

A HANDWORK ACTIVITY PROGRAM  
FOR ELEMENTARY SCHOOLS

by

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A THESIS

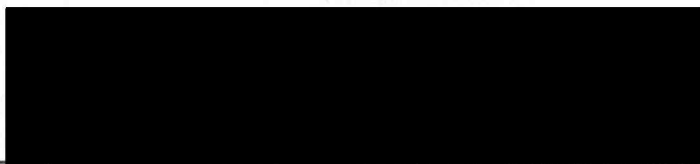
submitted to the  
OREGON STATE COLLEGE

in partial fulfillment of  
the requirements for the  
degree of

MASTER OF SCIENCE

June 1947

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### ACKNOWLEDGMENT

Grateful acknowledgment is hereby given to Professor George B. Cox whose encouragement, assistance, and confidence made this study possible; to Dr. Willard F. Tidyman and Dr. John U. Michaelis for their many helpful suggestions and criticisms; to the entire staff of the Fresno State College Demonstration School for their many useful and helpful suggestions, clarifications, and evaluations; to the many teachers, supervisors, and administrators who so enthusiastically helped in this study.

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# A HANDWORK ACTIVITY PROGRAM FOR ELEMENTARY SCHOOLS

## CHAPTER I INTRODUCTION

Handwork activities are not new. They have been used in one form or another for many years, and today their place in the elementary school is rather well established. Since 1900 handwork has continued to gain an ever-increasing number of supporters until today it is serving most of the modern elementary schools throughout the United States. It has also found its way into the schools of Canada where it is identified as the "enterprise method."

Until recently, however, few school administrators or teachers realized the true value and function of handwork. Much confusion resulted because these administrators and teachers failed to recognize the fact that handwork is an integral part of the teaching procedure and is a method of teaching suited to all curriculum subjects, rather than a separate curriculum subject in itself.

Today teachers and administrators alike are beginning to realize the close relationship between handwork and normal learning activities. To illustrate this point the following list of values of handwork activities is appropos.

1. Handwork activities vitalize the curriculum by increasing the meaning and purpose of its several parts.

2. Handwork activities promote initial learning and prolong retention, by the opportunity to learn through doing.
3. The handwork activities help to acquaint the pupil with the mechanical world in which he lives.
4. They present socializing values, gained from co-operative group work.
5. They offer opportunities for the teaching of safety education, embedded in practical situations.
6. Handwork activities open the door to the intelligent use of leisure time.
7. They offer problem solving experiences with practical media.
8. They develop creative abilities through manipulative processes.
9. They develop the ability to visualize and plan.
10. They offer experiences in composition and design.
11. Handwork activities furnish a rich and practical background for consumer education.
12. They offer opportunities for appropriate and economic use of time and materials.
13. They have positive therapeutic value.
14. Handwork activities develop the essential handiness involved in the use of tools and materials.

Newkirk (34:5) has summed up these several points with three major objectives:

1. To give the child an objective medium for expressing his ideas.
2. To provide the child with a manipulative form of creative leisure-time expression.
3. To acquaint the child with a variety of construction materials and to develop handiness with common tools.

As these values are analyzed and appraised in light of the total elementary school program it is difficult to visualize any other single teaching method which does so much. Why not, then, more handwork activities?

#### Statement of Problem

The problem of this study is not restricted to a single function, but instead it has a dual purpose. This dual purpose is to propose a handwork activity program for the Fresno State College Demonstration School which will serve these functions; (1) to provide a good handwork program for the pupils, and (2) demonstrate to the candidates for teacher education what a good handwork program should be. Specifically, the problem can be broken down into five major objectives, namely: (1) to formulate and project a handwork activity program in the elementary school; (2) to develop techniques and criteria for evaluating these activities; (3) to provide a situation where the



activities will be functional; (4) to arrive at some conclusions regarding the program and its contributions; and (5) to project some direction for future study and development.

### Procedure

The procedure used in making this study may be divided into five distinct steps. These include the analysis of literature, the investigation of courses of study of several school systems, the verification of data by personal interview, the drawing of conclusions from the data collected, and the recommendations and suggestions for a handwork activity program. A more complete analysis of these steps is given below.

First. A critical analysis of the writings of the leaders in the fields of education and industrial education was made in search for opinions regarding handwork activities and their place in the elementary school. Certain representative statements and philosophies of these leaders were then compiled to show in condensed form the ideas expressed by them.

Second. An investigation was made of the courses of study and curriculum guides of those school systems within the area most generally served by Fresno State College. The purpose of this investigation was to determine what

tools, materials, and handwork activities were used in connection with social studies units and to determine if there were any agreements as to which tools, materials, and activities should be used and at what grade level they should be introduced.

Third. The data collected from the courses of study and curriculum guides were then verified by personal interview. Administrators, supervisors, and classroom teachers were interviewed in an attempt to ascertain if the programs as recommended in the courses of study and curriculum guides were actually carried out in practice.

Fourth. After all the available data had been collected and recorded certain significant conclusions were drawn.

Fifth. Some recommendations and suggestions for carrying on a handwork activity program were recorded.

### Definition of Terms

A study such as this will possibly employ several terms which are not in common usage. The less common terms are defined herewith.

Activity - An action which involves an inter-relationship of mental and physical energy. An activity should never be thought of as a mere physical action, but as an action of the total personality.

Area- A large field or zone of learning. It is usually made up of a number of subjects within a given field. Example; the social studies area, the life science area, the fine arts area.

Experience- The actual living-through of an event or events, or the participation in them. The feeling or the undergoing of sensations as processes occur.

Experience Area- The area in which the actual experiences are occurring. Example: drawing, wood-working, metal work, clay modeling, etc.

Handwork- A method or approach to learning that is adaptable to all curriculum subjects. It is the planned modification of materials of construction with the hands or hand tools to aid the learner in expressing his ideas.

Handwork Activities- The activities that include the use of the handwork method and techniques.

Industrial Arts- A phase of general education (non-vocational) concerned with tools, materials and industrial phenomena, and with the contributions of those engaged in industry. Pupils develop through experiences with tools and materials and the study of resultant changes caused by industrial progress.



Project- An objective form of activity resulting in some definite product. The emphasis is upon the activity, the purposefulness on the part of the pupil, and the naturalness in the doing.

Unit- An organized and harmoniously integrated group of activities and subject matter. Example: Pueblo Indian Unit, Transportation Unit, Nature Study Unit.

Vocational Education- Education for a specific occupation. Example: Trade training in mill work.

### Location of Study

The information for this study was obtained from several sources. The writings of leaders in the fields of education and industrial education furnished considerable data. Courses of study which were investigated offered much in the way of practical suggestions.

Data and information gathered from these several sources were then processed and evaluated at the Fresno State College Demonstration School. This school is located on the campus of the Fresno (California) State College and is an integral part of the teacher education program. The school has seven classrooms used for instruction from kindergarten through grade six. There is one teacher for each classroom, and each class is made up of about thirty pupils. In addition to the regular classroom teachers,

teacher-education candidates are assigned to each room, where they observe and participate in the educational program.

### Sources of Data

Data for this study have been checked for accuracy and reliability. Any material which did not check out was discarded as unreliable.

The following sources of information have been used in this study.

1. Current literature, including the Industrial Arts and Vocational Education Magazine and Sierra Educational News.
2. Publications and professional literature noted throughout the study and listed in the bibliography.
3. Courses of Study from the following schools.
  - a. Fresno City System
  - b. Fresno County Schools
  - c. Los Angeles City System
  - d. Kern County Schools
  - e. Fresno State College Demonstration School.

### Limitations of Study

Early in the study it became apparent that it would be impossible to list all of the activities of value in

in the classroom. For this reason only those activities which can be classified as the construction type have been included. Even all of these activities cannot be used; neither can they be listed in the order of their comparative value.

It is not the intention of the writer to claim perfection for this program. Instead, this study is an attempt to point the way to a better and more serviceable handwork program for the elementary schools. It is a planned attempt to improve the program of handwork activities and to assist in the introduction of handwork into those schools which do not now use that method of teaching.

## CHAPTER II

### THE FUNCTION OF HANDWORK IN ELEMENTARY EDUCATION

A survey of literature in the field of education and industrial education indicates that since 1900 increased emphasis has been placed upon handwork and its use in the elementary school. Today educators recognize the learning values of motor activities and their part in the total development of the individual. There is a growing appreciation of the fact that these values hold true for all learners at all age levels.

Since motor activities play such an important role in the development of the individual it is logical that a great variety of experiences should be made available to the individual child. This concept of learning through actual participation is not a new idea. Nearly fifty years ago John Dewey (12:27-8) stressed the fact that people learn through doing or activity when he wrote:

We must conceive of work in wood and metal, of weaving, sewing, and cooking as methods of life; not distant studies, but as instruments through which the school itself shall be made a genuine form of active community life . . . . In educational terms this means these occupations in the school shall not be mere practical devices or modes of routine employment, the gaining of better technical skill as cooks, seamstresses, or carpenters, but active centers of insight into natural materials and processes, points of departure whence children shall be led out into a realization of the historical development of man.

