Name: Raymond F. Grey Date of Degree: August 4, 1957

Institution: Oklahoma State University of Agriculture and Applied Science

Location: Stillwater, Oklahoma

Title of Study: CORRELATING AND INTEGRATING INDUSTRIAL ARTS WITH THE SOCIAL STUDIES

Pages in Study: 31

Major Field: Industrial Arts Education

Scope of Study: This study deals with three basic phases of industrial education (1) The use of crude tools began with pre-historic man's efforts toward survival and protection. The development of tools has had a tremendous impact upon man's life physically, socially, and educationally. (2) The history of industrial arts parallels man's sturdy advancement throughout civilization to the present. (3) The correlation and integration of the industrial arts and social studies program reveals certain philosophies inherent in modern education.

Findings and Conclusions: The material concerned with correlating and integrating industrial arts was in articles and pamphlets.

It is the opinion of the writer that further study is needed in not only the correlating of industrial arts and social studies, but also in the integration of other related subjects in the curriculum.

ADVISER'S APPROVAL C. E. Hall

CORRELATING AND INTEGRATING INDUSTRIAL ARTS WITH THE SOCIAL STUDIES

By

Raymond F. Grey

Bachelor of Science

Colorado State Teachers College

Greeley, Colorado

1946

Submitted to the Faculty of the

Graduate School of

Oklahoma State University

of Agriculture and Applied Science

In Partial Fulfillment of the Requirements

For the Degree of Masters of Science

1957

CORRELATING AND INTEGRATING INDUSTRIAL ARTS

WITH THE SOCIAL STUDIES

RAYMOND F. GREY

Master of Science

1957

REPORT APPROVED:

C. R. Hill

Associate Professor and Acting Head
School of Industrial Arts Education

L. H. Bengtson

Associate Professor School of Industrial
Arts Education

Robert Maurice

Dean of Graduate School

ACKNOWLEDGEMENTS

To Professor C. L. Hill, of the Department of Industrial Arts for the fine assistance, suggestions, so untiringly given throughout the preparation of this study.

To the instructors of the Department who provided information and materials which proved invaluable in this study.

To my parents for their interest and understanding of this effort, and

To my wife, Barbara, to whom I am doubly indebted for her patience, encouragement and assistance.

To each of these persons, my sincerest thanks.

R. F. G.

TABLE OF CONTENTS

CHAPTER PAGE

CHAPTER I

INTRODUCTORY STATEMENT

Educators today are aware of the fact, that a number of attempts under diverse names have been made to effect some educational concept as the modern world requires. These attempts have been variously called correlation, fusion, and integration. In all the purposes are the same, the degree and method of concept has varied. The term correlation has been used in this report because it has had the greatest showing and may suggest to more people the idea of making clear to students the relationship between the various subject matter fields and their place in the total scheme of life.

The Purpose of the Study. The purpose of this study was made with the idea in mind that the material included, will be sufficient evidence to prove that correlation of industrial arts with the social studies will be helpful. This material may be of value to other teachers who are interested in correlating subjects in their respectful fields.

DEFINITION OF TERMS

A number of terms that are used throughout this report must be defined in order to understand the relationship that exist between the different terms found in this report.

Curriculum: The word curriculum used in this report means all the experiences students have under the direction of the teacher. Reinoehol and Ayers defines curriculum as

> An organized series of experiences carried under the guidance of an understanding teacher toward certain socially desirable goals which have been decided upon in terms of the needs of the learners, and which will provide for his continuous growth and development. (12, page 334)

Bonser in his book on "The Elementary School Curriculum", said

> The Curriculum represents the experiences in which pupils are expected to engage in school, and the general order of sequence in which these experiences are to come. (4, page 1)

Correlation. Scientists use the term correlation in a very strict manner to mean .... "that a causal or empirical connection exists between phenomena". (14, page 6)

Industrial Arts. The term industrial arts was first used by Bonser in 1910. The term has been defined by a number of educators in the field of industrial arts. Since that time, Bonser says that,

> "as a subject for educative purposes, industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes." (5, page 5)

In Wilber's book, Industrial Arts in General Education, is found the most popular definition of industrial arts. Wilber says

> ..... industrial arts will be defined as those phases of general education which deals with industry--its organization, materials, occupations, processes, and products--and with the problems

> resulting from the industrial and technological nature of society. (15, page 7)

This definition does not differ to much from the other definitions in this report, but it stresses the function of industrial arts in public education and its relationship to general education.

Social Studies: The term social studies was defined by Bining as

> ..... those related to the origin, organization, and development of human society and to the improvement of the social, economic, political, and cultural conditions under which man lives. They treat all the activities, achievements, and attainments of mankind and are as extensive as the scope of human interests and associations. (3, page 1)

Method Used in Collecting Data. The data for this report was collected from pamphlets, magazines, and books, found in the library of Oklahoma State University, Stillwater, Oklahoma. Articles and books were read for additional background in the preparation of this report.

