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ABSTRACT

Prepared by the vocational education division of a state department of education and compiled by industrial arts educators, this resource guide provides a conceptual basis for the elementary teacher using industrial arts as a means of introducing children to industrial processes and orienting them to the physical and material world. Included in the guide are manipulative activities and experiences that will help to broaden the child's knowledge about the interdependence of people and the world of work as it involves them and their families. Seven categories of elementary industrial arts programs are briefly outlined: limited and comprehensive classroom, laboratory, traveling teacher, mobile and central laboratory, and summer school enrichment programs. An example of a resource unit for primary level is given in detail including: (1) purposes, (2) learning activities, (3) skills developed, and (4) resource materials. Included in the guide are: (1) a list of safety rules for the teacher, (2) source of supplies, (3) an evaluation checklist, (4) suggestions for furniture, (5) an outline for organizing instructional plans and (6) one for studying basic raw materials of industry. (JS/MU)

STATE DEPARTMENT OF EDUCATION

OF LOUISIANA

1972

Bulletin No. 1207

Elementary School Industrial Arts
Interaction Technology for Children
A Positive Approach to Education for a Changing Society

Prepared by
Vocational Education Division
Thomas S. Derveloy, Assistant Superintendent

Industrial Arts Section
Andrew H. Gasperecz, Director
John A. Dobbs, Supervisor
John O. Murphy, Supervisor

Issued by

State Department of Education
William J. Dodd, Superintendent

CONTENTS

ACKNOWLEDGMENT

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DEFINITION

Industrial Arts, at the elementary school level, is an essential part of the education of every child. It is a positive approach to education for each boy and girl in our changing society. It deals with the way man thinks about and applies scientific theories and principles to control his physical environment. It provides opportunities for developing concepts related to the child's aesthetic and utilitarian needs. These concepts are developed through concrete experiences, including the manipulation of tools and materials, the management of processes, and other methods of discovery. Industrial Arts at the elementary school level includes: (1) knowledge of technology; (2) development of psychomotor skills; and (3) development of attitudes and understandings of how technology influences society.

PHILOSOPHICAL BASE

Education in the United States is committed to the task of developing the full potential of all children. School systems differ widely in their approach to the child, the environment, and learning experiences. There is a divergence from highly structural to non-structural programs. For the most part, learning has been oriented to the verbal and symbolic; provisions for developing the nonverbal abilities of each child have not been emphasized. Research indicates a need for the development of these nonverbal abilities of children.

Each child brings to the learning situation a unique profile of development resulting from the sum total of his past experiences. Therefore, educators must recognize to deal with individual levels of development in such personal characteristics as attitudes, values, self-concept, knowledge, and psychomotor skills.

Recognizing these individual differences, there are two fundamental dimensions in which the educational process operates and for which the educator must assume responsibility. The first is the physical setting, which includes materials, facilities, and media stimulating both verbal and nonverbal responses in the learner. The second is the mode of the organization, governing the ways in which the children operate in the physical setting. A flexible learning situation sets the stage for interaction, exploration, experimentation, problem solving, and concrete experiences that satisfy aesthetic and

utilitarian needs. Learners are provided opportunities to assume responsibility, make decisions, think, receive immediate feedback, and express themselves freely.

Industrial Arts for the elementary school (technology for children) can satisfy these conditions. The uniqueness of industrial arts lies in the fact that its activities can provide a greater variety of elements that enhance the learning process than any other single discipline.

INTRODUCTION TO THE WORLD OF WORK

Understanding of industrial processes and insights into manufacture and production, as well as exposure to and contact with the physical and material world, facilitates orientation to the world of work. Students attain respect for craftsmanship. They learn to appreciate ability in others, both in technical skills and talents other than manipulation. These appreciations enhance human relationships. They help individuals recognize their own place as contributors to the social system and the accompanying sense of accomplishment and involvement.

A FRAMEWORK FOR ELEMENTARY SCHOOL INDUSTRIAL ARTS
(Interactive Technology for Children)

I. Focus on the Child - Children's Needs

A. Personal
B. Physical
C. Social
D. Cultural

II. Objectives

A. To enrich the elementary school curriculum
B. To provide opportunities for effective and meaningful learning experiences
C. To teach children about their technological heritage
D. To help children develop attitudes and understanding of how technology influences society
E. To develop a basic understanding of the organization and function of modern industry
F. To help children develop a gracious attitude toward man and work
G. To develop skills:
   1. Informative skills
   2. Planning skills
   3. Behavior skills
   4. Appreciation skills
   5. Manipulative skills (of least importance at the elementary level)

III. Integration with other subject matter areas:

A. Traditional subject matter areas (basic skill areas) are vehicles through which additional learning can take place.
B. No one subject matter area is an "island"--subject matter areas should reinforce each other.
C. Industrial arts activities have many contributions to make that will enrich and reinforce other subject matter areas.

IV. Study of Industry

A. History
B. Industry's contribution to modern society
C. Technology of industry
D. Production

E. Consumption of industrial products
F. Service of industrial products

V. Classroom Organization and Management

A. Introductory procedures
B. Instructional personnel
C. Instructional procedures
D. Methodology:
    1. Construction
    2. Non-construction
    3. Research
    4. Problem solving
E. Evaluation

VI. Laboratory (Classroom)

A. Physical setting
B. Materials
C. Tools
D. Time allocated

Suggested Areas of Industry for Study in Elementary School Industrial Arts

1. Manufacturing
2. Transportation
3. Communication
4. Construction
5. Power
6. Services

SUGGESTED LIST OF TOOLS FOR ELEMENTARY SCHOOL INDUSTRIAL ARTS

(Subject to revision to meet individual teaching needs)

No.	Description	Approximate Cost
4	Hand saws. 20" 10 point	$3.75 each
3	Back saws -14" length	4.55 each
6	Coping saws	2.65 each
1	Combination square	1.80 each
6	Try-squares -8"	2.64 each
1	Hand drill	4.00 each
4	Twist drills (1/16", 1/8", 3/16", ¼")	.50 each
1	Brace, auger bit	7.50 each
1 set	Irvin auger bit set	18.80 each
6	10 oz. hammers	3.75 each
6	3" "C" clamps	1.00 each
1	Scratch awl	1.20 each
2	Nail sets (1/32-2/32)	.50 each
1	Small crescent wrench	1.75 each
1	Side cutters	2.25 each
1	Pliers	1.00 each
1	Small flat file 10"	.75 each
1	Stanley knife	1.25 each
4	Vises, 4" jaw, thumb screw mount	4.50 each
2	24" bench rules	2.35 each
2	12" bench rules	2.15 each
1	Needle nose pliers	1.50 each
2	Block planes	5.50 each
2	Smooth planes	5.50 each
4	Bench duster	1.75 each
3	Screwdrivers (assorted sizes)	1.50 each
3	Chisels (¼, 3/8, and ½)	1.50 each
1	Wood miter boxes (small)	1.75 each
1	Dust pan	2.00 each
2	Wood rasp	1.00 each
	Sub Total	$204.14

Electric Power Tools; (optional)

1.	Electric hand drill, ¼"	18.95
2.	Orbital-action sander	49.95
3.	Dremel deluxejig saw with attachments	49.95

Sub total for Power tools	118.85
GRAND TOTAL	322.99

Note: Assorted hardware, nail, screws, abrasive paper, paint, etc. as needed.

SOURCES OF SUPPLIES AND EQUIPMENT

Beckley-Cardy
1900 N. Narrangansett Ave.
Chicago, Illinois

Bersted's Hobby-Craft, Inc.
Monmouth, Illinois

Brodhead-Garrett
1213 Riverside Drive
Macon, Georgia 31201

Centuri Engineering Co.
Model Rocketry Products Div.
P. O. Box 1988
Phoenix, Arizona 85001

Estes Industries (Model Rocketry)
Box 227
Penrose, Colorado

Ideal School Supply
Chicago, Illinois

Interstate School Supply
John Harris
1835 Front St., Box 706
Baton Rouge, La. 70821

Industrial Arts Supply Co.
1408 West Lake
Minneapolis, Minnesota 55408

The Judy Company
Minneapolis, Minnesota 55401

Milton Bradley Company
2654 St. Louis Street
New Orleans, Louisiana

Practical Drawing Company
Box 5388
Dallas, Texas

Small Sales
Box 177
Shawnee Mission, Kansas 66201

Southern States School Supply
2138 Wooddale Blvd.
Baton Rouge, La. 70806

Stanley Tools
Division of the Stanley Works
New Brittain, Connecticut

Tandy Leather Co.
2021 Canal Street
New Orleans, La.

SAFETY

The Industrial Arts teacher can be held liable for injuries that occur to his students, as it can be proved the teacher was negligent in his responsibilities. However, this should not be a discouraging factor as it relates to industrial arts activities in the elementary classroom. Statistics show that industrial arts is no more prone to accidents, with elementary students, than any of the other regular elementary school offerings. The teacher's understanding of the use of tools and equipment is the best key to conducting a safe program. As the teacher introduces each tool and/or piece of equipment a brief statement should be made related to the safety factors involved. Horse-play should not be tolerated.

The following specific safety measures are recommended:

1. Keep oily rags in a closed, metal container.
2. Keep lids tightly closed on paints.
3. Teach children to carry sharp edged tools close to their body with the sharp edge pointed downward.
4. Teach children to take turns, not push or run.
5. Insist that children wear eye goggles when engaging in activities that could conceivably cause injury to the eyes.
6. Use the saw block (shown on page 64).
7. Provide gloves for handling hot items.
8. Inspect electrical wiring; teach children how to insert and remove an electric plug from a convenience outlet; pull the plug, not the cord.
9. Provide a first aid kit.

10. Keep your laboratory neat and clean--"have a place for everything and keep it in its place."

11. Teach children to place tools under their saw horse or work bench temporarily when they are not using them. Keep them out of the aisle of traffic.

IMPLEMENTATION THROUGH VARIOUS APPROACHES TO ELEMENTARY SCHOOL INDUSTRIAL ARTS

The organization and administration of industrial arts programs in the elementary school fall into several general categories. There is a vast difference between minimum and maximum programs both in content and facilities. Most elementary school programs are directed by the regular teacher in the classroom utilizing portable tools and equipment. A few programs involve a specially trained teacher who, in cooperation with other teachers of the school, directs the work in a laboratory or permanent workshop facility. Between these two extremes are a variety of programs which are successful and need some explanation.

Elementary school industrial arts programs fall into the following general categories:

I. Limited classroom program

II. Comprehensive classroom program

III. Laboratory program

IV. Traveling teacher program

V. Mobile laboratory program

VI. Central laboratory program

VII. Summer school enrichment program

The philosophy of the local school district, the budget, the time, the classroom or laboratory space, and the personnel determine the approach to industrial arts in any school district.

I. Limited Classroom Program

The majority of elementary school industrial arts programs fall into this category. The term "limited" refers to the classroom time allowed for the subject, to the tools and materials available and to the direct assistance available from an industrial arts consultant. The activity is usually integrated with other subjects of the elementary curriculum such as geography, history, science, language arts, art through tool skills, experimentation, problem solving, and the appreciations of various industrial processes.

This category can be characterized as follows:

a. The program is directed by the classroom teacher.

b. The work is correlated with other subjects.

c. The activities are usually limited to blocks of time, units, or episodes.

d. Minimum numbers of hand tools are used.

e. Tools and equipment are portable.

f. The services of an industrial arts specialist are minimal.

II. Comprehensive Classroom Program

In this type of program the classroom teacher has the advantage of regular assistance from an industrial arts consultant. The school visitations by the consultant are frequent, and usually many teachers of several grades are involved in the industrial arts programs. A course of study is set up for all grades, and there is planned articulation from grade to grade.

This purpose is characterized as follows:

a. The classroom teacher directs the work in close cooperation with a specialist.

b. The industrial arts activities related to other subjects, to the study of technology, and to the discovery of personal abilities.

c. The industrial arts specialist does not "take over" the program but does provide active assistance to classroom teachers and students.

d. The activities and content dictate the numbers and kinds of tools that are needed.

e. Tools and equipment are portable.

f. The work is scheduled on the basis of a semester or a school year.

g. Regular courses of in-service training are offered to teachers.

III. Laboratory Program

The trained industrial arts teacher who leads a laboratory program has a dual role to play in the elementary school. He directs a balanced industrial arts program for the children of the school in cooperation with the classroom teachers, and he gives these teachers sufficient in-service training to be fully aware of the total needs of the children.

The industrial arts teacher has an excellent opportunity to give children a variety of experiences which reflect modern technology and still maintain a balanced relationship with the elementary school curriculum.

The ideal laboratory teacher is one who has an industrial arts background and has had some training or experience in elementary education.

This category is characterized as follows:

a. The industrial arts teacher directs the activities.

b. The classroom teacher cooperates in planning the work, and he assists in carrying out the objectives of the work.

c. The industrial arts work is subject oriented, yet it will complement the general elementary course of study.

d. A regular schedule of classes is set up for each semester or for the school year.

e. The course of study would be articulated by the co-operative efforts of the industrial arts teacher, the classroom teachers, and the school administrators.

f. Tools and equipment are appropriate to the content.