Gordon A. Melvin (30:7) giving point and purpose to

the philosophy of the handwork activity programs writes:

Children are essentially and fundamentally dynamic. They are energy clothed upon with personality. They are bursting with tendencies, desires, and drives. One has only to watch them as they go about their own affairs to realize their intensely active nature.

Modern education with its science and its philosophy and its incessant involvement with psychology and statistics has forgotten the child. It has lost the dynamic conception of childhood . . . . Educational philosophy has thoroughly discussed the how, the when, and the if; yet were a child to appear among a group of educational philosophers he would be a stranger in their midst. We have remembered our "subject" of education, but we have forgotten its object - the whole human child.

And again, in the same book, the author (30:17) explains the need for the function of handwork as education:

Activity finds its origin in activity. Therefore in the background of every progressing school there should be a series of activities already going on. There should be a complex of behavior, of being and doing and acting, of things on the move. This combination of events on the march, this seething of life already underway, forms the matrix of school life.

George A. Retan (38:223-4) emphasizing the value of learning through actual participation writes:

Beginning in America with the experimental school at the University of Chicago under the direction of Dr. John Dewey, there has grown up a demand for breaking away from the formal curriculum with its artificial divisions of experience into the so-called "subjects." This school with its slogan of learning by doing, bringing real life activities into the schoolroom, introduced a great deal of practical manual activity.

William H. Johnson (25:2-3), former superintendent



the Chicago Public Schools, in a recent address said:

Modern educators know that children learn thoroughly only when they have the opportunity to take part actively in lifelike experiences. Although school subjects have had their origin in the practical needs of life, they have tended to become separated in the school curriculum from the out-of-school situations in which they are of use. Students lose sight of the relationship between the subject matter taught in the school and its application in their out-of-school experiences. To counteract or remedy this lack of association, teachers have recognized the value of introducing handwork in their classes as a device to help make meanings clear and to give the reality of personal experience to school learning.

Handwork should grow out of the work of the school, out of the many problems in geography, history, and arithmetic, and should serve to intensify interest and to promote understanding and appreciation.

To learn through personal participation by handling materials, recognizing the problems that arise, and contributing to their solution, gives pupils an understanding -- a sense of personal acquaintance -- that can be achieved in no other way. The handcraft method thus often serves as an approach to more advanced forms of industrial studies as well as the means to carry such studies forward with greater comprehension.

Maris M. Proffit (36:13), in a realistic approach defined the values of handwork when he wrote:

It contributes to complete living because it meets needs that are real and satisfies impulses that are inherent; it contributes in a unique and wholesome way to social awareness and morale. Reading, discussion, observations, and experiment are combined with participation in activities which permit discovery and development of creative and artistic abilities.

Vivian Borgman Pfleiderer (35:1), explaining the need for handwork, substantiates the opinions of Dr. Proffit.

Today the child lives in a world of finished products. He has few opportunities to participate in first-hand experiences. He does not realize the struggle and the heart-aches behind industrial development. In order to become an intelligent member of society and a wise consumer he should know the precesses behind the finished product. Only when the child has an understanding of the simple processes that man has developed to meet his needs does he begin to understand and appreciate the scientific, complex life about him today.

Again, in the same book, the author (35:2) further explains the function and value of handwork activities as they are related to the elementary school curriculum.

If the child is to live richly today, opportunities must be provided whereby first-hand experiences can be had. Through these participations many problems arise. As the child solves these problems many important aspects of living are developed. He learns to solve problems, to appreciate the arts and knowledge of people, to develop the skill of handling various materials and tools, to apply the knowledges gained through the "three - R's", to evaluate and criticize his own work as well as others, to plan and organize carefully, and to work together democratically.

In discussing the place of handwork in the elementary school program the following excerpt taken from the introduction of the Teacher's Manual for Correlated Handcraft Program of the Berkeley Public Schools (2:1) seems pertinent.

The practical arts and crafts should be an integral part of the elementary school program. They should be correlated or integrated with other school subjects, but should be an outgrowth of school and home interest of the children. The method of organization should be a subject for experimentation in the several schools with modified departmentalization, or a fusion of these activities with other school subjects as possible methods of approach.

Specialization of these activities on the elementary school level is not desirable, but where simple techniques are taught they should be correctly taught and a reasonable degree of mastery on the part of the pupil should be expected.

The practical arts and crafts in the elementary school should provide:

1. Learning through first-hand contacts with various materials.
2. Opportunities for self-expression.
3. An understanding of how things are made and what is involved in making them.
4. Training in attacking and solving problems with the aid of tangible materials.
5. Opportunity for discovery of aptitude and interests.
6. Development of appreciations as a consumer.
7. Development of a sense of responsibility as a creative producer.
8. Opportunity for development of constructive leisure time interest and skills.

Emphasizing the importance of the creative aspects of handwork, the committee on the school child of the White House Conference on Child Health and Protection (9:17) reports:

It is highly misleading to say that only a few can create. The ability to create is found in even the lowest and earliest instance of learning. It remains, in different degrees, a characteristic of all learning . . . . And creation enriches life. Nor is creation confined to art. All life demands it and illustrates it. To join things in a new way to meet adequately a sensed situation of any nature whatever is among the most enjoyable of experiences, and the more meaningful the surer the joy. Every person's life abounds in such opportunities. To help find the promising places for creation, to help build the wish to create, and to help find the means of better creation -- than these the educator has no higher duty.



Clyde Hissong (20:1), discussing the activity movement explains the introduction and establishment of handwork in the elementary school curriculum as follows:

With increasing inclusiveness the movement for child activity is settling over the school systems of the world. The pioneers established a new system as a reaction against prevalent practice. They introduced into their education a great many activities for the training of the hand and eye.

The underlying philosophy of the handwork program is explained in the Twelfth Yearbook of the National Education Association (11:93-4).

The school life should be organized around areas of experience in which the children are able to share wholeheartedly, which help to satisfy their immediate needs and desires as members in a social group, and which reveal new needs and desires. . . .

Educators should ask constantly what facts and principles of history, geography, arithmetic, and science do young people need assembled in close relationship in order that they may understand and reflect upon American institutions and problems? What kinds of examples, episodes, graphic and pictorial representations, problems, statistics, facts do they need to comprehend the interdependence of the modern world; the wise distribution and use of all its resources such as coal, iron, oil, and land; the improvement of education; the culture of American people? What kinds of experience must they have to make clear, and identify themselves with these problems which make living together possible. Those responsible for the education of children should ask themselves these questions in order that in the effort to answer them they will become wise, far-seeing guides who at the same time are ready to help the children to take each succeeding step which will lead toward this understanding of life to make possible rich living here and now, and the continuance and

growth to a finer way of sharing life together. Part of this understanding comes through constructing those things and carrying out those processes which will make it more possible to understand and to share in the basic life experiences of people with whom the youth of today comes in close contact.

In her book "The Child and Things," Edwina Fallis (16: 1-2) says:

. . . . Yesterday the children went to school to learn from books; today the concept of education has broadened and there is an increasing emphasis on experiences outside of books. Children today learn by doing.

The importance of the physical environment - of things as they contribute to the child's physical, mental, and emotional experiences, of play materials as they promote desirable group activities, of play materials as they teach the child new skills and acquaint him with the world in which he lives - has been repeatedly demonstrated. If an environment is to be rich in learning experiences, opportunity for independent creative activity and for group activity must be provided. These activities for young children center around the use of physical materials. From construction work in the classroom children learn by actual experience how things are made, appropriate materials to use, and names and uses of tools. They learn to work together and at the same time each develops according to his own ability and background of experience.

James E. McDade writes, in the foreword of the book "Integrated Handwork for Elementary Schools" (34:111), these concepts.

There is scarcely a field of human experience which is not enriched through contributions made by human hands or which a student may not enter with keener zest and fuller understanding if his hands play their rightful part of subduing and shaping concrete materials to his thoughts and his purposes. Every child should have an opportunity to think concretely, his hands serving his

brain. He should get the feel of varied materials, learn their right use, shape them with his fingers, and acquire the habit of direct and forceful thinking based on his practical experiences

Today machinery makes for us practically every article we use. Hence children are deprived of the stimulating contact with material things that vitalized the learning of primitive times, when making was an integral part of living. It becomes necessary, then, for the fullest development of the children's powers, that they be given adequate experience in creation from raw materials, to the end that they may attain a clear understanding of what machinery does for us and may grow to be masters of the machine rather than its servants. Thus learning through the hand is not something merely added to the learning of the mind, but is an intrinsic part of it, the very warp of its fabric, without which the patterns of experience are blurred and not lasting.

The time is ripe for a forward movement in the use of handwork as an integral part of elementary education. . . . it is not craftsmanship for its own sake that schools need, but the craftsmanship that serves useful educational purposes. So employed, handwork techniques open to a pupil adventures in living that deepen his understanding and enrich his life.