Limitations of the Study. Due to the fact that very little has been written on this specific subject, this report is limited to periodicals devoted to the interest of correlating industrial arts with other subjects.

The purpose and definitions contained in this chapter has a direct relationship, with the educational and social life of early man, and his employment of tools found in Chapter II of this report.

CHAPTER II

HISTORY OF MAN'S EMPLOYMENT OF TOOLS

When one goes back far enough in the history of man, he finds a time when man possessed nothing but his hands with which to protect himself, satisfy his hunger, and meet all of his other needs.

The earliest man who began in this situation had to learn everything for himself by slow experiences and long effort, and every tool no matter how simple, had to be invented.

The saw and the file were the first tools known to man. When early man wanted to abrade or file an object, sand coral, bone, and grit were used to aid him to do the task at hand. Since there is no record of the earliest existence of the file and saw, it may be reasonably ascertained that the process by which they were discovered was accidental rather than incidental.

Ancient Development. As in many other things, nature was responsible for man's development of the file.

> "There is a type mollusc having a rough tongue with which it rubs or files through the shells of other molluscs on which it feeds. The wasp, also has a rasp-like organ with which it abrades dry wood, afterwards mixing the dust with gluton glue and that of the cow are familiar examples of abrading organs in the animal kingdom." (8, page 166)

Crude and slow as this instrument seemed to have been, it served man very well throughout the stone and bronze age. Up to the time of the discovery of iron, natural

abrasives were used extensively. Copper nor bronze was hard enough to use as a material for the making of artificial files, although, evidence shows attempts were made to use both for that purpose.

The North American Continent has yielded more examples of the natural files of the ancients than any other part of the world. Stones were used for abrading purposes by the ancient mound builders and cliff dwellers of North America. Although both races left traces of their familiarity with certain types of metal from which they made tools, ornaments, and other articles, neither race, apparently, was acquainted with the artificial file. Nothing of this nature has ever been found so far as it is known, but several examples of the stone file have been found.

Archaeologists do not definitely know when the saw was first used, nor do they know how they were first used, or the reason for their original use. It is established, however, that the saw was one of the very earliest tools employed by man. Archaeologists estimate that the saw dates back at least to the Neolithic Age. This means that man used saws before the discovery of metals, even though they were very crude implements. It is generally believed that nature provided the examples which inspired the invention of saws.

> "A Grecian fable, describing the origin of the saw, relates how Talus (or Perdix), having found the jawbone of a fish (according to some authorities, a serpent), produced imitation by cutting teeth in iron." (8, page 88)

The earliest saws were simply flakes of flint, which were notched by chipping. They were not more than three (3) inches long, with irregular dull teeth. These saws were used chiefly in the making of ornaments from bone and soft stones. Flint saws have been discovered in caves of the "reindeer period" in France, in the ancient stone heaps of Denmark, Sweden, Italy, and practically throughout Europe.

Tools other than the file and the saw were also made from stone by primitive man. He made the first hatchet, which was almond shaped, about six (6) inches long, three (3) inches wide, one (1) inch thick, and had one sharpened edge. This important tool was used as a knife, a scraper, a hammer, and an ax. The Bone Tools such as needles, spears and barbed harpoon heads appeared later in the period.

Resemblances are seen in ancient tools though they were discovered in different parts of the world. America's records of ancient man were found in Foslon, New Mexico. The tools consisted of flint with ragged edges made by flaking and was similar to those found in Europe. Their time dates back approximately 6 or 7 thousand years.

The transition from the stone age to the age of metal was a mile stone in the progress of man. Wood and stone tools took little thinking to produce, but to smelter ores and pattern tools from metals required thinking and planning. Copper needles have been found in Egyptian graves

which date back to about 4000 B. C. "By the middle of the 4th Millennium B. C., copper tools and weapons were very common in Egypt." (6, page 46)

To make bronze, an alloy of copper and tin, required more skill, but finer and better tools could be made from it than from copper alone.

Early Development During the Iron Age. The development of iron introduced an entirely new era. Up to this time any material used was very inefficient because of the lack of properities to be sharpened and to maintain a sharp edge. The work was very slow and much patience and persistence were required to operate these tools. Now a metal was discovered that had the property of being formed to a desired shape, such as a sharp edge, and could be maintained by abrading or whetting it against a stone.

> "The Assyrians, who were about the first race to profit by the discovery of iron, made a straight rasp of iron which is exactly like that of modern times." (8, page 120)

Ancient man was quite clever in originating tools. Some Ancient Roman files that have been found show evidence of producing the teeth on the file by filing. This was replaced by cutting with a chisel made from a good grade of steel. The later method seemed much faster and more efficient.