IV. Traveling Teacher Program

The traveling industrial arts teacher functions in about the same way as the laboratory teacher in Category III. He works in the classroom, in a laboratory, or in a multipurpose room.

The traveling industrial arts teacher:

a. Visits two or more schools on a regular schedule and teaches children.

b. Plans the program with the classroom teachers and the local administrator; the work centers around local needs.

c. Uses tools and equipment permanently assigned to each school.

V. Mobile Laboratory Program

The mobile laboratory has been used mostly in rural areas where schools are far apart, and each school is unable to afford tools and equipment of their own. This mobile unit may serve as a laboratory for tools, and equipment may be moved to other work areas. The equipped van or trailer can serve as an in-service training facility

for teachers at the end of the school day.

The mobile laboratory teacher:

a. Moves from school to school in a self-contained unit.

b. Works with children in the unit, in a classroom, or in other convenient work areas.

c. Plans and works cooperatively with the faculty to serve local needs.

d. Conducts in-service education for teachers.

e. Provides workshop facilities for the construction of teaching aids and accessories.

VI. Central Laboratory Program

Certain circumstances may require the establishment of centralized industrial arts laboratories. Children would travel to the center on a regularly scheduled basis. Programs would be conducted by an industrial arts teacher in a facility designed for comprehensive industrial arts activities. A special effort must be made to coordinate industrial arts with classroom instruction.

VII. Summer School Enrichment Program

Many school districts offer enrichment studies as well as remedial work in summer programs. Art, music, drama, science, and industrial arts activities have been highly successful in various summer school organizations. Rather than spend a full summer school day on one subject, there have been some rather innovative combinations such as theater arts, math-science, etc., all combined with industrial arts.

The summer period provides many opportunities for experimentation in various programs and for the in-service training of teachers.

VEHICLE OF INSTRUCTION

When the scope and sequence of an industrial arts program has been determined, suitable plans for maximum learning in an orderly environment need to be developed. The following outline may assist the industrial arts consultant and/or the classroom teacher in organizing instruction.

CHILDREN'S LEARNING ACTIVITY PROCEDURE

I. Title: The title should give a clear picture of what is to follow in the content.

II. Rationale: The rationale includes the basic reasons for the activities and the justification for the children's experiences. The statement may introduce a problem that needs a solution; it may preface content for orderly confrontation; or it may present an activity to satisfy a need arising from other areas of the curriculum.

III. Concepts: The basic concepts of an instructional unit should be stated so that the objectives and activities selected are directed toward understanding these concepts.

IV. Behavioral Objectives: Behavioral objectives should clearly state what is to be accomplished by the students. They should be written so that the students will know:

1. What will be provided to work with.

2. What performance is expected of them.

3. What criteria will be used in the evaluation.

The objectives provide the basis for selection of learning activities and experiences.

V. Learning Activities: Once the objectives have been stated, activities and experiences should be selected to help students obtain them. The child should have a major role in selecting, planning, and executing these activities.

VI. Evaluation: Evaluation techniques must be utilized to determine if and when the objectives have been achieved.

EXAMPLE OF A RESOURCE UNIT

TITLE: Families and the World of Work

KIND OF UNIT: Resource Activity Unit

GRADE LEVEL: Primary Level

The following resource unit was planned cooperatively by: Emma Lou Slack, Alice Lee Claiborne, Dorothy Dickson, Kenneth Kirkpatrick, Christella Lewis and Everett Waldrum, who were participants in the EPDA Institute, "American Industry in the Elementary School," Northwestern State University.

FAMILIES AND THE WORLD OF WORK

Introduction

Industrial arts is the field of study, or the body of knowledge, skills, attitudes, and activities related to man's way of changing raw materials into needs for daily life. Our society is highly efficient in many branches of technology from the manufacture of essential goods to the rendering of daily services.

MAJOR CONCEPT I: There are many kinds of workers. The workers in a community are dependent upon each other.

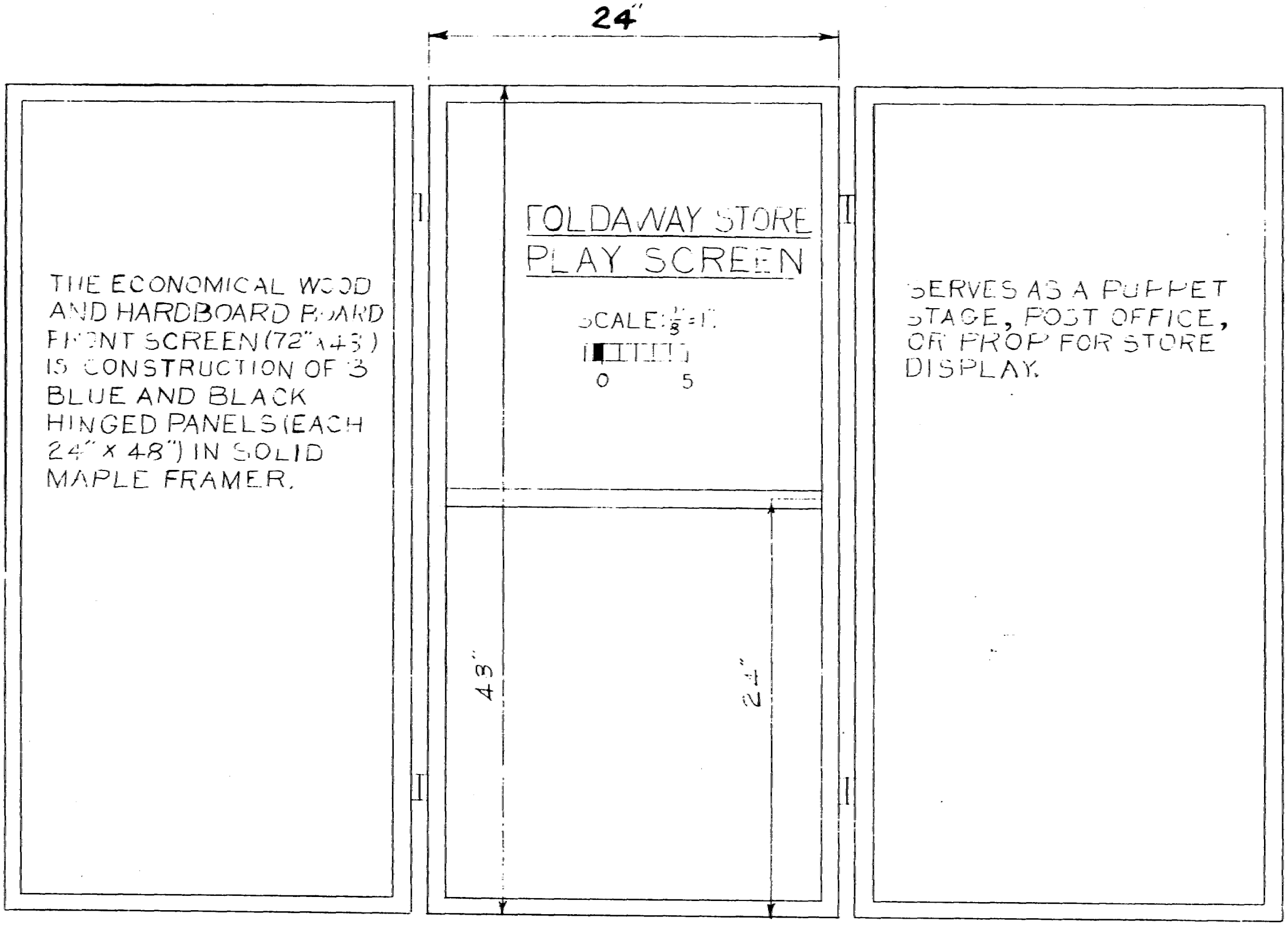
PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
To develop desirable attitudes toward the many workers upon whom we depend for services.	Children read stories and poems pertaining to milk and milkman. Have the milkman come and talk to the class about the milk industry and what his job involves.	Reading for information and pleasure. Listening for information that gives a better understanding of the job of a milkman.	Greene, Carla, <u>I Want to Be a Milkman</u>; Children's Press Inc., Chicago, 1950 Resource person- The milkman

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Help children arrange an attractive display using books and pictures about the milkman.	Learning to make displays that are attractive and eye appealing.	books pictures table
To establish habits of cooperation and friendliness with community workers.	Help the children make charts showing how the milkman helps us.	Developing ideas Making choices of what is more important.	chart paper rulers magic markers
	Show the children a film.	Critical viewing of a film; looking for specific information.	Film: "Helper in our Community," 11 min. Coronet Films; Music For Young Americans, "The Milkman" P. 28
	Learn and sing songs about the milkman.	Relating music to people who work, singing for enjoyment.	
To develop in the children a healthy attitude about the nurse and her world of work.	Invite school nurse to talk to class about proper health habits.	Learning to listen for needed information.	School Nurse
	Dramatize the duties of the nurse.	Expressing themselves through creative play.	Classroom
	Children read a book about a nurse.	Reading for information and pleasure.	I Want to Be A Nurse, Children's Press, Inc. 1958
	Show filmstrips to the class.	Critically viewing a filmstrip.	Filmstrips: "Health Helper" "The Doctor" "We Visit the Doctor" Coronet Films
	Guide the children in making up a story about a nurse. Write the story on the blackboard, let the children use it for their writing lesson for the day.	Organizing thoughts so that they may be expressed to the class improving writing skills, learning new vocabulary.	Blackboard Chalk, Pencil, Paper

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Let the children relate personal experiences about the nurse and how she has helped them.	Learning to take turns in a class discussion.	Children's experiences with nurses
To further the understanding that a policeman is a community helper.	See filmstrip and discuss the policeman's work as shown there.	Viewing for information; organizing thoughts for discussion.	Film: "Policeman at Work," Coronet Films
To encourage the children to obey all safety precautions.	Have a policeman come and talk to the class.	Listening for information.	Policeman
	Make safety signs out of wood and paint them correctly.	Learning shapes of safety signs. Learning to use simple tools. Learning the colors of signs.	wood saws measuring devices paints
	Carry out the actual experience of going down a street and using the signs made by the children.	Learning about safety.	The signs the children made in class
	Let the children act out situations where the policeman helps us.	Expressing themselves through creative play.	Classroom
	Read the children some books about the policeman.	Listening for information and enjoyment.	Greene, Carla, I Want To Be a Policeman, Children's Press, Inc. 1958. Barr, Jene, Policeman Paul, Whitman, 1952. Hoffman, Elaine, Our Friendly Helpers, Melmont, 1954.

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
To help children understand that the mail is one means of communication-- a link to the world around us.	Children read the story in the Basil Reader about the postman.	Reading for information and enjoyment.	City Days, City Ways "What can I do," p. 47, Harper and Row Basic Reading Program

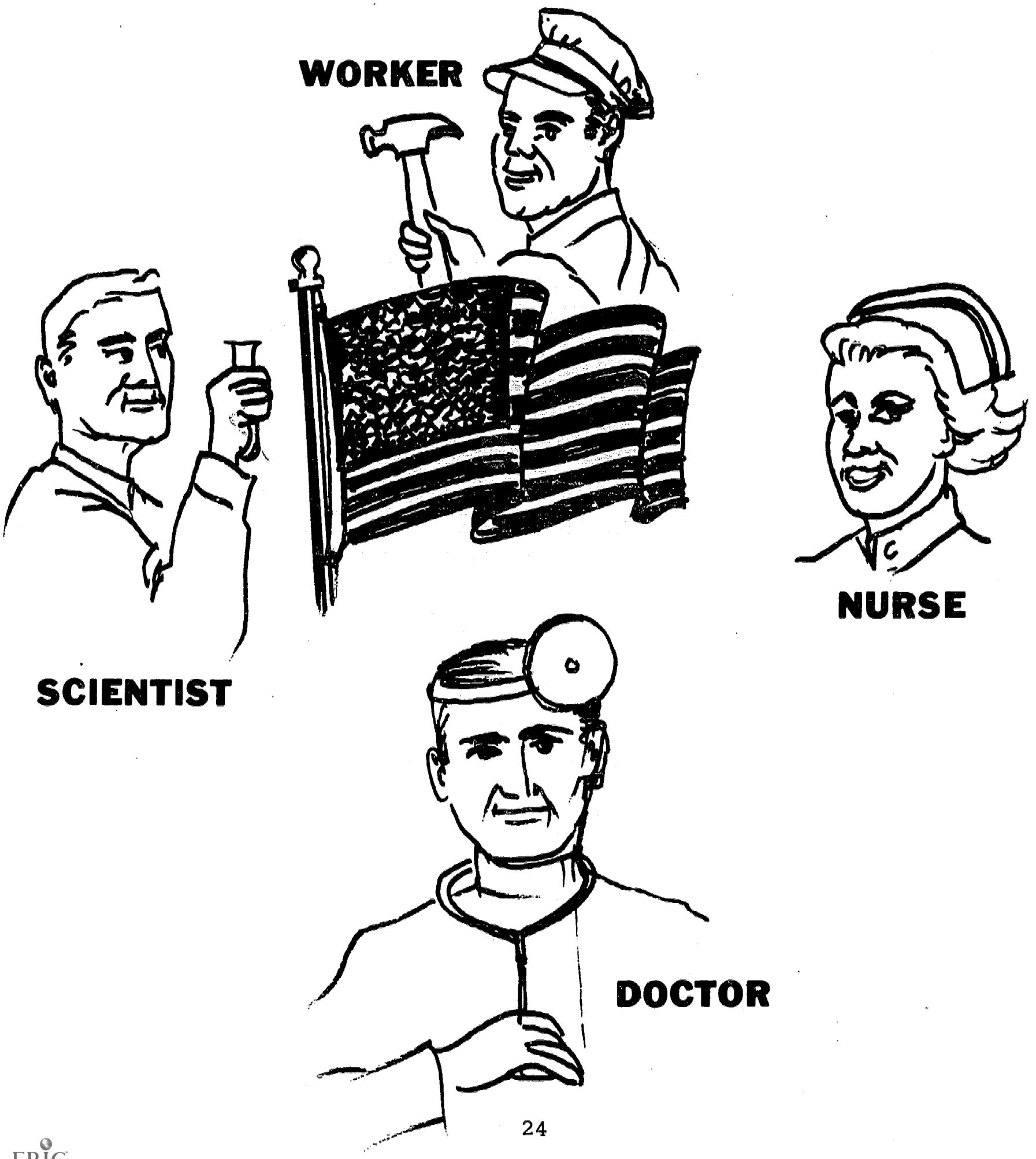
PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	View film about postman.	Viewing for information.	Film: "Helpers Who Come to Our House," 11 min., Coronet Film
To promote the idea that the post office performs many jobs.	Take children on a field trip to a local post office.	Finding out how a post office is operated.	Post office guide
	Children write letters to someone and mail them.		paper pencils envelopes stamps
	Arrange a bulletin board using the postman as the main theme.	Creative arrangement of materials to get a pleasing effect.	string cardboard colors magic markers cut-out letters
	Make booklets containing new vocabularywords.	Improving writing skills, learning new words.	paper pencil stapler
	Guide the children in constructing individual mail-bags and take turns being the postman.	Manipulating different materials.	brown paper bags magic marker stapler