It seems quite apparent that the leaders in the fields of both general and industrial education who have given time and thought to the problem and who have made detailed studies of curriculum and method are in definite agreement as to the value of and the need for handwork activities in the elementary school. These leaders, because of their training, service, and contributions, should be well qualified to voice their opinions regarding this subject.

The writings of these authorities seemed to indicate the general trend throughout the country of an ever in-

creasing emphasis being placed upon the active phases of education. These leaders agree that there should be provided in all elementary schools the tools, materials, and facilities for carrying on a handwork program. Some went so far as to indicate that handwork is the very core of all education. All are agreed that handwork, with its great variety of values, contributes largely to the broad general aims of education. That it places the emphasis of education where it belongs, upon the child rather than upon the curriculum subject, is conceded by all.

## CHAPTER III

### THE STUDY

#### Procedure

It is believed that if this study is to be effective it should accomplish the purpose for which it was intended -- namely, the setting up a recommended handwork program for the Fresno State College Demonstration School. To accomplish this purpose it was decided that, since Fresno State College is primarily a teacher education institution, those school systems which employ the larger percentage of her graduates should be surveyed to determine their needs and to examine their present programs. An investigation of the records of the teacher placement office of the college disclosed that two county systems and two city systems employ the great bulk of Fresno State College teacher-credential graduates. Those systems are Kern County, Fresno County, Los Angeles City, and Fresno City.

To conform with this hypothesis, the courses of study and curriculum guides of those systems were investigated in order to determine their present programs in terms of tools used at the various grade levels, materials used, units studied, and handwork activities carried on in connection with these units.

After all available data had been collected from these courses of study and curriculum guides, the writer



then verified these data by personal interview with teachers, supervisors, and administrators. This seemed to be a necessary step to determine if the program in theory was being applied in practice. It was a very enlightening phase of the study and much information was obtained. It is interesting to note that, in the main, the programs and procedures recommended in the courses of study and curriculum guides are rather closely adhered to by the classroom teachers. However, teachers are individualistic, and each gives his own particular coloring to the work and gears the curriculum material to his interpretation of student needs and interests.

#### Analysis and Results of the Study

An overview of the results of the study is shown in the tables on the following pages.

Tables I through VII show the tools used in the various grades, Kindergarten through Grade VI, in the several systems studied. Tables VIII through XIV show the materials of construction used.

Tables XV through XXI show the units studied in four of the five systems. Since the Los Angeles city system organizes the curriculum around basic curriculum subjects, i.e. geography, history, art, etc., rather than around unit studies, it was not possible to include that city in this phase of the study.

Tables XXII through XXVIII show the handwork activities carried on in connection with the units studied in the various grades in the several school systems studied. Again, since Los Angeles does not organize her curriculum around unit studies she was unable to participate in this phase of the study.

Table I

Tools Used in the Kindergartens of the Various  
School Systems Studied

Tools	School System				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Bench	x	x	x	x	x
Hammer	x	x	x	x	x
Hand Drills		x	x	x	
Paint Brush	x	x	x	x	x
Saw (Back)	x	x			x
Saw (Coping)	x	x	x	x	x
Saw (Crosscut)	x				
Vise	x	x	x	x	x



Table II

Tools Used in Grade I of the Various  
School Systems Studied

School Systems

Tools	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Bench	x	x	x	x	x
Hammer	x	x	x	x	x
Hand Drill		x	x	x	
Paint Brush	x	x	x	x	x
Saw (Back)	x	x	x		x
Saw (Coping)	x	x	x	x	x
Saw (Crosscut)	x	x	x		x
Vise	x		x	x	x

Table III

Tools Used in Grade II of the Various  
School Systems Studied

Tools	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Bench	x	x	x	x	x
Chisel		x	x	x	x
Hammer	x	x	x	x	x
Hand Drill		x	x	x	
Paint Brush	x	x	x	x	x
Plane			x	x	x
Pliers			x	x	x
Rule & Yard Stick	x	x	x	x	x
Saw (Back)	x	x	x		x
Saw (Coping)	x	x	x	x	x
Saw (Crosscut)		x	x	x	x
Screwdriver		x	x	x	x
Square	x	x	x	x	x
Vise	x	x	x	x	x

Table IV  
Tools Used in Grade III of the Various  
School Systems Studied

Tools	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Bench	x	x	x	x	x
C-Clamp		x	x	x	x
Chisel		x	x	x	x
Hammer	x	x	x	x	x
Hard Drill		x	x	x	x
Paint Brush	x	x	x	x	x
Plane		x	x	x	x
Pliers		x	x	x	x
Rule & Yard Stick	x	x	x	x	x
Saw (Back)	x	x	x		x
Saw (Coping)	x	x	x	x	x
Saw (Crosscut)	x	x	x	x	x
Screwdriver		x	x	x	x
Square	x	x	x	x	x
Vise	x	x	x	x	x

Table V

Tools Used in Grade IV of the Various  
School Systems Studied

Tools	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Benches	x	x	x	x	x
Brace & Bits	x	x	x	x	x
C-Clamps		x	x	x	x
Chisel		x	x	x	x
File Card		x	x	x	x
Files		x	x	x	x
Hammer	x	x	x	x	x
Hand Drill		x	x	x	x
Paint Brush	x	x	x	x	x
Plane	x	x	x	x	x
Pliers		x	x	x	x
Rule & Yardstick	x	x	x	x	x
Saw (Back)	x	x	x	x	x
Saw (Compass)		x	x	x	x
Saw (Coping)	x	x	x	x	x
Saw (Crosscut)	x	x	x	x	x
Saw (Rip)	x	x	x	x	x
Screwdriver	x	x	x	x	x
Square	x	x	x	x	x
Tinners' Snips		x	x	x	x
Vise	x	x	x	x	x

Table VI

Tools Used in Grade V of the Various  
School Systems Studied

Tools	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Benches	x	x	x	x	x
Brace & Bits	x	x	x	x	x
C-Clamps		x	x	x	x
Chisel		x	x	x	x
File Card		x	x	x	x
Files		x	x	x	x
Hammer	x	x	x	x	x
Hand Drill		x	x	x	x
Paint Brush	x	x	x	x	x
Plane	x	x	x	x	x
Pliers		x	x	x	x
Putty Knife	x	x	x	x	x
Rule & Yardstick	x	x	x	x	x
Saw (Back)	x	x	x	x	x
Saw (Compass)		x	x	x	x
Saw (Coping)	x	x	x	x	x
Saw (Crosscut)	x	x	x	x	x
Saw (Rip)	x	x	x	x	x
Screw Driver	x	x	x	x	x
Sloyd Knives		x	x	x	x
Square	x	x	x	x	x
Tinners' Snips		x	x	x	x
Vise	x	x	x	x	x

Table VII

Tools Used in Grade VI of the Various  
School Systems Studied

Tools	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Bench	x	x	x	x	x
Brace & Bits	x	x	x	x	x
C-Clamps		x	x	x	x
Chisel		x	x	x	x
File Card		x	x	x	x
File		x	x	x	x
Hammer	x	x	x	x	x
Hand Drill		x	x	x	x
Paint Brush	x	x	x	x	x
Plane	x	x	x	x	x
Pliers		x	x	x	x
Punch (Leather)				x	
Putty Knife	x	x	x	x	x
Rule & Yardstick	x	x	x	x	x
Saw (Back)	x	x	x	x	x
Saw (Compass)		x	x	x	x
Saw (Coping)	x	x	x	x	x
Saw (Crosscut)	x	x	x	x	x
Saw (Rip)	x	x	x	x	x
Screw Driver	x	x	x	x	x
Sloyd Knife		x	x	x	x
Square	x	x	x	x	x
Tinners' Snips		x	x	x	x
Vise	x	x	x	x	x

Table VIII

Materials Used in the Kindergartens of the Various  
School Systems Studied

Materials	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Alcohol		x	x	x	x
Barrels & Kegs	x	x			x
Boxes (Wood)	x	x	x	x	x
Building Blocks		x	x	x	x
Cans		x			x
Cartons & Boxes	x	x	x	x	x
Glue		x	x	x	x
Lumber	x	x	x	x	x
Nails	x	x	x	x	x
Paint (Washable)	x	x	x	x	x
Pasteboard	x	x	x	x	x
Sandpaper		x	x	x	x
Shellac		x	x	x	x
Spools	x	x	x	x	x

Table IX

Materials Used in Grade I of the Various  
School Systems Studied

Materials	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Alcohol		x	x	x	x
Barrels & Kegs	x	x	x	x	x
Boxes (Wood)	x	x	x	x	x
Building Blocks		x	x	x	x
Cans		x	x	x	x
Cartons & Boxes	x	x	x	x	x
Glue		x	x	x	x
Lumber	x	x	x	x	x
Nails	x	x	x	x	x
Paint (Washable)	x	x	x	x	x
Pasteboard	x	x	x	x	x
Sandpaper		x	x	x	x
Shellac		x	x	x	x
Spools	x	x	x	x	x



