putty

2 each, scrapers, hand

1 each, burnisher

2 each, scrapers, cabinet

1 each, draw knife

1 each, spokeshave

1 set, screwdrivers, phillips, No. 1, 2, 3

1 each, ratchet, phillips offset

1 set, screwdrivers, standard, for slotted screws, 4", 6", 8", 12"

1 each, standard offset ratchet

1 each, screwdriver, "stubby"

1 each, bit, screwdriver

1 each, brace, ratchet

1 set, bits, auger, 4/16 through 15/16

1 each, bit, expansive

1 each, countersink

1 each, drill, hand

1 set, drills, straight shank, 1/32, 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4

8 each, rulers, bench

2 each, tapes, steel, 6'

1 each, square, framing

1 each, T-bevel

8 each, squares, try

1 each, square, combination

2 each, gauges, marking

1 each, divider, wing

2 each, hammers, nail

3 each, mallets, rawhide

1 each, nail set

1 each, punch, center

1 each, file card

1 set, files, assorted

General Metals.

1 each, sheet metal bench 4' x 8'

1 each, soldering iron, electric

1 each, snips, tin

1 each, dividers, wing

1 each, punch, center

1 each, awl, scratch

3 each, hammers, wooden

1 each, vise, machinist

1 each, saw, hack

1 set, hammers, ball pein, 4 oz., 6 oz., 8 oz.

1 each, hammer, tinners' riveting

1 each, pliers, combination

1 each, pliers, thin straight nose

1 each, pliers, diagonal cutting

1 set, chisels, cold, 1/4", 3/8", 1/2", 5/8", 3/4", 1"

1 set, punches, tapered, point diameter, 1/8", 3/16", 1/4", 1/2" 5/8", 3/4"

1 set, rivet sets

1 set, taps and dies

1 set, forming stakes with; pexto stake, beakhorn, hollow mandrel, creasing stake with horn, and coppersmiths square stake

1 each, furnace, crucible, with crucible

1 each, tongs, crucible

1 each, ladle, melting

2 each, flasks, steel foundry

1 each, cheek, steel

1 each, sponge, bulb

1 each, riddle, foundry

1 each, bellows, molders

2 each, shovels, square point

1 each, trowel, finish

1 each, slick and oval

1 each, lifter

2 each, rammers, bench

300 pounds, sand, molding

5 pounds, parting, non-sil

Electricity.

2 sets, screwdrivers, standard, for slotted screws

2 each, pliers, combination

2 each, pliers, thin straight nose

2 each, pliers, diagonal cutting

2 each, soldering irons, electric

1 each, saw, hack

1 each, vise, pipe

4 each, panel boards with bells and buzzers

4 each, panel boards with bulbs and circuits

8 each, dry cells

2 each, transformers

2 each, benches

CHAPTER IV

CONCLUSION

This study includes a short history of the general shop and its development. The main purpose is to organize a general shop course for the Cushing Junior High School.

Summary. The idea for many experience giving activities in one shop was born in the sixteenth century by Comenius. This was continued with Pestalozzi's educational system and one of his workers published a book which was the first to direct the trend to the general shop. With the growth of industry and the change in the educational system to include a junior high school came a need for more variety in the industrial arts program.

Recommendations. It is the writer's recommendation that all junior high schools and small high schools have a general shop which gives as large a variety of subjects as practicable. There should be subjects in crafts for the youngest students and as they become older they should have subjects along the industrial line.

Bibliography

A. Books

1. Groneman, Chris H., and Fierer, John L., General Shop, McGraw - Hill Book Company, New York, 1954, 307 pages

2. Newkirk, Louis V., General Shop for Everyone, Health Company, Boston, 1952, 261 pages

3. Newkirk, Louis V., The General Shop, The Manual Arts Press, Peoria, Illinois, 1929, 190 pages

4. Newkirk, Louis V., Organizing and Teaching the General Shop, The Manual Arts Press, Peoria, Illinois, 1947, 200 pages

5. Silvius, Harold G., and Curry, Estell H., Teaching Multiple Activities in Industrial Education, McKnight & McKnight Publishing Company, Bloomington, Illinois, 1956, 484 pages

B. Magazines

6. Luehring, Authur H., and Yoger, Sylvan A., A General Shop, Its Equipment and a Suggested Curriculum for the Smaller High School, Teachers College Journal, 7:51-82, March, 1936

7. Williams, Anos G., Building A General Shop Curriculum, Industrial Arts and Vocational Education Magazine, 30:307, October, 1944

C. Pamphlet

8. Profitt, Maris, Trends in Industrial Arts, United States Office of Education, Pamphlet No. 93, Government Printing Office, Washington, D. C., 1940

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Master of Science

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