The economical wood-and hardboard front screen (72" X 48") is constructed of 3 blue and black hinged panels (each 24" X 48") in solid maple frame.

Serves as a puppet stage, post office, or prop for store play.

IT TAKES GREAT WORKERS TO MAKE A GREAT NATION



MAJOR CONCEPT II: There are many places where people work

PURPOSE	LEARNING ACTIVITIES	SKILLS DE.ELOPED	RESOURCES
To acquaint pupils with fundamental processes of lumber making.	Show children a film about trees.	Critically viewing a film.	Film: "How Trees Help Us," 11 min. Coronet film
To help children become aware of the many jobs created by trees.	Take the children to visit a sawmill.	Observation for needed information.	Sawmill guide
	Read a story to the children about a tree.	Listening for information and pleasure.	Blough, Glenn, The Tree on the Road to Turntown; New York: McGraw Hill, 1953. Udry, Janice, A Tree Is Nice, New York: Harper, 1956.
	Help the children construct a display of different types of wood.	Learning to make an attractive display arrangement.	Different types of wood
	Children read a book about trees.	Improving reading.	Collier, Ethel, The Birthday Tree, New York: Scott, 1961
	Have a man from the paper mill visit the classroom.	Listening for information.	Resource person from paper mill
	Children listen to a record about paper.	Listening for information.	Record: "The Story of Paper," International Paper Co. New York

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Guide the children in making murals and friezes.	Expressing themselves creatively through art.	paper, colors, paints, scissors, paste

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Show the children a filmstrip about plants.	Viewing film for information.	
To acquaint pupils with the farm and its relationship to their basic needs.	Take a field trip to a farm.	Learning about the farm first-hand by observation and listening to the owner tell about important aspects.	resource person
To make children more familiar with the place of machines in modern methods of farming.	Let the children read a book about the farm.	Reading for enjoyment and information. Learning new vocabulary words about the farm.	
	Construct a miniature farm in the classroom, making sure to include all buildings that make up the farm unit.	Learning to use simple basic tools and to choose the proper tool to fit the job.	wood saws hammers fasteners pieces of roof shingle paint brushes measuring device toy animals toy farm equipment
	Let the children view some filmstrips.	Viewing filmstrips to pull information together.	"The Farm," modern Teaching Aids; "American Farm Bureau," U. S. Dept. of Agriculture; "Johnny Appleseed," Encyclopedia Brittanica "Visiting the Farm," Teach-o-Films

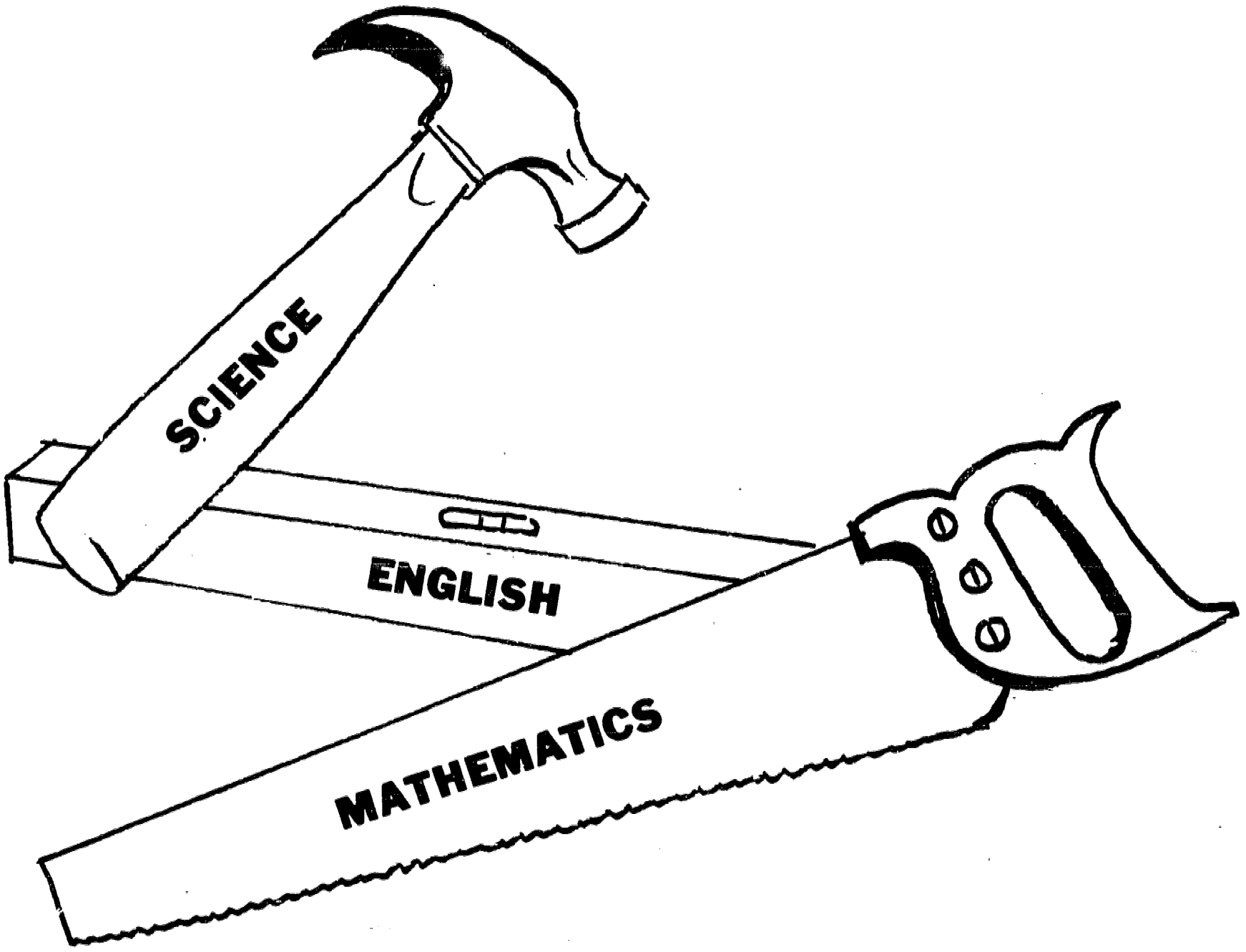
PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Read to the children some books about the farm.	Listening for pleasure information.	Garrett, Helen, Jobie, New York: Messner, 1942. Hartwell, Marjorie, Animals of Friendly Farm, Chicago Follett, 1951. Scott, William, The Apple That Jack Ate, New York: Scott, 1951. Sewell, Helen, Blue Barns, New York: Macmillan, 1933. Lenski, Lois, Little Farm, New York: Oxford, 1942.
	Make a display of these books on a table and let the children look at the pictures and read any that they choose.	Improving reading skills; learning to arrange attractive displays.	All the above books.
	Make charts showing the different types of farms.	Organizing materials and ideas.	chart paper marking materials colored pencils
	Guide the children in making a bulletin board using the farm as the central theme.	Learning to organize materials around a central theme.	pictures of different types of farms colors and markers, string and staples, cut-out letters.
	The children make up stories and poems about the farm.	Creative writing.	books and other materials that have been covered.

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Have children pantomime the work of a farm.	Creative play.	Classroom.
	Have children view a film.	Viewing for pleasure and information.	Films: "Farmyard Babies," Coronet, 11 min. "One Day On a Farm," Coronet, 11 min.

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
To help pupils discover that stores are necessary for families today because of the interdependence of people.	Take the children on a field trip to visit a store.	First hand observation.	Resource person (store manager)
	Children view filmstrips about stores.	Critically viewing a filmstrip.	Filmstrips: "Family Shopping," Society for Visual Education. "Learning to Use Money Wisely," Society for Visual Education. "Going Shopping," Encyclopedia Brittanica
To acquaint children with the fact that choices must be made in buying goods.	Make an experience chart about the trip to the store.	Improving reading skills; Organizing thoughts to be expressed.	chart paper marking materials blackboard and chalk
	View films about stores.	Learning to critically view films .	Films: "The Food Store," Encyclopedia Brittanica, 11 min. "Stores in Our Community," Coronet, 11 min.

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Construct a store in the classroom.	Learning to use basic tools.	wood saws and hammers fasteners measuring devices paint brushes
	Let the children take turns being the store-keeper and the person who is buying something.	Improving arithmetic skills.	the constructed store coins merchandise for store
	Have a discussion about all the different types of stores a community could have.	Learning to be polite Learning to organize thoughts before speaking.	materials covered

IT TAKES TOOLS



TO BUILD A FUTURE

MAJOR CONCEPT III: Some Workers Provide Services and Some Workers Produce Goods

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
To help children understand how the workers who perform services or produce goods help make our lives more enjoyable.	The children can find out from their parents what type of work they do and either report to the class or act out their parent's job.	Language experience Child's conception of world expanded Child's cognition expanded Social living.	Books: I Want to Be a Postman I Want to Be a Zoo-keeper I Want to Be a Fisherman I Want to Be a Baker I Want to Be a Base-ball Player I Want to Be a Dairy Farmer I Want to Be an Orange Grower I Want to Be a Ballet Dancer I Want to Be a Home-maker I Want to Be a Coal-miner I Want to Be a Mechanic I Want to Be a Fireman I Want to Be a Policeman I Want to Be a Store-keeper I Want to Be a Restaurant Owner Policeman Pad Who Am I? Greene, Carla, Chicago Press; Filmstrip, "Family Helper," Society for Visual Education.
Because they have special jobs to be performed, each must depend on other people to do other jobs.	Bulletin board display of each job - children choose the previously cut-out letters that spell father or mother's job.	Tactile experiences vocabulary spelling	
Because each of these workers has a special job to do, each worker learns how to do his job well.	Each child will be assisted, if necessary, to place his parent's job in the category of services performed or goods produced.	Use of scissors, rulers, squares, saws, hammers	
Because each person learns a special job well, he produces more and better services or goods than if he were a jack-of-all trades and produced everything he needed at home.	The class can play a game of charade letting the members of the class act out certain occupations, letting the rest of the class guess what the occupation is.	Drama Humor Critical thinking Analytical Processes Language Social living	

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	The teacher can read the story "The Cat Who Wondered" to the class; the class might discuss the various jobs of people.	Critical thinking and analytical evaluation	Book: Sprague, Lucy M. "The Cat Who Wondered," from Animals, Plants, and Machines: D. C. Heath and Company
To reinforce the idea that many goods have to be produced away from home because of cost of equipment and the many specialized skills needed.	The teacher can read the story "Twelve O'Clock Whistle" to the class. a) This story explains why specialization is needed and would motivate the children toward a team project using the assembly line method. b) The children would probably choose little cars or other type of transportation vehicles as their project. c) Filmstrips d) Study Prints	Listening skill Cutting Sawing Screws and nuts Painting Sanding To assemble To cooperate To share To discuss To evaluate	Book: Berm, Jerold and Crichlow, Earnest. Twelve O'Clock Whistle, 1946, William Morrow and Co., Inc. Filmstrip: Fs 48-Neighborhood Workers (Sacto, City, A. V.) Study Prints: S. P-40 Community Helpers

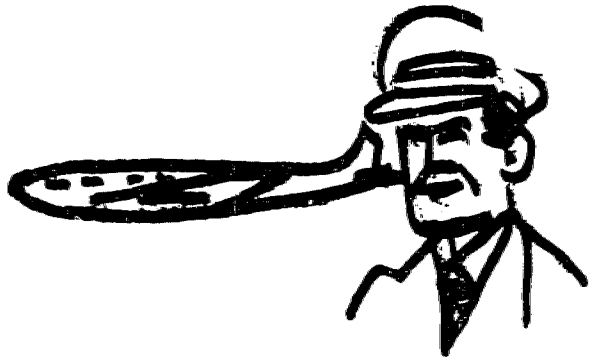
PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
To reinforce the idea that some workers produce goods and some services and are all important and interdependent.	The children can cut from magazines pictures showing producers at work. An exhibition can be made of the pictures grouping them under the titles "Producers of Goods" and "Producers of Services." a) Filmstrip b) Film	Cutting Fastening Association Discrimination Tactile skill Perception skill Cognitive learning Auditory discrimination Visual discrimination Listening skills Increasing perceptual field of children.	Magazines of all type Filmstrip--Fs48 Neighborhood Workers (Sacto, City, A. V.) Film--Coronet--"Helpers in our Community." (This film introduces the street repairman, the doctor, the storekeeper, the bus driver, and other community helpers.