Table X

Materials Used in Grade II of the Various  
School Systems Studied

Materials	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Alcohol		x	x	x	x
Barrels & Kegs	x	x	x	x	x
Boxes (Wood)	x	x	x	x	x
Building Blocks		x	x	x	x
Cans		x	x	x	x
Cartons & Boxes	x	x	x	x	x
Enamel		x	x	x	
Glue		x	x	x	x
Lumber	x	x	x	x	x
Nails	x	x	x	x	x
Paint (Washable)	x	x	x	x	x
Pasteboard	x	x	x	x	x
Sand paper		x	x	x	x
Screws		x	x	x	x
Shellac		x	x	x	x
Spools	x	x	x	x	x
Tacks		x	x	x	
Turpentine		x	x	x	
Varnish		x	x	x	

Table XI

Materials Used in Grade III of the Various  
School Systems Studied

School Systems					
Materials	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Alcohol		x	x	x	x
Barrels & Kegs	x	x	x	x	x
Boxes (Wood)	x	x	x	x	x
Cans		x	x	x	x
Cartons & Boxes	x	x	x	x	x
Enamels		x	x	x	x
Glue		x	x	x	x
Lumber	x	x	x	x	x
Nails	x	x	x	x	x
Paint (Washable)	x	x	x	x	x
Pasteboard	x	x	x	x	x
Sandpaper		x	x	x	x
Screw Eyes		x	x	x	x
Screws		x	x	x	x
Shellac		x	x	x	x
Spools	x	x	x	x	x
Staples		x	x	x	x
Tacks		x	x	x	
Turpentine		x	x	x	
Varnish		x	x	x	
Wire		x	x	x	x

Table XII

Materials Used in Grade IV of the Various  
School Systems Studied

Materials	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Alcohol	x	x	x	x	x
Barrels & Kegs	x	x	x	x	x
Bolts		x	x	x	x
Boxes (Wood)	x	x	x	x	x
Cans		x	x	x	x
Cartons & Boxes	x	x	x	x	x
Casting Plaster		x	x	x	
Dowels	x	x	x	x	x
Enamels		x	x	x	x
Glue		x	x	x	x
Laths	x	x	x	x	x
Lumber	x	x	x	x	x
Nails	x	x	x	x	x
Paint (Washable)	x	x	x	x	x
Paste board	x	x	x	x	x
Plastic Wood		x	x	x	
Sand paper		x	x	x	x
Screw eyes		x	x	x	x
Screws	x	x	x	x	x
Shellac	x	x	x	x	x
Spools	x	x	x	x	x
Staples		x	x	x	x
Tacks		x	x	x	x
Turpentine		x	x	x	x
Varnish		x	x	x	x
Washers		x	x	x	x
Wire		x	x	x	x

Table XIII

Materials Used in Grade V of the Various  
School Systems Studied

Materials	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Alcohol	x	x	x	x	x
Barrels & Kegs	x	x	x		x
Bolts		x	x	x	x
Boxes (Wood)	x	x	x	x	x
Cans		x	x	x	x
Cartons & Boxes	x	x	x	x	x
Casting Plaster		x	x	x	
Dowels	x	x	x	x	x
Enamels		x	x	x	x
Glue		x	x	x	x
Isinglass			x	x	x
Lath	x	x	x	x	x
Lumber	x	x	x	x	x
Nails	x	x	x	x	x
Paint (Washable)	x	x	x	x	x
Pasteboard		x	x	x	x
Plastic Wood		x	x	x	
Putty	x	x	x	x	x
Sandpaper	x	x	x	x	x
Screw eyes		x	x	x	x
Screws		x	x	x	x
Shellac	x	x	x	x	x
Spools	x	x	x	x	x
Staples		x	x	x	x
Tacks		x	x	x	x
Tape		x	x	x	
Turpentine		x	x	x	x
Varnish		x	x	x	x
Washers		x	x	x	x
Wire		x	x	x	x

Table XIV

Materials Used in Grade VI of the Various  
School Systems Studied

Materials	School Systems				
	Los Angeles City	Kern County	Fresno City	F.S.C. Training School	Fresno County
Alcohol	x	x	x	x	x
Bambo & Cane	x	x	x	x	x
Barrels & Kegs	x	x	x	x	x
Bolts		x	x	x	x
Boxes (Wood)	x	x	x	x	x
Cans		x	x	x	x
Canvas				x	
Cartons & Boxes	x	x	x	x	x
Casting Plaster		x	x	x	x
Dowels	x	x	x	x	x
Enamel		x	x	x	x
Gunny Sacks		x	x	x	
Glue		x	x	x	x
Gourds		x	x	x	
Isinglass		x	x	x	x
Lath	x	x	x	x	x
Lumber	x	x	x	x	x
Nails	x	x	x	x	x
Paint (Washable)	x	x	x	x	x
Paste Board	x	x	x	x	x
Plastic Wood		x	x	x	x
Putty	x	x	x	x	x
Rubber		x	x	x	x
Sandpaper	x	x	x	x	x
Screw eyes		x	x	x	x
Screws	x	x	x	x	x
Shellac	x	x	x	x	x
Spools	x	x	x	x	x
Staples		x	x	x	x
Tacks		x	x	x	x
Tape		x	x	x	x
Turpentine		x	x	x	x
Varnish		x	x	x	x
Washers		x	x	x	x
Wire		x	x	x	x

Table XV

Units Studied in the Kindergartens of the Various  
School Systems Studied

Units	School Systems			
	Kern County	Fresno City	F.S.C. Training School	Fresno County
Home	x	x	x	x
School	x			x
Transportation		x	x	x
Community				x
Special Holidays		x	x	x
Nature Interests	x			x
Grocery Store		x	x	x
Farm		x	x	x
Circus	x	x	x	x
Pets	x	x	x	x



Table XVI

Units Studied in Grade I of the Various  
School Systems Studied

Units	School Systems			
	Kern County	Fresno City	F.S.C. Training School	Fresno County
Home	x			x
School	x			x
Holidays		x	x	x
Pets	x	x	x	x
Toys & Toymaking		x	x	x
Circus	x	x	x	x
Airplanes		x	x	x
Farm	x	x	x	x
Flower Shop		x	x	x
Playhouse		x	x	x
Puppet Show		x	x	x
Foods	x			
Gardens	x			x
Dairy	x			
Animals	x			x
Playground				x

Table XVII

Units Studied in Grade II of the Various  
School Systems Studied

Units	School Systems			
	Kern County	Fresno City	F.S.C. Training School	Fresno County
Foods		x	x	
Our Helpers, Postman	x	x	x	x
Our Helpers, Librarian	x	x	x	x
Our Helpers, Bus Drivers	x	x	x	x
Our Helpers, Pilots	x			x
Our Helpers, Fireman	x	x	x	x
Our Helpers, Policeman	x	x	x	x
Builders	x	x	x	x
Stores	x	x	x	x
Story of Bread	x	x	x	x
Story of Milk	x	x	x	x
Our Parks	x	x	x	x
Transportation		x	x	
Doctor, Nurse, & Dentist	x		x	
Community Life				x
Fair				x
Farm				x
Gift Shop		x	x	

Table XVIII

Units Studied in Grade III of the Various  
School Systems Studied

Units	School Systems			
	Kern County	Fresno City	F.S.C. Training School	Fresno County
Community Life	x			
How the Indians Live		x	x	x
How the Eskimos Live		x	x	x
How the People of China Live		x	x	
How the People of Holland Live		x	x	x
Life on the Highway	x			
Water	x			
How the People of Mexico Live				x
How the People of Japan Live				x
Primitive Life				x

Table XIX

Units Studied in Grade IV of the Various  
School Systems Studied

Units	School Systems			
	Kern County	Fresno City	F.S.C. Training School	Fresno County
Cotton Industry	x			
Wool Industry	x			
Flax Industry	x			
Oil Industry	x			
Farming	x			
Transportation				x
Mexico		x	x	
Christmas				x
Life in Hot, Dry Lands		x	x	x
Life in Semi-Tropical Lands		x	x	x
Life in Cold Lands		x	x	x
Life in Tropical Lands		x	x	x
Life on the Seacoast		x	x	
American Indians				x
California Missions				x
Gold Rush				x

Table XX

Units Studied in Grade V of the Various  
School Systems Studied

Units	School Systems			
	Kern County	Fresno City	F.S.C. Training School	Fresno County
California Today & Yesterday	x	x	x	
Exploration	x	x	x	x
Settlement	x	x	x	x
Expansion	x	x	x	x
Unity	x	x	x	x
Development	x	x	x	x
Resources				x
Great Men				x
Shelter & Clothing				x
Transportation & Communication				x
Mexico				x
Colonial Life				x
Products				x
American Holidays				x
How Americans Earn a Living				x

Table XXI

Units Studied in Grade VI of the Various  
School Systems Studied

Units	School Systems			
	Kern County	Fresno City	F.S.C. Training School	Fresno County
Africa		x	x	
Asia		x	x	x
Australia & Pacific Islands		x	x	x
Europe		x	x	
Air Transportation & Communication	x	x	x	x
Background of Our Civilization	x			x
Life in the Middle Ages				x
Irrigation				x
How the World Started to School				x
The Great Desert & Arabia				x
Great Britain & Ireland				x
Religions of Various Nations				x
Light				x



Table XXII

Handwork Activities Carried On In Connection  
With Social Studies Units In The Kindergartens Of  
The Various School Systems Studied

Activities	Units									
	Circus	Community	Farm	Grocery Store	Holidays	Home	Nature Interest	Pets	School	Transportation
Airplanes										///
Animals	///	///					///	///		
Boats		///					///	///		///
Buildings	///	///	///	///		///	///	///	///	///
Buses	///								///	///
Child's Size Buildings		///	///	///		///			///	
Counters		///	///	///		///			///	
Fences		///	///	///		///	///		///	
Furniture		///	///	///		///	///		///	
Gifts (Wood)			///	///	///	///			///	
Signs		///	///	///	///	///	///		///	
Toys (Wood)	///				///	///			///	
Trains	///				///	///				///
Trucks & Wagons	///	///	///	///		///			///	///

F.S.C. Demonstration School—  
Fresno City

Fresno County—  
Kern County—

Table XXIII

Handwork Activities Carried On In Connection  
With Social Studies Units In Grade I of  
The Various School Systems Studied

Activities	Units													
	Airplanes	Animals	Circus	Dairy	Farm	Foods	Gardens	Holidays	Home	Pets	Playground	Playhouses	School	Toys & Toymaking
Airplanes	//													//
Animals		//	//	//	//					//				//
Boats														//
Boxes												//		//
Buildings	//			//					//			//	//	
Buses	//									//			//	
Child Size Projects					//					//		//	//	
Counters								//						
Fences	//	//			//		//			//		//		
Furniture										//			//	
Gifts		//	//					//				//	//	
Jig-Saw Puzzles					//			//		//				//
Scrap books	//	//	//	//			//						//	
Signs	//	//	//	//			//							
Table Models	//		//	//			//		//					
Toys (Wood)		//	//					//				//		//
Trains														//
Trucks & Wagons			//	//						//				//

F.S.C. Demonstration School—/  
Fresno City —

Fresno County—/  
Kern County —

Table XXIV

Handwork Activities Carried On In Connection  
With Social Studies Units In Grade II Of  
The Various School Systems Studied

Activities	Units									
	Bakery	Builders	Community Life	Doctor, Nurse and Dentist	Fair	Farm	Gift Shop	Grocery Store	Our Helpers	Our Parks
Airplanes			/					///		/
Animals					/	/			////	
Boats								///		/
Boxes								///		/
Buildings	////	///	///		/	/	////	////	///	
Buses			/					///		/
Child-Size Project		///	/				/	///	///	///
Crates		/				/		///		
Counters & Windows	////	///			/	/	////	////	///	
Fences		///				/				///
Furniture		///	///					///		/
Gifts		///					/	///	///	
Jig-Saw Puzzles			/		/	/		///		
Products - Wood	///				/			///		///
Scrapbooks	///	/	///			/	///	////		
Signs	////	///	///		/	/	///	////	///	
Table Model	///	///	///		/	/	///	////	///	
Toys - Wood		///	/				/	///		
Trains			/					///		/
Trucks & Wagons	///	/			/	/	///	////	///	
Vegetables - Wood						/		///		

F.S.C. Demonstration School —  
Fresno City —

Fresno County —  
Kern County —

Table XXV

Handwork Activities Carried On In Connection  
With Social Studies Units In Grade III Of  
The Various School Systems Studied

Activities	Units									
	China	Community Life	Eskimos	Holland	Indians	Japan	Life on the Highway	Mexico	Primitive Life	Water
Animals	/	/	/	/	/			/	/	
Boats	/		/	/	/	/				/
Buildings	/	/		/		/		/	/	/
Buses		/					/			
Child-Size Projects	/			/				/		
Dishes - Wood				/	/			/		
Fences		/					/			/
Figures	/	/	/	/	/	/	/	/	/	/
Gifts	/	/	/	/	/	/		/		
Igloo			/							
Musical Instrument	/				/			/	/	
Scrapbook - Wood	/	/	/	/	/	/	/	/	/	
Signs		/		/			/			
Table Model	/	/	/	/	/	/		/	/	
Tools & Weapons	/		/		/			/	/	
Toys	/	/		/						
Trains							/			
Trucks & Wagons							/			/

F.S.C. Demonstration School — /  
Fresno City — /

Fresno County — /  
Kern County — /

Handwork Activities Carried On In Connection  
With Social Studies Units In Grade IV Of  
The Various School Systems Studied

Activities	Units												
	American Indians	California Missions	Christmas	Cold Lands	Cotton Industry	Farming	Flax Industry	Gold Rush	Hawaii	Highlands	Hot Dry Lands	Hot Wet Lands	Mexico
Airplanes													
Animals - Fish & Bird	/	/	/	/	/	/	/	/	/	/	/	/	/
Boats	/	/	/	/	/	/	/	/	/	/	/	/	/
Buildings	/	/	/	/	/	/	/	/	/	/	/	/	/
Buses	/	/	/	/	/	/	/	/	/	/	/	/	/
Child-Size Project	/	/	/	/	/	/	/	/	/	/	/	/	/
Fences	/	/	/	/	/	/	/	/	/	/	/	/	/
Figures	/	/	/	/	/	/	/	/	/	/	/	/	/
Fixtures	/	/	/	/	/	/	/	/	/	/	/	/	/
Furniture	/	/	/	/	/	/	/	/	/	/	/	/	/
Gifts	/	/	/	/	/	/	/	/	/	/	/	/	/
Igloo	/	/	/	/	/	/	/	/	/	/	/	/	/
Movie Box	/	/	/	/	/	/	/	/	/	/	/	/	/
Musical Instrument	/	/	/	/	/	/	/	/	/	/	/	/	/
Relief Maps	/	/	/	/	/	/	/	/	/	/	/	/	/
Scrapbooks	/	/	/	/	/	/	/	/	/	/	/	/	/
Signs	/	/	/	/	/	/	/	/	/	/	/	/	/
Table Model	/	/	/	/	/	/	/	/	/	/	/	/	/
Tools & Weapons	/	/	/	/	/	/	/	/	/	/	/	/	/
Toys	/	/	/	/	/	/	/	/	/	/	/	/	/
Trains	/	/	/	/	/	/	/	/	/	/	/	/	/
Trucks & Wagons	/	/	/	/	/	/	/	/	/	/	/	/	/

F.S.C. Demonstration School — /  
Fresno City — /

Fresno County — /  
Kern County — /

Table XXVII

Handwork Activities Carried On In Connection  
With Social Studies Units In Grade V Of  
The Various School Systems Studied

Activities	Units												
	American Holidays	California Today	Central States	Gold Rush	Great Men	Jamestown	Mexico	Missions	New York	Pacific Northwest	Plymouth	Products	Resources
Airplanes													
Animals													
Boats													
Buildings													
Buses													
Child-Size Project													
Fences													
Figures													
Fixtures													
Furniture													
Gifts													
Landscaping													
Movie Box													
Musical Instrument													
Product Map													
Radio													
Relief Map													
Scrapbook													
Signs													
Table Model													
Tools & Weapons													
Toys													
Trains													
Trucks & Wagons													
Utensils													

F.S.C. Demonstration School —  
Fresno City —

Fresno County —  
Kern County —



Handwork Activities Carried On In Connection  
With Social Studies Units In Grade VI Of  
The Various School Systems Studied

Activities	Units												
	Africa	Air Transportation And Communications	Australia	Background for Civilization	China	Europe	Great Britain and Ireland	How the World Started to School	Irrigation	Life in the Middle Ages	Light	Religions of Various Nations	The Great Desert and Arabia
Airplanes		///		/									
Animals	/		//		///	/				/			/
Boats	/			/	//	/							
Buildings	/				//	/	/			/	/		
Buses				/									
Child-Size Project	/												
Figures	/		/		///	/	/	/	/	/	/	/	/
Fixtures					///					/			
Furniture		///		/	//								
Gifts	/				/								
Jewelry-Wood	/		//	/	//								
Landscaping	/	///	/	/	//	/	/	/	/	/			/
Looms				//									
Movie Box						/					/		
Musical Instruments	/		//		//					/			
Product Maps	/		//	//	//				/				
Radio Microphone		///				/					/		
Relief Maps	/		//	//	//	/		/					
Scrapbooks	/		//	//	//	/		/	/	/	/	/	/
Shoes & Clothing	/			//	//					/			/
Signs		///											
Table Model	/	///		//	//	/	/	/	/	/			/
Tools & Weapons	/			//	//	/	/			/	/	/	/
Trains				/									
Trucks & Wagons					/								
Utensils	/			//	//	/							

F.S.C. Demonstration School—  
Fresno City—

Fresno County—  
Kern County—

## CHAPTER IV

### SUMMARY AND CONCLUSIONS

#### Summary

The function of the school is primarily to provide the child with experiences and problems within the school which are commensurate with those experiences and problems he will face in his out of school activities. These experiences and problems should evolve from his group and social activities which are usually centered around unit studies. By the activity method the pupil has an opportunity to experience active rather than passive learning. The activity method places the emphasis upon the "do" in education which promotes initial learning and prolongs retention.