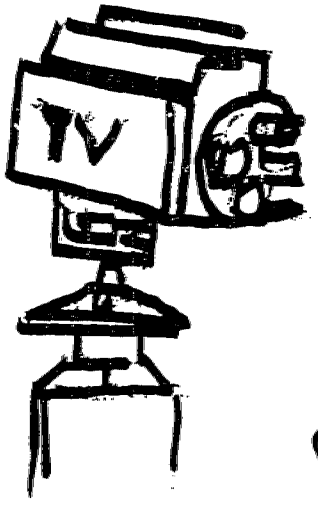
PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
To show that more people are now free to produce services which make our lives more comfortable. To also reveal that today people have a wider choice of services than people had a long time ago. To help the children discover that today a larger number of people produce services than produce goods.	The teacher can ask the children to find out at home how many of their parents, relatives, friends, neighbors, and community helpers are actually engaged in producing services. After the information has been gathered, the children might prepare a pictoral chart entitled "Our Fathers Produce Goods and Services away from Home." The chart should include the following headings: Number of Fathers Who Produce Services and Who Produce Goods. The children should use symbols to represent the number of persons in each category, and put a legend at the bottom explaining what the symbol stands for.	Job classification Language experience Learning new words Sharing of ideas Language usage Word discrimination Tactile skills Manipulative skills Cutting (Scissors) Glueing Square usage (measurements) Ruler (number and fractions) Perception skills Chart reading Symbols to help understand how computers work Geometry Concepts--square triangle, rectangle, circle, straight line, etc. How to read legends for future use in map construction	1. Resource people available 2. a. Books: Fresselt, Alvin. A Day With Daddy. New York: Lothrop, Lee and Shepard, 1953. (This book can be used to distinguish between producers of goods and producers of services) b. Books--Who Am I? Racine, Wis: Whitman, 1952: (Simple riddles describing producers of goods and services. Children will enjoy guessing the riddle.) c. Book--Daddies: What They Do, N.Y. Lothrop, Lee and Shepard, 1946. (To be read aloud to children. Could be used to distinguish between producers of goods or services.)

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
			3. Film: "Helper, Come to Our House," Coronet. 4. Songs: Music for Early Childhood. Silver Burdett, 1952. The songs "Community Helpers," "Playing Fireman," and "Mister Policeman" and "Mister Banker."

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
People and families depend upon each other. To help children understand the importance of specialization. To help the children understand that today many specialists are needed to produce goods and services and that specialization increases dependence on one another. To explain why we call a man or woman who learns to do a particular job a "specialist."	Read and enjoy the following poem: "Every day some people Come to my house to call-- The Workman, the milkman, and that isn't all: The sanitation man, the baker-man, The groceryman--oh, My! So many, many people Every day stop by. a) Have the children discuss the above poem. b) If possible, make an original verse about helpers who serve our needs. c) Discuss how goods and services produced by each neighborhood worker benefits other people. d) Discuss possibility of what could happen if father could not produce the goods or perform all the goods and services we are accustomed to e) Poem--Father at Work f) Learn song, "My Father" and act out various workers.	Listening skills Democratic Capitalism at work Group dependence Poetic appreciation Verbal Communication Creativity Prose Poetry Debating Listening Language usage Analytical thinking Problem solving Vocabulary usage Role playing Manipulative skills In making customs	Author of poems unknown-- Poem Books: Refer to all of Carla Greene's books--previously listed. Filmstrips: Fs 64-6-"City Helper" Song: Our Singing World: Kindergarten Book. Boston: Ginn, 1957. Songs about various occupations Filmstrip: "Community Helpers." Series: Set no. 2 McGraw Hill. (Toby visits his father at his construction job and observes many fathers at work.) Film: "What Do Fathers' Do." Churchill Films, Los Angeles. Poem: "Father at Work," by William Rader. Fs 69-4 "Father Works for the Family." Music Round the Town, "My Father," p. 32.

SOME WORKERS PROVIDE SERVICES





MAJOR CONCEPT IV: Many Stores Specialize In The Kinds of Goods They Offer For Sale.

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
To help the children recognize and know the functions of special stores and shops.	View and discuss a film.	To develop the skill of critically viewing a film. To develop the skill of sticking to the subject during discussion.	Film: "The Big Bakery." Educational Film, Calif., 11 min., color, b/w Song: "When I Grow Up"
	Plan with children a field trip to the local bakery.	To develop the skill of recognizing a bake shop by its smell as well as by sight.	Local bakery Cars for transportation
		To develop the skill of listening to the guide.	"The Baker," Coronet
	View filmstrips.	To develop the skill of viewing a filmstrip for information.	"How Our Town Grew" No. 421
	Write a letter to a national flour company asking for information on their product.	To develop a better handwriting skill. To develop the skill of correctly composing a letter.	"Wheat-Flour Industry" Chicago, Illinois Paper Pencil Model business letter

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Flow chart on bulletin board.	To develop an understanding of how a grain of wheat finally becomes a loaf of bread.	Pictures or drawings
	Reading for enjoyment.	To develop a desire to read.	Such books as: <u>The Cookie Tree,</u> Jay Williams, Parents Magazine Press
	Make cookies in classroom.	To develop an understand that a bakery is a specialized kitchen.	Hot plate Portable oven Cookie sheet Pot holder Mixing bowl
		To increase the knowledge that cleanliness is essential in cooking.	Cookie recipe and all ingredients
	Make party mats and napkins.	To develop the skill of creatively expressing themselves through art.	Paper, paste, colors, and scissors Film: "Parties Can Be Fun," Coronet

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Have a party using the cookies as refreshments.	To develop skills in social courtesy.	Manners Can Be Fun, Monro Leaf Table and cookies
		To develop the skill of critically viewing a film.	Film: "Stores in Our Community," Coronet Films, 1961, 11 min., color and b/w
		To develop a respect for others during a class discussion.	
	Plan with children a field trip to a local gift or craft shop.	To develop the skill of critical observation.	Local shop Cars for transportation
		To develop a respect of property belonging to others	
	Write letter of appreciation to the shop owner.	To develop the skill of letter writing	Dear Dragon...And Other Useful Letter Forms, Sesyle, Joslin, New York
		To develop the skill of practicing good manners through letter writing	

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	View film for information.	To develop a basic knowledge of simple tools.	"How Machines and Tools Help Us," Coronet Films, 11 min., color
	Construct bulletin board on hand tools.	To develop a skill of following a plan.	Construction paper Scissors and paste
	View film for information.	To develop safety with tools.	Film: "Safe Use of Tools," Coronet Films
	Construct a gift shop in the classroom (to stock later).	To develop the skill of manipulating hand tools.	Saw, hammer, ruler boards, cardboard
	Silent reading period.	To develop the skill of gleaning information and enjoyment from the printed page.	Time and the Tool Chest, William Morrow, New York, 1951. I Want to Be a Store-keeper, Carla Greene, Children's Press
To help children become aware of some of the work that goes into the making of articles that are offered for sale in a gift shop.	Construct a silk screen print frame.	To develop the skill of manipulating tools necessary to make a silk screen frame.	Cardboard, tape, Organdy
	Each child print a picture to sell in the gift shop.	To develop the skill of expression through creating and printing design.	Paper and other Desired objects Silk screen print Frame

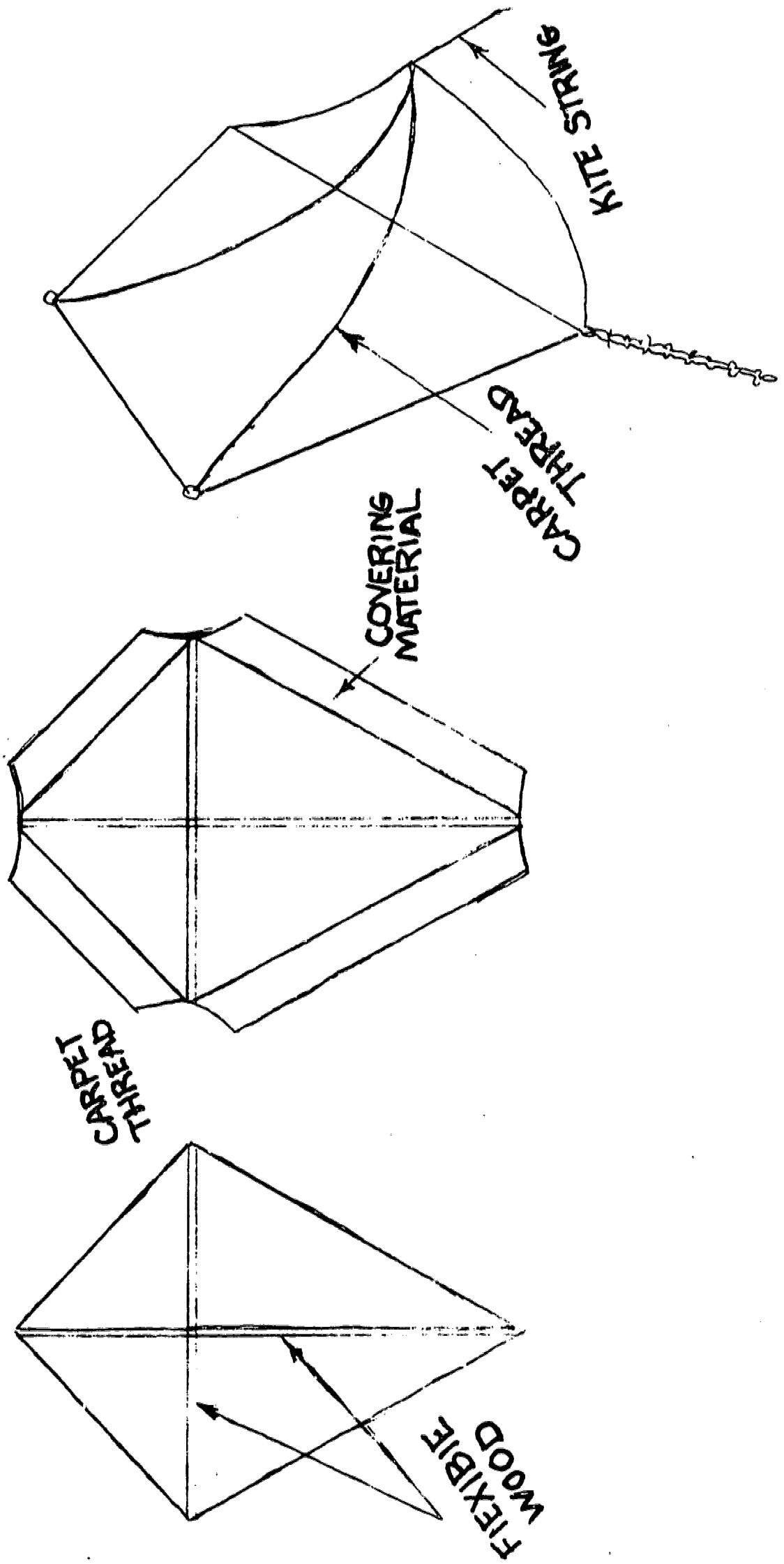
PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	View and discuss a film-strip.	To develop the skill of critically viewing a filmstrip in order to discuss the topic.	"Industry and Home Crafts," Coronet, #295
	Resource person.	To develop skills in weaving and to generate enthusiasm.	High school crafts Teacher
	Weave pot holders on a loom to sell in the gift shop.	To manipulate the yarn and loom to produce a desired pattern.	Loom Yarn
	Listen to a story at the listening center.	To develop the skill of listening for fun.	The Little Indian Basket Maker, Ann Clark, Children's Press
	View a film.	To develop a skill of viewing a film for information.	Film: "The Toy Maker," Athens, 16 min.
	Make clay flower pots to sell in the gift shop.	To develop a working knowledge of clay.	Clay, water, and other materials
	Direct children in making a display of many hand-craft books.	To develop an awareness that much material is available.	Children's collection of books, such as: Modeling in Clay and Plaster, Richard Slade

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Make kites to sell in the gift shop, then paint designs on them.	To develop the skill of measuring, cutting, and glueing.	Wood strips, saw, hammer, scissors and glue
		To develop the skill creatively expressing themselves through art.	Tempera paints and brushes
	Listen to a story at the listening center.	To develop the skill of listening for pleasure.	The Flight of the Kite Merriweather, Mildred Teal
To help children understand that different articles in a store or shop may sell at different prices.	Class discuss and decide on a price for each kite, flower pot, pot holder, and silk screen print.	To develop the ability to see that some articles should sell for more than others.	All handcraft articles, small price tags
	Take inventory of all stock as it is displayed for sale (Teacher and children have a group evaluation period).	To learn or increase arithmetic skills in counting and adding.	Paper and pencil
		To develop a feeling of good balance as articles are displayed.	Shelf space All stock

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	View and discuss a film. (Let the children discuss their father's world of work.)	To develop the skill of viewing a film for discussion purposes.	"What Do Fathers Do?" Churchill Films, 11 min., color, b/w
	Children make up a poem about a shopkeeper. The teacher may write it on the board to be used as a writing lesson.	To develop a skill of using rhyming words.	Chalkboard Chalk
		To develop better writing skills and habits.	Paper and pencil
	Paint large shop signs and price posters.	To increase numeral printing ability.	Poster paper Tempera and brush
	Organize the operating force for the gift shop (using play money as means of exchange). Sell goods.	To develop skills in selling, making change, wrapping gifts, cleaning up, and others.	The shop and all Articles Play money
	Have children compare real money with play money and counterfeit money.	To develop a knowledge that all real looking money isn't good money.	Play money Real money

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Take inventory of all unsold articles. Compare this total with beginning total.	To develop arithmetic skills. To develop a working knowledge of why and how to inventory.	Pencil and paper Balance of stock
	Clean up.	To develop a realization that all work deserves respect. To develop an understanding that cleanliness is necessary to all business.	Whatever articles are needed to do the job.