In this complex process of learning, handwork provides a large portion of the activity that is carried on in the modern elementary school. Since it is a method of teaching suited to all curriculum subjects, it provides the child with many opportunities to give free expression to his basic desires.

The scope of this study includes the Kindergarten through Grade VI, and involves tools used, materials used, units studied, and activities carried on in connection with these units. These grades were chosen since, for the most part, they constitute the grades that go to make up the usual elementary school in California.

The problem of the study, as here presented, is to determine what tools, materials, and activities should be included in a correlated and integrated handwork activity program and at what grade levels these tools, materials, and activities should be introduced.

The procedure used in making this study involved three distinct steps. First, a critical analysis was made of the writings of the leaders in the fields of general education and industrial education, in search for opinions regarding the function of handwork in the elementary school. Second, an investigation was made of the courses of study and curriculum guides within the area most generally served by Fresno State College. Third, the data collected from the courses of study and curriculum guides were verified by personal interview to determine if the program in theory was being applied in practice.

Because a study of this type must through necessity be delimited, only those activities which can be classified as the construction type were included. By construction type is meant those activities which involve constructional tools and materials.

### Conclusions

1. The place and function of handwork in the elementary school is conceded by leaders,

administrators, supervisors, and educators in general as being rather well established.

2. Handwork as used in the elementary school is not a subject in itself but a method suited to teaching all curriculum subjects.
3. All of the school systems studied use handwork as a method of teaching.
4. All of the systems except one centers its curriculum around unit studies.
5. Starting with a small number at the Kindergarten level, the tools used are progressively increased at the various grade levels.
6. Most of the school systems were rather well agreed as to what and when additional tools and materials should be introduced.
7. It is as illogical to expect a child to use a certain tool before he has reached the proper maturation point as it is to expect him to read before he is ready to read. Conversely it is as illogical not to allow a child to use a certain tool when he has reached the proper maturation point as it is to prevent him from reading when he is ready to read.
8. Materials like tools are progressively increased from Kindergarten through Grade VI.

9. Materials used, for the most part, are inexpensive and available to all communities.
10. A greater variety exists among the school systems concerning the selection of units than exists concerning the selection of tools and materials.  
  
This is due primarily to the fact that schools attempt to center their curriculum around pupil and community interests and needs. The same content material may be covered by one school in the study of a certain unit and by another school in the study of a totally different unit.
11. Like tools and materials, activities are progressively increased from Kindergarten through Grade VI.
12. There seems to be a general agreement among school systems as to what handwork activities should be carried on in connection with social studies units.
13. In all cases these activities provide a great variety of experiences and group work.
14. At present the program of the Fresno State College Demonstration School seems to be in line with the needs of those areas served by the college. Constant investigation and evaluation should be carried on so that these needs will always be served. Some differences do exist between

the programs of the various systems and the program of the demonstration school, but these differences do not appear to be significant.

15. Since the college occupies a position of leadership and since it is looked to for new ideas and practices, its program should be somewhat ahead of the programs of those areas served by the college.
16. Any school system which uses or intends to use the handwork method should investigate the community in order to determine needs and interests and to arrive at some decision as to what tools, materials, and activities will best accomplish its purpose - that of providing true life experiences for the pupil.



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## APPENDIX

### Suggestions for a Handwork Program

## APPENDIX

### Suggested Criteria for Selecting Handwork Activities

1. Are the activities in line with the Pupils' abilities?
  - a. Are the activities diversified so that all pupils may engage?
  - b. Can slow learners, fast learners, etc. engage in the activities?
2. Do the activities help achieve the purposes of the unit?
  - a. Does each activity contribute to a worthwhile goal?
  - b. Are there any activities which are just pulled in to keep the children busy and do not contribute to the goal of the purposes of the unit?
3. Are the processes involved in the activities compatible with the child's manipulative abilities?
  - a. Are there big muscle activities?
  - b. Are activities requiring finer coordination delayed until the children are more mature, etc.?
4. Are the activities meaningful to the children?
  - a. Do the children understand what they are doing?
  - b. Do they see the connection with the major purposes of the unit?
  - c. Can they carry on the activities with understanding?
  - d. Can they share in the planning and evaluating?
5. Do the activities provoke broader interests?
  - a. Do the activities extend pupil interest?
  - b. Do they allow for the use of new media, new skills, and ability?
  - c. Are the children developing new tastes and appreciations?
6. Are materials available for the activities?
  - a. Are varied materials available?
  - b. Can the materials be secured within limitations of the budget?
7. Is equipment available for the activities?
  - a. Is equipment in the school?
  - b. Can needed equipment be secured?



## Suggested Units and Activities

### Kindergarten

<u>Units</u>	<u>Handwork Activities</u>
The Home	A child-size house A doll house Furniture from boxes and crates Toys
The Farm	Table model of farm Animals Trucks, wagons, and tractors
Circus	Table model of circus Animals Toys Trucks and wagons
Pets	Animals Bird house Dog house

### Grade I

The Dairy	Table model of dairy farm Animals Plywood scrap book
Airplanes	Table model of airport Airplanes Buses and trucks Toys
Farm	Table model of farm Animals Trucks, wagons, and tractors Scrap book
Toys and Toymaking	Toys Jig-saw puzzles Scrap book



## Grade IV

Mexico	Table model of Mexican life Tools and weapons Looms Relief map Musical Instruments
Life in the Tropics	Animals Boats and rafts Scrap books
California Missions	Table model of mission Furniture and fixtures Fences Animals
Gold Rush	Table model of gold rush days Animals Wagons and carts Tools and weapons

## Grade V

Westward Movement	Table model of west-ward movement Tools and weapons Wagons and carts Animals Scrap books
Pacific Northwest	Relief map Scrap book Tools and utensils Trucks, buses, and wagons Product map
New York	Table model Buildings Scrap book

## Grade VI

Air Transportation and Communication	Table model of airport Airplanes Child-size radio station
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## Europe

Relief map  
Product map  
Scrap book  
Gifts

## Asia

Relief map  
Product map  
Scrap book  
Musical instruments  
Jewelry

## Irrigation

Relief map  
Product map  
Tools  
Trucks and tractors

Suggested Handwork Equipment for  
Individual Classrooms

<u>Tools and Equipment</u>	<u>Number</u>
Auger Bits - 1/4", 3/8", 1/2", 5/8", 3/4", and 1".	1 each
Back Saw - 10" or 12".	2
Brace	1
Chisels - 1/4", 1/2", and 3/4".	1 each
C-Clamps - 2" and 4".	12 each
Claw Hammers - 8 ounce, 10 ounce, or 12 ounce.	6
Coping Saws	15
Extra Blades for above	1 gross
Crosscut Saw - 8 point, 20".	1
Files - 10" mill and 10" cabinet	2 each
Hand Drill	1
1/8", 1/4", and 3/8" drills for above	2 each
Mallets - wood, 2-1/2" head	1
Oil Stones - 1"X 2"X 6".	1
Planes - jack, smooth, and block	1 each
Pliers - 6" side cutting	2
Putty Knife - 1" or 1-1/2".	1
Rip Saw - 7 point, 20".	1
Rules - 12" or 18"	24
Screw Driver - 6" or 8".	2
Sloyd Knives - 4"	4

Tools and EquipmentNumber

Tin Snips - 8" or 10".

1

Try Squares - 6".

4

## Suggested Tools for Handwork

**Auger Bits.** Are secured in the jaws of a brace and are used for boring holes in wood. Graduated in sizes by sixteenths of an inch (a #4 auger bit means  $4/16''$  or  $1/4''$ , a #6 bit means  $6/16''$  or  $3/8''$ .) Best sizes for classroom are #4, #6, #8, #10, #12, #14, and #16. Available at hardware stores -- approximate cost 60 cents each.

**Backsaw.** A stiff-backed, fin-toothed saw. Used for cutting small pieces of wood. Available at hardware stores in various sizes -- 10" to 12" size is best for school use -- approximate cost \$1.00 each.

**Brace.** Holds and drives auger bits. Available at hardware stores in several sizes -- approximate cost \$2.50 each.

**Chisel (Wood).** Used to cut grooves etc. in wood. Chisel is usually driven by striking the handle of the chisel with a wooden mallet. Available at hardware stores in various sizes --  $1/4''$ ,  $1/2''$ ,  $3/4''$ , and 1" size best for school use -- approximate cost 75 cents each.

**C-Clamp.** Used for clamping and holding wood and metal. Available at hardware stores in various sizes -- 2", 4", and 6" are best for school use -- approximate cost 45 cents each.

**Claw Hammer.** Used for driving and drawing nails. Available at hardware stores in various sizes -- 8 ounce,

10 ounce, and 12 ounce best for school use -- approximate cost \$1.00 each.

Coping Saw. Used for sawing curves and irregular designs from thin pieces of wood. Blades for coping saws are replaceable. Available at hardware stores -- approximate cost for saw-frames 50 cents each -- saw blades 25 cents per dozen.

Crosscut Saw. Used for sawing across the grain of wood. Available at hardware stores in various sizes and grades. Best crosscut saw for school use is 20"-8 point -- approximate cost \$2.00 each.

File. Used to smooth irregular surfaces on wood and metal. Available at hardware stores in various sizes, grades and shapes. Best files for school use are 10" mill files, 10" cabinet files, and 8" rat-tail files -- approximate cost 50 cents each.

Hand Drill. Used for drilling small holes in wood and metal. Available at hardware stores in various sizes and grades. Drills and drill bits for hand drill are available in various sizes --  $1/8"$ ,  $1/4"$ , and  $3/8"$  are useful sizes for school use -- approximate cost for hand drill \$2.00 each -- drill and drill bits 25 cents each.

Mallet. Used for striking the head of a wood chisel when chiseling, also used for hammering surfaces that would be marred by blows from a hammer. Available at hardware stores -- approximate cost 75 cents each.

Planes. Used for smoothing surfaces and edges of wood.

Common types are: jack plane, smooth plane, and block plane. Available at hardware stores -- approximate cost: jack plane \$3.00 each, smooth plane \$2.00 each, and block plane \$1.00 each.

Pliers. Used for twisting and cutting wire, holding objects, etc. Common types are: general utility pliers and side cutting pliers. Available at hardware stores in various sizes -- 6" size is best for general school use. Approximate cost \$1.00 each.

Putty Knife. Used for applying putty and plastic wood into cracks. Available at hardware stores in various sizes -- 1" and 1-1/2" widths are best for general school use. Approximate cost 25 cents each.

Rip Saw. Used for sawing wood with the grain or lengthwise. Comes in various sizes and grades - 20", 7 point saw is best for general school use. Approximate cost \$2.00 each.

Rule. Used for measuring. Available at hardware, drug, and department stores in various lengths -- 12 and 24 inch lengths best for school use. Approximate cost 20 cents each.

Screw Driver. Used for driving screws and bolts into wood, metal, and other material. Available at hardware stores in various sizes-- 6" and 8" sizes are good



school use. Approximate cost 50 cents each.

Sloyd Knife. Used for cutting, whittling, and carving.

Available at hardware stores and craft-supply houses.

Approximate cost 30 cents each.

Tin Snips. Used for cutting sheet metal and cardboard.

Available at hardware stores in various sizes -- 8" and

10" sizes are best for school use. Approximate cost

\$1.00 each.

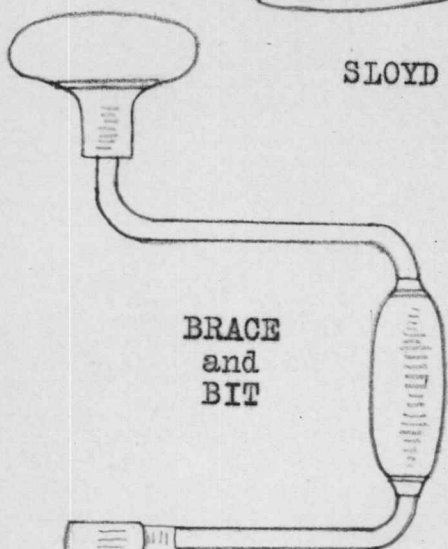
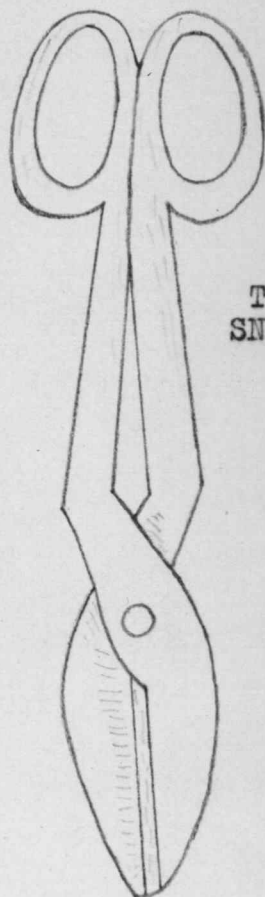
Try Square. Used for testing squareness of stock and for measuring. Available at hardware stores in various sizes

-- 6" size is good for school use. Approximate cost

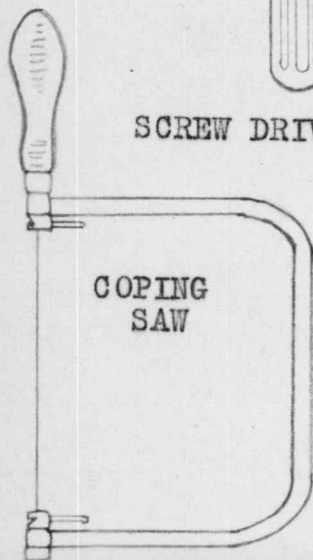
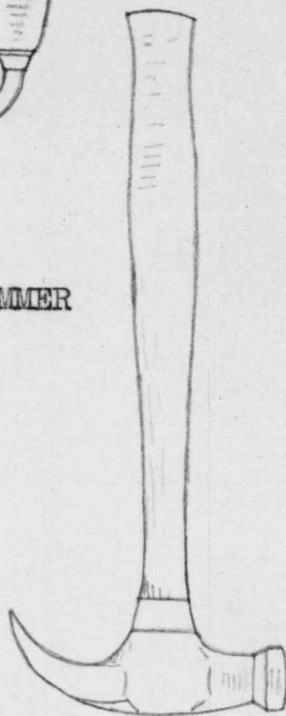
50 cents each.



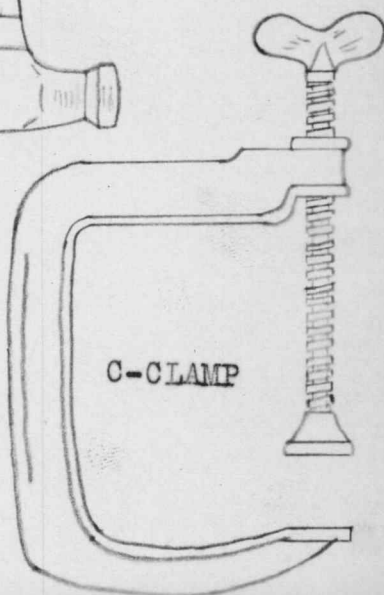
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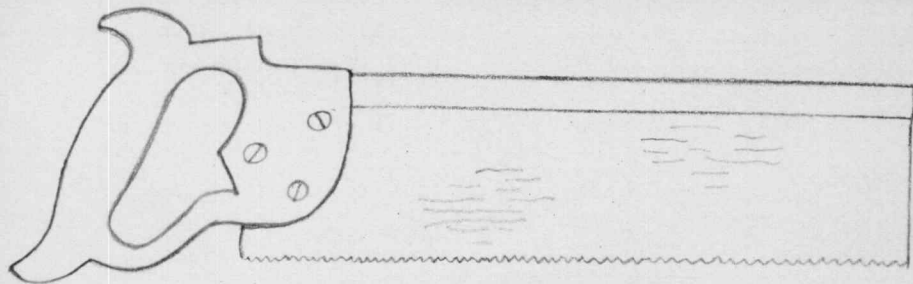
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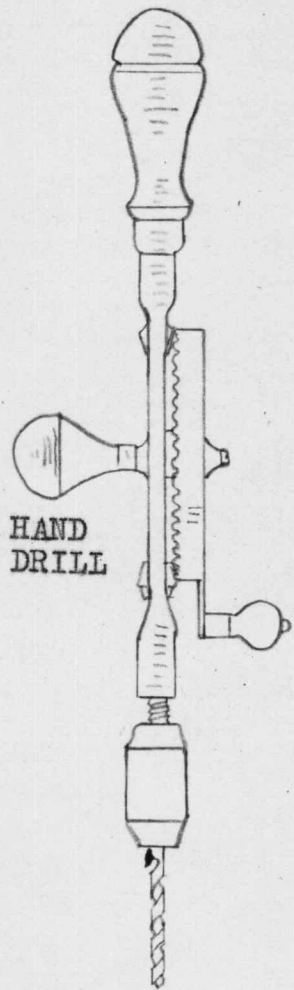
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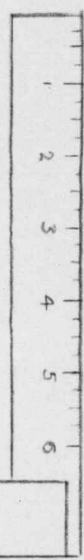
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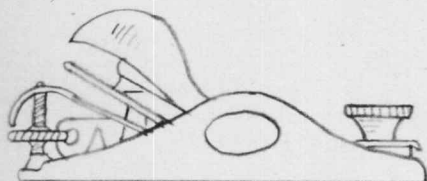
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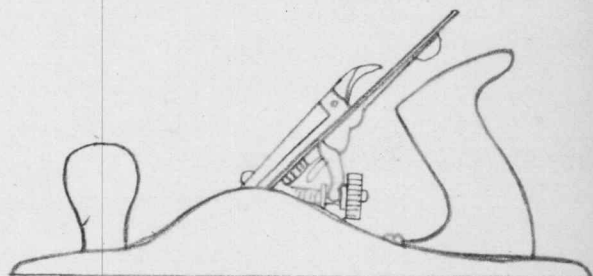
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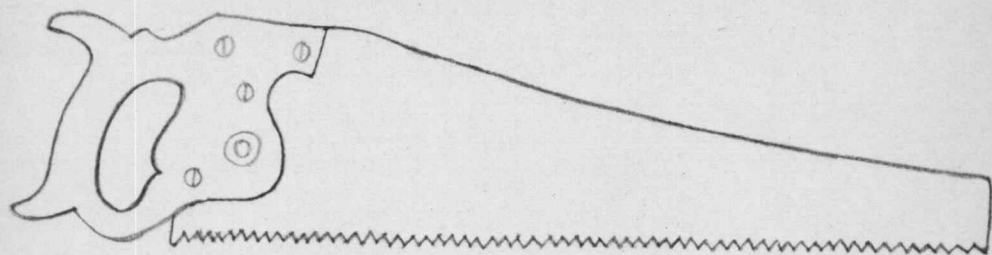
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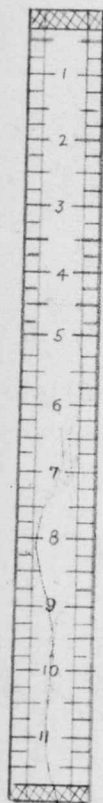
BLOCK PLANE