At this point the teacher may use the evaluation check sheet at the end of this resource unit as an evaluation or as an interest inventory.


KITE STRING
CARPET THREAD
COVERING MATERIAL
CARPET THREAD
FLEXIBLE WOOD

MAJOR CONCEPT V: Some Families Have More Money Than They Need To Spend Right Now. They Must Decide What To Do With Their Extra Money.

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
To help children understand the purposes of banks and the value of putting away extra money for later use.	Have a banker visit the classroom and explain the services of the bank.	Listening for needed information.	Representative from bank
	Discuss the advantages of depositing excess income where it will earn interest.	Ability to talk and listen.	Material covered in a large group
	Construct a bank in the classroom made of wood and cardboard.	Learning to use simple tools.	Wood, hammers, saws, nails, measuring tools, and cardboard
	Teacher and children plan together to make a field trip to a bank.	Large group planning and exchanging ideas.	Chalkboard, chalk, and charts
	Class makes a field trip to the bank.	Observation of what goes on in a bank.	Bank guide Bank

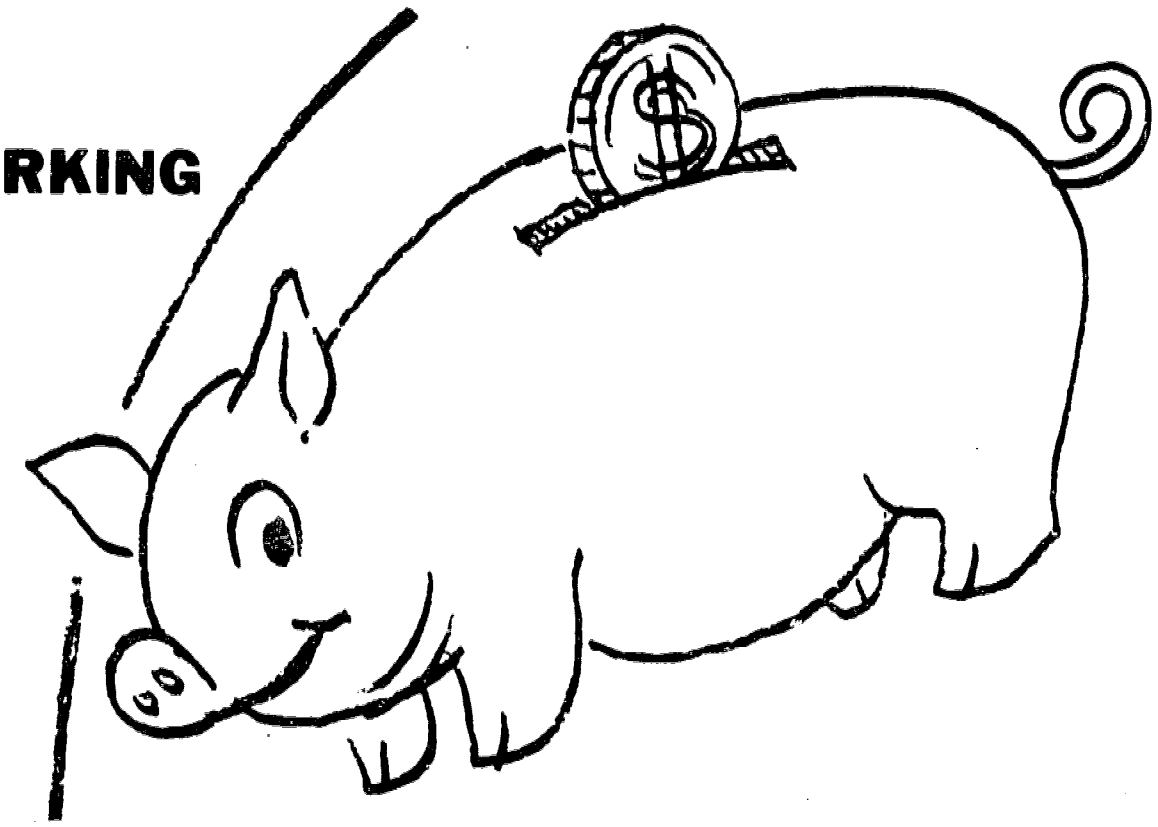
PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Class write a "thank you" letter to the bank.	Letter writing and values of appreciation and politeness.	Paper and pencils Envelopes Stamps
	Make an experience chart about the field trip to the bank.	Reading and writing of new vocabulary words.	Chalkboard and chalk Paper and pencil
	Draw pictures of banks and families doing business with banks.	Creatively expressing themselves and their feelings through art.	Paper Colors Tempera paints Water colors Brushes
To develop the idea that money can be saved a little at a time.	Each child make a bank by cutting a hole in an empty plastic container.	Learning manipulative skills using different types of materials.	Plastic container Knife or cutting edge, paint or ink
	Keep a record of all money put in the bank.	Adding together sums of money.	Small notebook of small paper, pad
To develop in children an awareness that money has value.	Study, handle, and discuss the different coins and their value, such as penny, nickel, dime, quarter, fifty-cent piece.	Knowledge of what coins look like, value of each, and the size of each.	Pennies Nickels Dimes Quarters Fifty-cent pieces
	View film	Viewing of film for informational purposes.	Film: "Making Change for a Dollar," Coronet Films, 11 min.

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Children read a book about money.	Reading for information.	Elkin, Benjamin: The True Book of Money, Children's Press, Chicago, 1960.
	View filmstrip about saving.	Listening and looking for specific information.	Filmstrip: "It Pays to Save," Popular Science Publishing Company.
	Read to children about banks and bankers.	Listening for enjoyment.	Nash, Ogden, "Banker Are Just Like Anybody Else, Except Richer."
	Have children act out little skits about people and how and why they save.	Creative acting Creative thinking Expressing themselves through creative play.	The classroom Classroom furniture
	Show films about economics.	Viewing film to find information.	"Economics---It's Elementary," Cahill, 1965, 11 min. color.
To help children understand the reasons families save money.	Guide the children in drawing pictures showing reasons why families save and use the pictures in making a bulletin board arrangement.	Expressing themselves through creative drawings. Learning to arrange materials for effective display.	Paper Colors Paints Brushes Colored paper Strings Cut-out letters

PURPOSE	LEARNING ACTIVITIES	SKILLS DEVELOPED	RESOURCES
	Teacher reads a story to the children.	Enjoyment of a story. Critical listening. Critical thinking.	Story: The Grasshopper and the Ant, by Aesop.
	Children view film.	Critical viewing for information.	Film: "Bone for Spotty," 11 min., American Bankers Association.
	Teacher guides the children in a discussion about the "Christmas Club Plan" that banks offer families.	Organizing thoughts so that other people will understand your meaning.	Material that has been covered about banks and ways of saving.
	Read and look at a pamphlet about saving.	Listening and looking for information.	Pamphlet: "Vinny and Billy," American Bankers.
	The children read a book about children and money.	Reading for enjoyment. Reading for information.	Book: Joel Spends His Money, Albelard-Schuman, New York, 1954.
	Teacher and children have an oral evaluation in the form of a group discussion.	To help children draw conclusions and make judgments about their accomplishments.	All materials covered.

FROM PIGGY BANK

WORKING



EARNING

TO

SAVING

BANK ACCOUNT

CONCLUSION

We have attempted to plan in this resource unit many manipulative activities and experiences that will help to broaden the child's knowledge about the interdependence of people and the world of work as it involves them and their families. A consideration of the differences in children and how their family fits into the vast "World of Work" was an important aspect in the preparation of this unit. A realization that teaching children is a much broader objective than teaching subject matter, puts a greater emphasis upon motivational techniques than ever before. The classroom teacher can draw from this unit the materials that best fit the needs of her unique classroom situation, and add or change it in any way that better provides for individual differences.

EVALUATION CHECK SHEET

OR

INTEREST INVENTORY

NAME

Date	1- 2- 3-													
Understood purpose or objective	1- 2- 3-													
Showed interest in activity	1- 2- 3-													
Helped make collections	1- 2- 3-													
Helped construct frieze, bulletin board, etc.	1- 2- 3-													
Contributed ideas during discussion	1- 2- 3-													
Curious: Does he really want to know more?	1- 2- 3-													
Independent reading	1- 2- 3-													
Respectful of viewpoint of others	1- 2- 3-													
Did interest grow as study progressed?	1- 2- 3-													
Has this study caused a change in his thinking?	1- 2- 3-													

1 = Satisfactory, 2 = Fair, 3 = Poor

Adams, Ruth J., How To Do It Book. Minneapolis: T. S. Denison and Company, Inc., 1962.

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Feirer, John L., Industrial Arts Woodworking,III.: Charles A. Bennett Company, Inc., 1950.

Gilbert, Harold G., Children Study American Industry, Iowa: Wm. C. Brown Company, 1966.

Hanna, Larons A., and others. Unit Teaching in the Elementary School, New York: Holt, Rinehart, and Winston, 1966.

Mattil, Edward L. Meaning in Crafts, New Jersey: Prentice-Hall, Inc., 1958.

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Moore, Frank C., and others, Handcrafts for Elementary Schools, Boston: D. C. Heath and Company, 1967.

Norris, Willa, Occupational Information in the Elementary School, Chicago: Science Research Associates, Inc., 1963.

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Presno, Vincent, People and Their Actions, New Jersey: Prentice-Hall, Inc., 1967.

Preston and Clymer, Communities at Work, Boston: D. C. Heath and Company, 1967.

Scobey, Mary-Margaret, Teaching Children About Technology, Illinois: McKnight and McKnight, 1968.

Sheehy, Wann., Learning About Our Families, Atlanta: Allyn and Bacon, 1964.

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Willoughby and Risk, Construction Projects for Elementary Grades, Detroit: Royalle Publishing Company, Inc., 1958.

SUGGESTED OUTLINE FOR STUDYING BASIC RAW MATERIAL OF INDUSTRY

(Note: The degree of complexity of this outline will vary, dependent upon the maturity of the child or children who use it.)

I. Chemical Background

II. Biological Background

III. What is the Basic Raw Material?

IV. How is the Basic Raw Material Acquired?

V. Where is the Basic Raw Material Acquired?

VI. What are the Basic Processes through which the Raw Materials are carried to convert them to more usable products?

VII. Describe and give identifiable characteristics and some commonly known examples of products derived from Number Vi. (Examples: Sheet Steel, Rods, Bars, etc.)

VIII. Describe manufacturing processes used to convert the products described in Number VII to other products that are available to the buying public usually through retail outlets. (Example: Sheet Steel formed into auto bodies.)

IX. Discuss the overall evolution of the metals industries (a brief chronological and historical development).

X. Economic value of the metals industries to our national economy.

XI. Employment opportunities in the metal industries
   a. What are some of the specific jobs?
   b. Where are they located?
   c. Job entry requirements
   d. Wage scales
   e. Present and projected need for workers in the field

XII. Application in the elementary classroom.

Kind of Metal	Ways in which it can be worked	Tools Needed	Other Material Needed
Tin Plate Sheet Metal (26 Gauge)	Formed, bent, shaped	1. Tin snips 2. File 3. Wooden blocks 4. Soldering copper	1. Solder 2. Soldering flux 3. ?
Copper Foil (30 Gauge)	Formed, bent, shaped	1. Tin snips 2. Mold 3. Modeling tool 4. Forming hammer	1. Steel wool 2. ? 3. ? 4. ?
Hot Metal (Lead or Alloy)	Melted and cast into a mold	1. Mold 2. Electric Hot Plate 3. Pliers 4. File	1. Candle 2. Matches 3. Paint
Cold Formed Metal Bars, Rods, Etc.	Bent, pressed, shaped	1. Hack saw 2. Bending apparatus 3. File	1. Steel wool 2. Bolts and nuts 3. Rivets 4. Paints

XIII. Suggested Projects:

Two projects are recommended: The anthropological approach

(1) a project depicting methods used in time-gone-by; hand processes: Ex. Forming a candy dish in wooden mold.