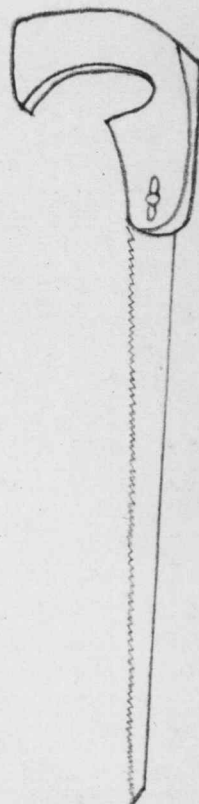
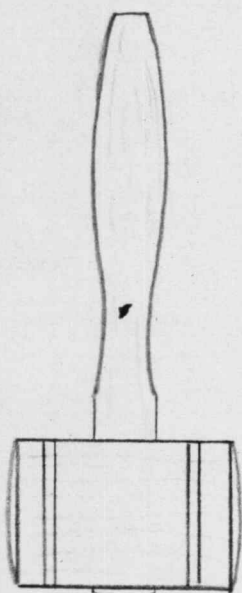
JACK PLANE



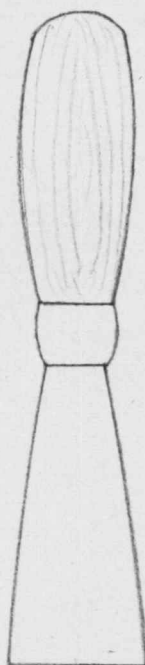
HAND SAW



RULE

PAINT  
BRUSHCOMPASS  
SAW

MALLET



PUTTY KNIFE

## Suggested Materials for Handwork Projects

Alcohol (Denatured). Used for thinning shellac and cleaning shellac brushes. Available at paint and hardware stores -- approximate cost 85 cents per gallon.

Bamboo. Used for kites, toys, model airplanes, boats, etc. Available at nurseries, hardware stores, etc. -- approximate cost 5 cents per foot.

Barrels and Kegs. Used for airplane models, boats, locomotive models, etc. Available at cooperage shops, grocery stores, feed stores, etc. -- approximate cost free to \$1.50 each.

Bolts. Metal screw thread pins. Stove bolts with nuts are most useful -- assorted sizes. Available at hardware stores -- approximate cost 1 cent to 10 cents each.

Boxes (Wood). Used for furniture, counters, shelves, transportation models, etc. Orange crates, lug boxes, apple boxes, etc. are easily obtainable -- approximate cost free to 25 cents each.

Burlap. Used for rugs, wall covering, tents and tepees, etc. Available from feed stores, grocery stores, and farms. Approximate cost free to 15 cents per sack.

Cans (Tin). Used for drums (cover open ends with rubber or canvas), musical instruments, models, etc.

Canvas. Used for tents, panoramas, model construction, etc. Available in different weights at department stores -- approximate cost 50 cents per yard.

Cartons and Boxes. Used for furniture, counters, shelves, transportation units, etc. Available at grocery stores, drugstores, etc. -- free.

Cement (Transparent -- Household). Used for cementing objects together -- will stick to almost any material. Available at hardware and drug stores -- approximate cost 25 cents for 3-ounce tube.

Dowel Rods. Used for making toys, transportation models, figures, etc. Available at lumber yards and hardware stores -- available in different sizes  $3/16$ " to 1" diameter and 36" long -- approximately 5 cents each.

Enamel. Used for painting toys and projects -- quick drying. Available at hardware and paint stores -- approximate cost 60 cents per pint.

Glue. Used for gluing projects -- comes in liquid or powder form. Available at paint and hardware stores -- approximate cost -- liquid glue 70 cents per pint; powder glue 60 cents per pound.

Gourds. Used for musical instruments etc. Available at novelty stores and from farms -- approximate cost free to 10 cents each.

Lath. Used for furniture, shelves, looms, toys, etc. Available at lumber yards in bundles of 50 and 100 -- approximate cost \$1.00 per bundle of 50.

Nails. Used for fastening stock together -- common types



are brads, common nails, and finishing nails. Have a large assortment on hand. Available at lumber yards and hardware stores -- approximate cost, brads 15 cents per pound -- nails 10 cents per pound.

Paint. Used for painting projects. Chief types are flat and oil paints. Oil paints are usually put on over flat paints. Available at paint and hardware store -- approximate cost 50 cents per pint.

Paint (Washable). Used for painting toys, projects, etc. comes in dry powder which mixes with water. Available at paint and school supply houses -- approximate cost 50 cents per pound.

Plaster (Casting). Used to make relief maps, product charts, table models, etc. Available at lumber yards in 100 pound sacks -- approximate cost \$1.25 per sack.

Plastic Wood. Used for mending cracks in wood, making figures, models, etc. Available at hardware and paint stores -- approximate cost 25 cents per 3-ounce can.

Plastic Wood Thinner. Used for thinning plastic wood when it becomes too hard to work. Available at hardware and paint stores -- approximate cost 25 cents per 3-ounce bottle.

Plywood. Used for all types of construction -- toys, models, building, etc. Available at lumber yards in various thicknesses; best thickness for school use is 1/4". Approximate cost 8 cents per foot.



Rubber (Sheet). Used to make musical instruments, models, etc. Available at hardware stores or old inner tubes may be used -- approximate cost free to 15 cents per square foot.

Sandpaper. Used for smoothing wood surfaces and for musical instruments. Available at hardware stores, paint stores, lumber yards, etc. in various grades of coarseness -- best grades for school use are #1, #1/2, and #0. Approximate cost 3 cents per sheet 8-1/2" X 11".

Screw Eyes. Used to make looms, connections on toys, etc. Available at hardware stores in assorted sizes -- approximate cost 5 cents per dozen.

Screws. Used for fastening and holding stock together. Comes in a variety of sizes -- Have large assortment on hand. Available at hardware stores and lumber yards -- approximate cost 35 cents per gross.

Shellac (White). Used for a finish on toys and projects -- also as a sealing coat for varnish. Available at paint and hardware stores -- approximate cost \$2.50 per gallon.

Spools. Used for jewelry, child-size furniture, wheels, etc. Available at tailor shops -- free.

Staples. Used to make looms, connections on toys, etc. Available at hardware stores -- approximate cost 15 cents per pound in assorted sizes.

Tacks. Used for fastening screen and stock. Cut carpet tacks are best for school use. Available in assorted

sizes, at hardware stores -- approximate cost 25 cents per pound.

Tape. Used to bind and mend edges of projects. Popular types are gummed paper tape, machinists tape, transparent tape, and adhesive tape. Available at hardware, department, and drug stores -- approximate cost 15 cents per roll.

Turpentine. Used for thinning varnish and paints and for cleaning varnish and paint brushes. Available at hardware and paint stores -- approximate cost \$1.00 per gallon.

Varnish. Used as a finish on projects. Quick drying is best for school use. Available at paint and hardware stores -- approximate cost \$3.00 per gallon.

Washers. Used on toys with movable parts. Available at hardware stores in assorted sizes -- approximate cost 10 cents per dozen.

Wire. Used to make looms, toys, figures, etc. Available in assorted sizes at hardware stores. Best for school use is galvanized wire in #12, #16, #20, and #24 gauge. Approximate cost is 10 cents per pound.