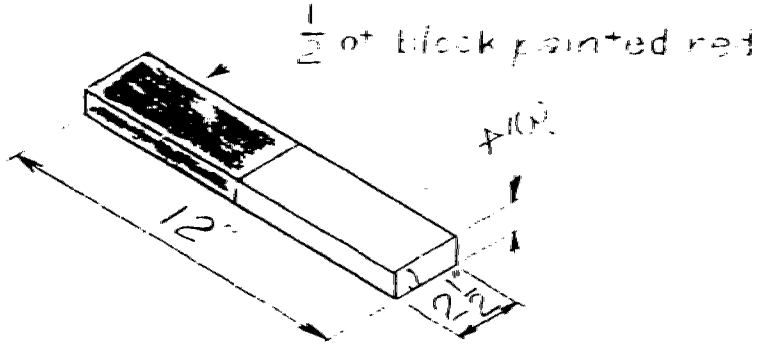
(2) a project depicting current methods (as relevant as possible in the classroom); machine processes; Example: Forming candy dish with arbor press.

XIV. Mass Production

XV. What effects have technological developments in the metal industries had on society?

XVI. What ways can this study of these metals industries relate to units of study on (1) Manufacturing, (2) Transportation, (3) Communication, (4) Power, (5) Construction, and (6) Services?

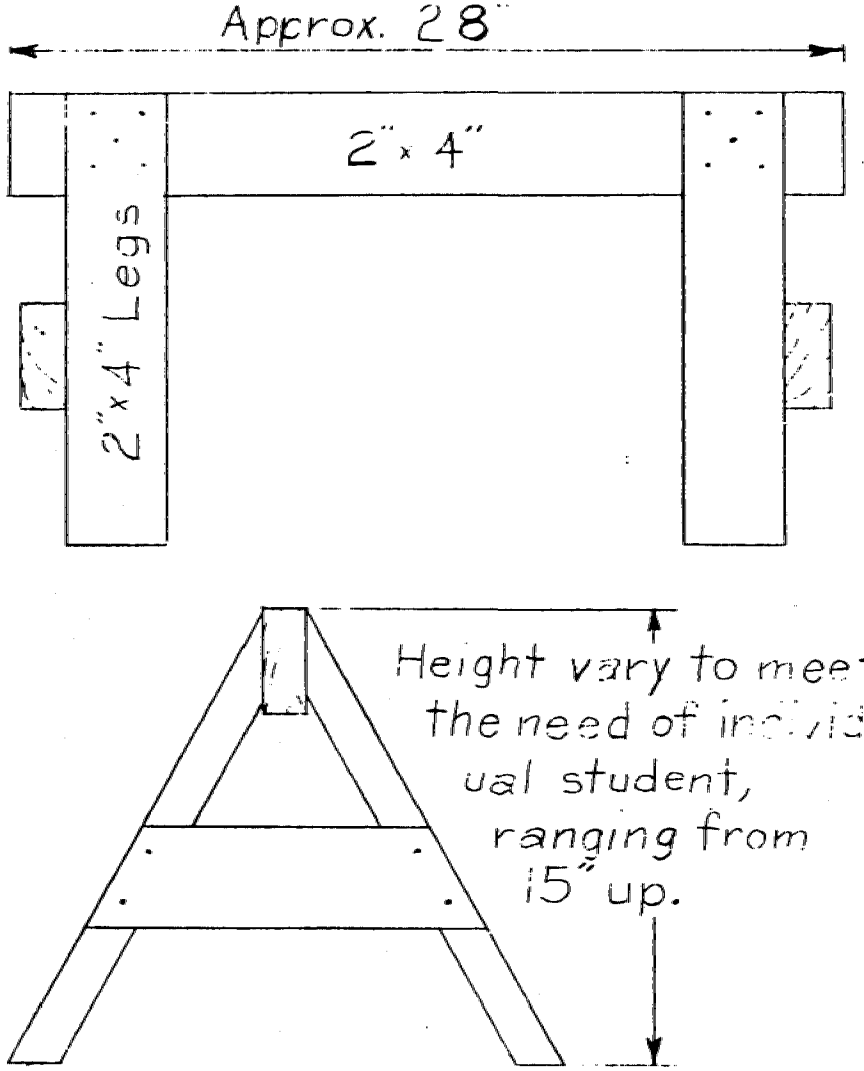
SUGGESTED FURNITURE

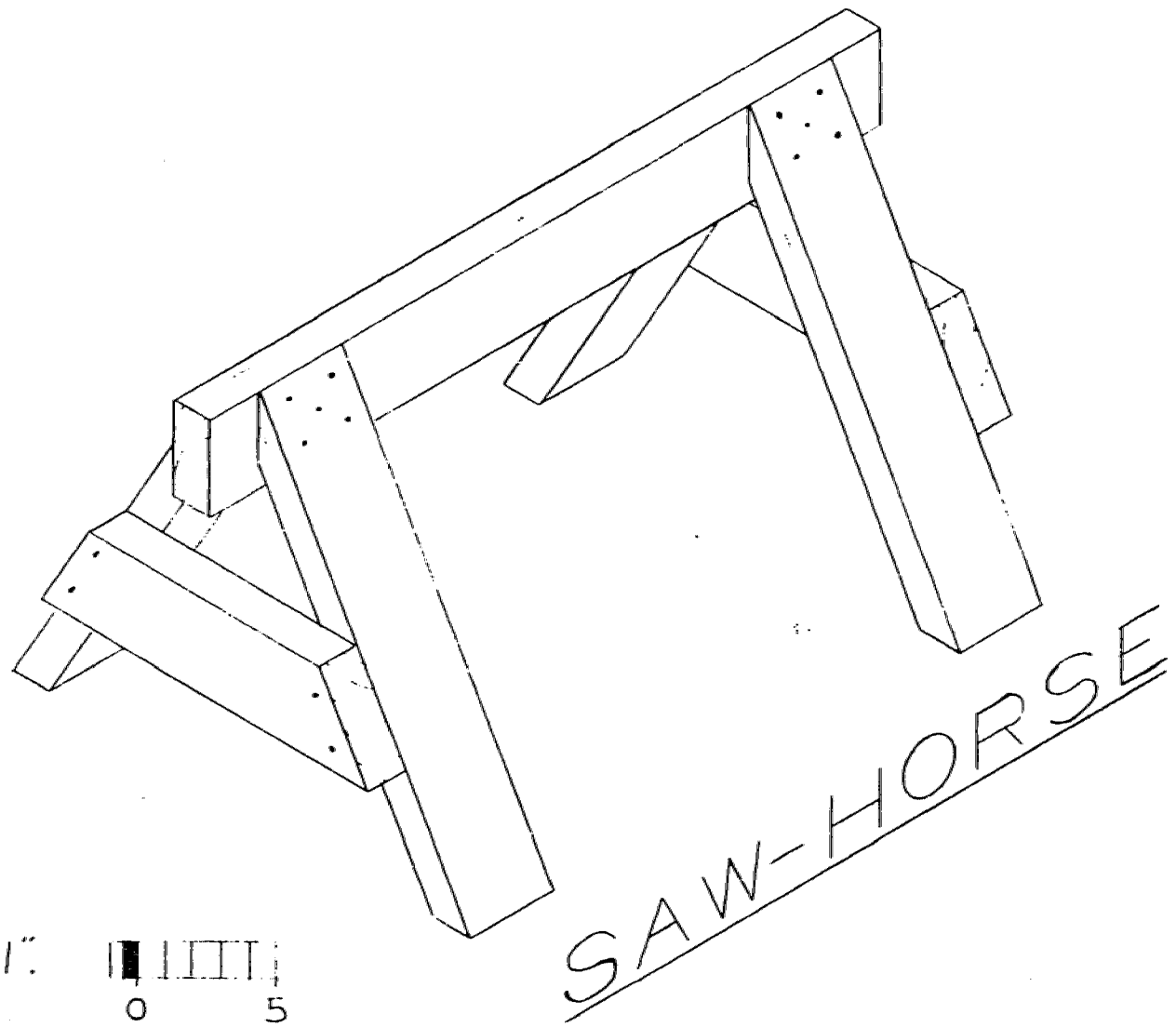


CUTTING BOARD

This block is used as a guide for the hand saw. The student clamps the block on top of the piece to be sawed with the painted end on the squared mark where his board is to be cut. The block serves as a guide to keep the saw going straight through the stock. The red end serves as a safety factor. "Keep fingers out from under the saw."

Height should vary to meet need of elementary students, ranging from 15" up.





SAW-HORSE

Scale: 1" = 1'

0 5

The saw-horse is an indispensable item for manipulative activities. It serves as an individual work station; stock can be clamped on it for sawing and boring holes; two or more can be used together to support a large piece of plywood to make a table; and many other purposes. Eight or ten can easily be used in a classroom. They can be stacked on top of each other for storage.

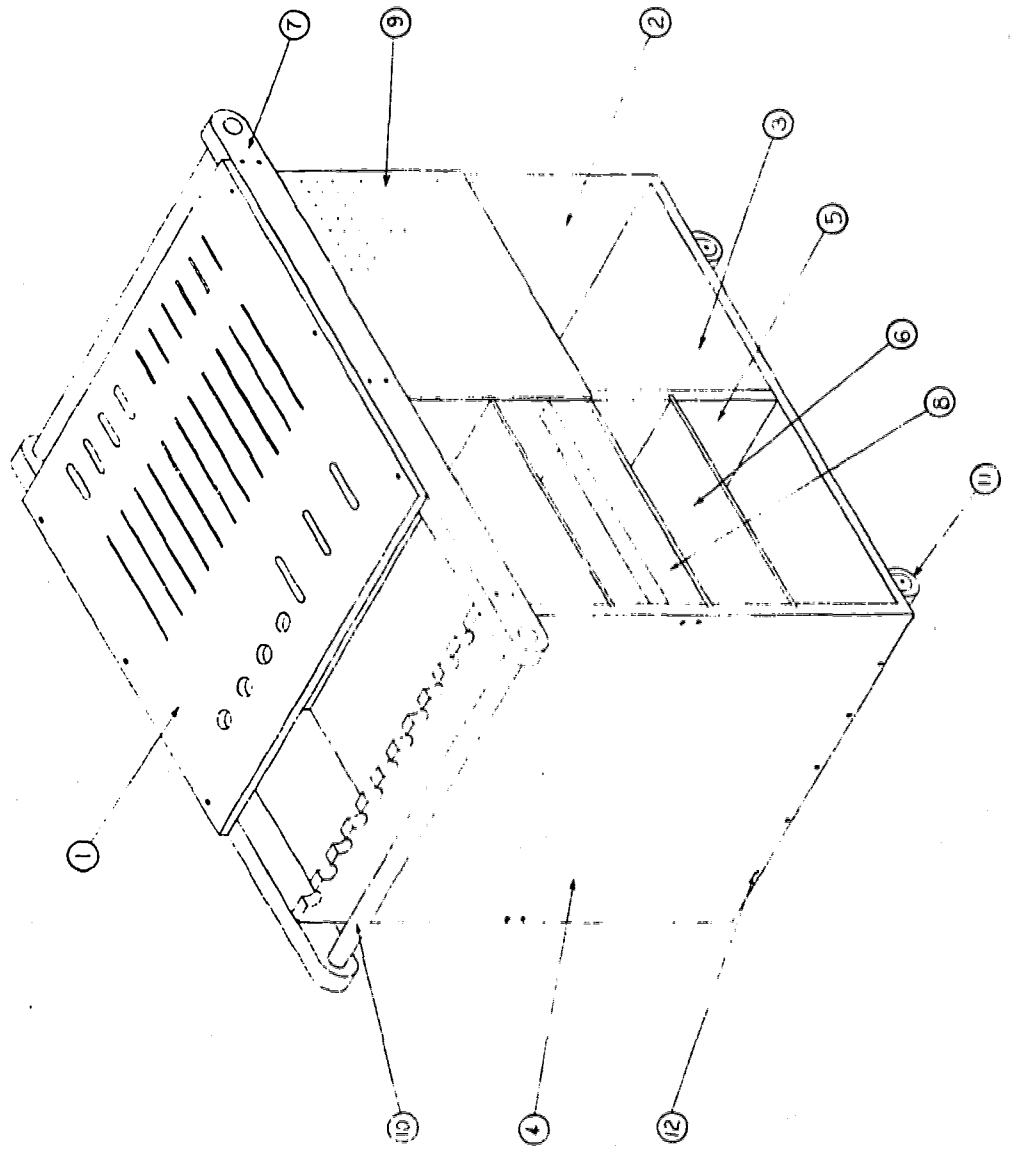
The tool cart shown on the accompanying drawing can be constructed locally. The drawing gives complete dimensions plus a bill of material. It provides ample storage for tools and a limited amount of supplies, i.e., paint, nails, etc. Alterations can be made to local needs.

Note that it is mounted on casters. This enables the cart to be moved about as needed. Two or more teachers can share the tools and cart by moving it from one room to another.

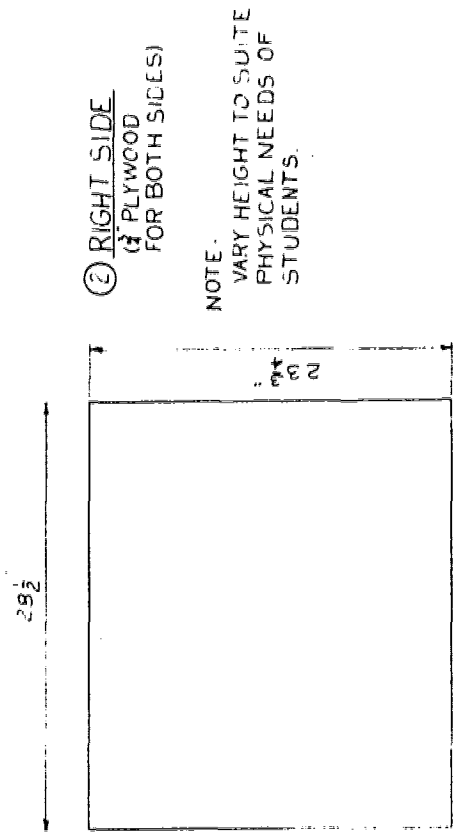
TOOL CART

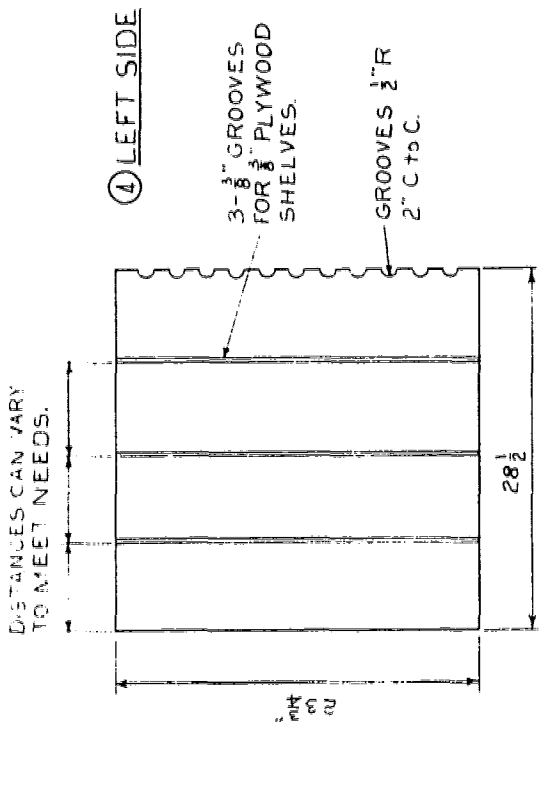
SCALE $\frac{1}{8}$" = 1"

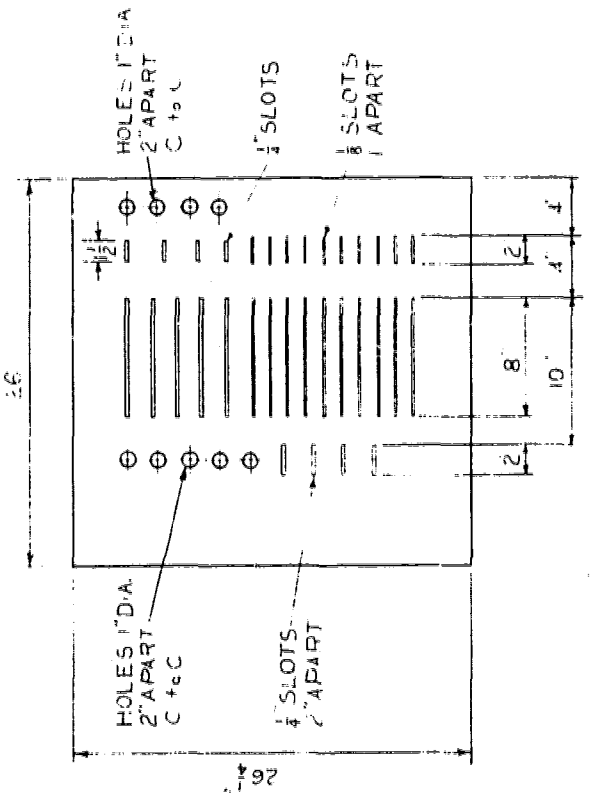
BILL OF MATERIALS			
PT.#	NAME	NO.	SIZE
1	TOP	1	$\frac{3}{4}$" x 26$\frac{1}{2}$" x 26"
2	RIGHT SIDE	1	$\frac{3}{4}$" x 23$\frac{3}{4}$" x 28$\frac{1}{2}$"
3	BOTTOM	1	$\frac{3}{4}$" x 23$\frac{3}{4}$" x 32$\frac{1}{2}$"
4	LEFT SIDE	1	$\frac{3}{4}$" x 23$\frac{3}{4}$" x 28$\frac{1}{2}$"
5	CENTER	1	$\frac{3}{4}$" x 23$\frac{3}{4}$" x 27$\frac{3}{4}$"
6	SHELF	3	$\frac{3}{8}$" x 16$\frac{1}{2}$" x 23$\frac{3}{4}$"
7	RAIL	2	1$\frac{1}{2}$" x 2$\frac{1}{2}$" x 42"
8	BRACE	2	1$\frac{1}{2}$" x 2$\frac{1}{2}$" x 16"
9	PEG-BOARD	2	$\frac{1}{4}$" x 13" x 17$\frac{1}{2}$"
10	DOWEL ROD	2	1" x 26$\frac{1}{4}$"
11	ROLLERS	4	2"
12	FLAT HEAD SCR.	3 DOZ	NO. 10-2"



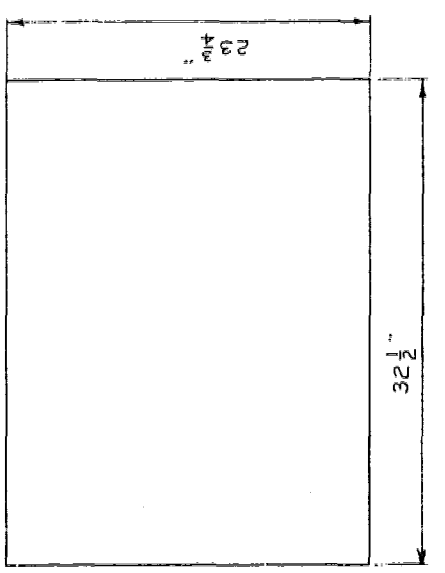
NOTES:
1. SLOTS CUT IN TOP TO HOLD TOOLS REQUIRED
2. HOOKS CAN BE PUT IN PEG-BOARD TO HOLD TOOLS.





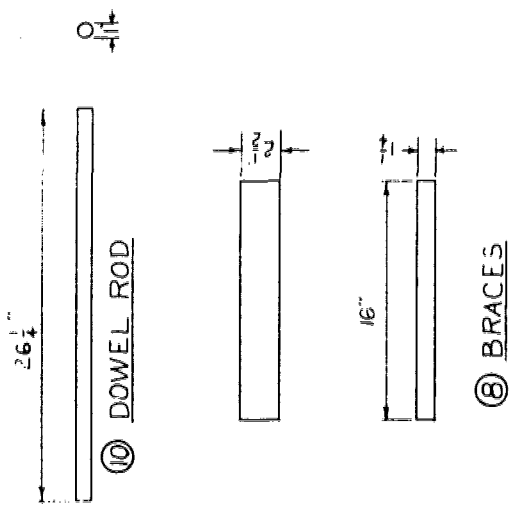


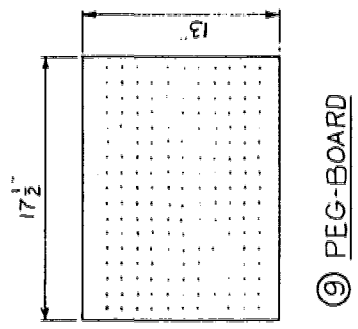
① TOP
(¾" PLYWOOD)

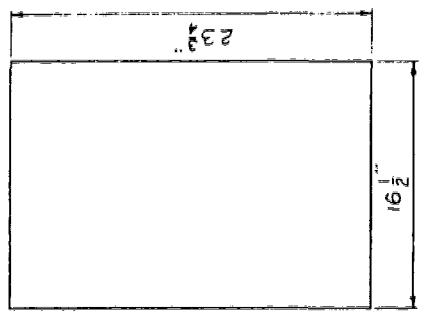


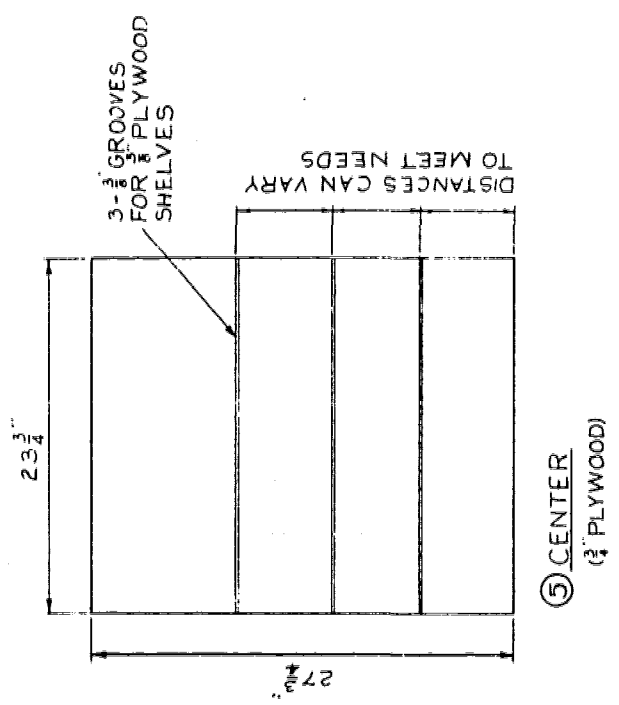
③ BOTTOM
(¾" PLYWOOD)

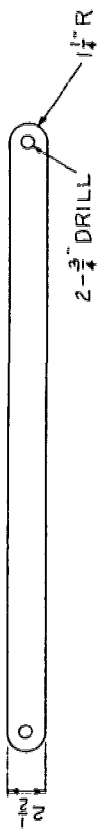
SCALE: ⅛"=1"

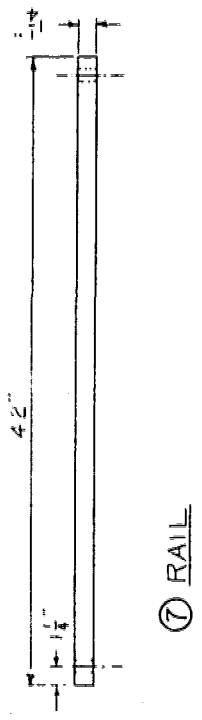


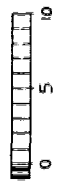






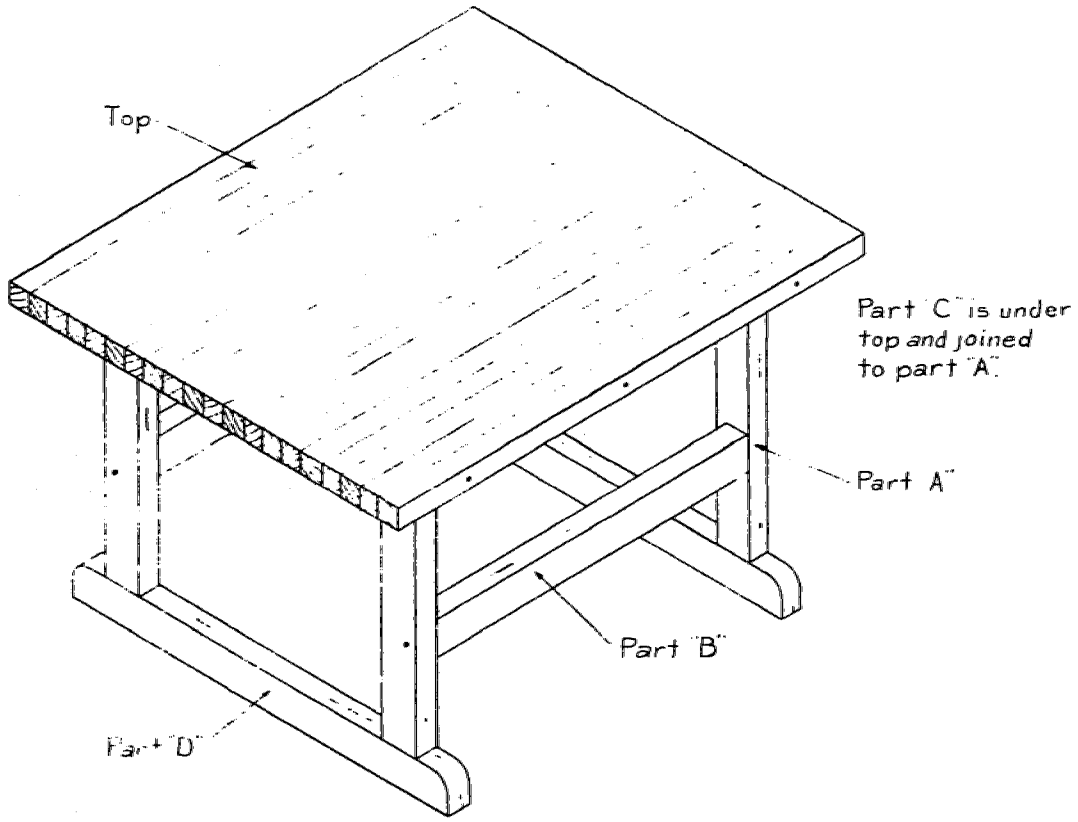






SCALE: 1" = 1"

Many industrial arts activities call for a sturdy work bench. The bench shown on the accompanying drawing serves the purpose very adequately. It can be constructed locally. The drawing gives complete dimensions and a bill of materials. The height of the work bench can be varied to meet needs of a particular age group, varying from 22" or 24" upward. This type work bench should not be mounted on casters. The number of benches per classroom can be adjusted to meet needs.



Note: Check dimensions for accuracy.

BILL OF MATERIALS		
No.	Description	Size
1	Top	$1\frac{1}{2}$" x 30" x 36"
3	Rods w/nuts	$\frac{5}{16}$" x 36"
4	Part "A" – Leg	$1\frac{1}{2}$" x $2\frac{1}{2}$" x $20\frac{1}{2}$"
8	$\frac{5}{16}$" sq. bolts	$4\frac{1}{2}$"
2	Part "B" – Brace	$1\frac{1}{2}$" x $2\frac{1}{2}$" x 24"
4	$\frac{5}{16}$" lag screws	$4\frac{1}{2}$"
2	Part "C" – Leg	$1\frac{1}{2}$" x $2\frac{1}{2}$" x 24"
2	Part "D" – Leg	$1\frac{1}{2}$" x $2\frac{1}{2}$" x 29"
6	$\frac{5}{16}$" lag screws to secure legs to top	$3\frac{1}{2}$"

TABLE

Scale: $\frac{1}{8}$" = 1"

0 5 10

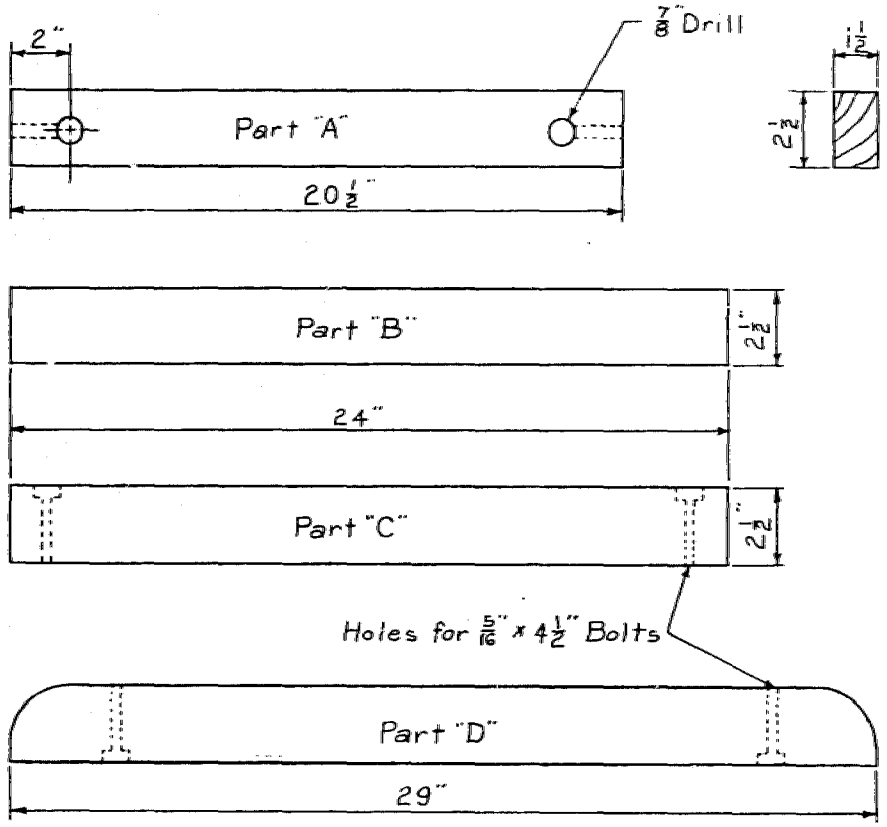
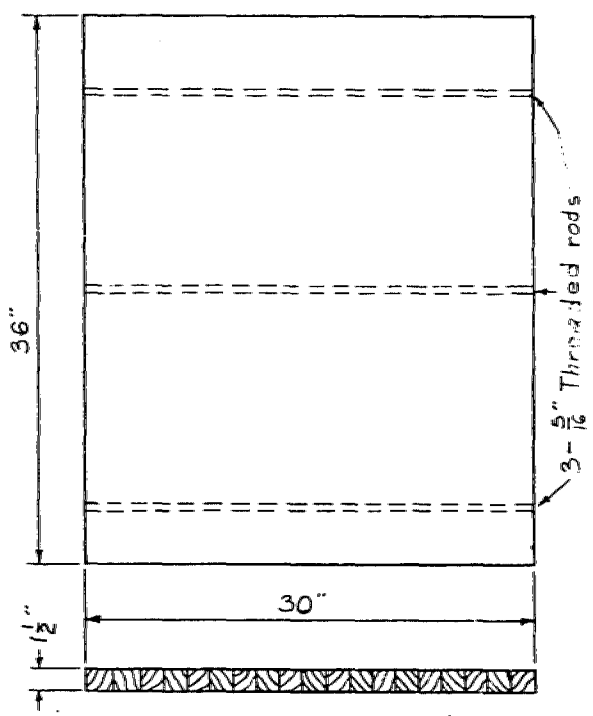


TABLE LEGS

SCALE: 3" = 1'-0"

0 1 2 3 6 9 1'-0"

NOTE DIFFERENT SCALES



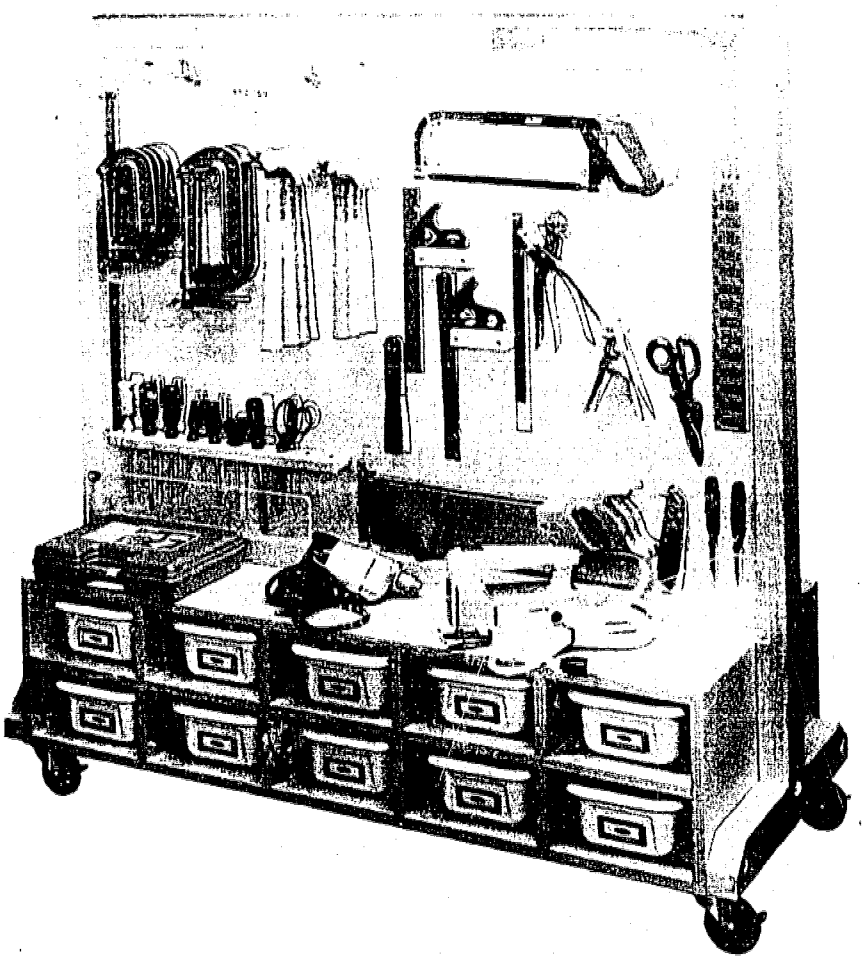
Top to be made of 1 1/2" x 1 1/2" laminated pine. Can be cut from 2" x 4" stock.

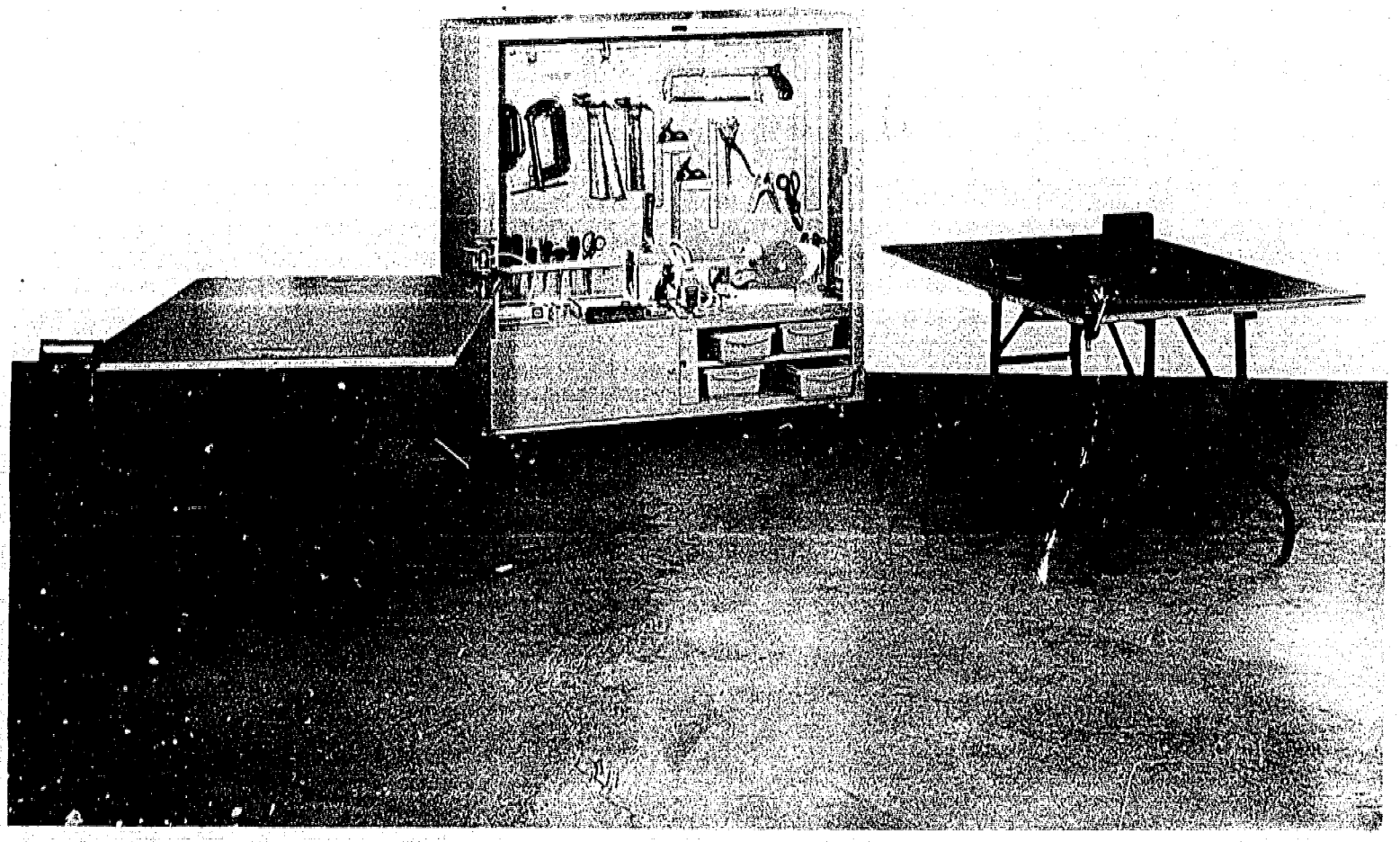
TABLE TOP

SCALE: 1 1/2" = 1'-0"

9 6 3 2 1 0 1'-0"

Commercial tool panels are available from several companies.





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