Along with the introduction of the iron file was the saw which was made from metal. During the middle ages a Monk, Theophilus Presbyter, gave the world several formulae for tempering iron instruments. Once the file had been

forged to the desired shape it was smoothed then the teeth were cut on it.

> "He describes the hardening process very clearly and curiously enough, it does not differ greatly from some present day methods." (8, page 122)

About 1490 A. D. the first known attempt to cut files by machine was invented by Leonardo DaVinci, a noted painter, scientist, and engineer. Little recognition was given him, and in 1750, Chopitel, a Frenchman, invented a machine which actually cut the files.

The first circular saw was invented in England by Samuel Miller, but it has claimed that circular saws were used in Holland nearly 100 years before that time. At the close of the 18th century, wood working was done by the hand method. The attempts at inventing machines had proven nearly useless, however, this was the marking of a new area of the industrial revolution.

> "Hand methods were giving away to the newly invented machines in many different fields, notably in the textile industry, and wood-working was soon to undergo the same revolutionary change." (11, page 2)

In 1799 Samuel Bentham succeeded in inventing several machines where ten unskilled men and one machine could do the work of one hundred and ten skilled men. Because of the success of this experiment, money was given him by the government to further perfect the circular saw.

Current Development. Machines and hand tools are no longer made in a crude manner but has become precision work. Many machines were invented such as the planer, jointer, and the variety saw. Improved methods of making

high grade steel makes possible better hand tools. Early American and English furniture was often the product of a very proud and skillful craftsman who prided himself in his fine hand tools. Most of the work was done with hand tools and the early cabinet maker boasted of his choice of steel that went into the making of tools. Many times these were made by the craftsman himself.

Basically hand tools are constantly undergoing changes. Today we have the iron bed plane instead of the wooden bed. The files we now have are precision instruments and are made according to the United States Bureau of Standards.

The file and saw will be used by the writer to show the current development of tools. Both are good examples of the exactness of their manufacture and both show the development of the high grade steels that are used in tool making today.

To fit the needs of industry today, more than 3000 types, sizes, and cuts of files have been made to increase efficiency of work on the various kinds of metals used.

The manufacture of a file goes beyond the walls of the factory to the research laboratory. Here the study deals with the steel, design, performance, and metallurgy. A high quality file must first start with high quality steel. The process of preparing and finishing the file involves forging, annealing, smoothing, cutting, hardening, and finishing.

The forging shapes the point, body and tang of the file. Annealing conditions the steel to insure uniform grain, the large furnaces are controlled and the heat is kept under strict laboratory conditions. The file is then ground to remove scales, then drawfiled to insure even filing surfaces. A machine then cuts the teeth on the file blank. The file is again heated and hardened. After hardening the teeth are sharpened and prepared for service. During all of these operations the file is carefully watched and inspected.

The same care is given the making of a saw. The heat from the furnace is controlled to the closest degree and laboratory supervision is exercised over every process. Although the use of high quality steel is important in making a fine saw, careful and skilled workmanship is also required.

There are several operations to the making of a saw. These operations are shaping, tempering, taper grinding, tensioning, setting, sharping and finishing. The saw is shaped to produce a good balance then tempered to insure cutting points that remain sharp and retain their set. Taper grinding makes the saw blade of proper thickness and gauge along the edge and on the back. The saw is tensioned to be sure it will stand up in the cut, then it is set accurately. It is then expertly sharpened and finished so as to give the saw a nice appearance. During these many operations the saw is checked and inspected many times.

Manufacturers are continually striving to perfect better steel and processes so as to make their tools of higher quality. Hand tools are today made with precision machinery and those using them now enjoy the progress, and development which started thousands of years ago.

CHAPTER III

HISTORY OF INDUSTRIAL ARTS

The history of industrial arts had its beginning when human life appeared on the earth and has steadily advanced from that time until the present. The contents of this chapter are broken down into the important periods of education that have a direct bearing on industrial arts, the important leaders and other events that influenced the program.

PART A

EARLY HISTORY

Manual skills were developed in the period of savagery to help the pre-historic people secure food, provide shelter, and devise better weapons for the protection of himself and family. These skills were passed on to the next generation by imitation. Also new skills and procedures were developed by each descendent.

The ancient Jews believed that a boy should be taught a trade, as well as religion. The Jewish law placed the responsibility of teaching the trade on the father. As a result of this thinking, each boy was sent to school for the Rabbi's instruction each morning and the afternoons were spent with the father, learning the father's trade.

Many a famous Rabbi was noted, in addition to his religious duties, for his skill or trades. "The Rabbi who

gave one-third to study, one-third to prayer, and one-third to labor was mentioned for special honor." (10, page 14) It was the national belief of the Jews that a manual occupation was one important step in developing useful citizens of society.

Francke. August Herman Francke (1663-1727) primarily aimed to provide religious education for the poor and neglected children. His orphanage, therefore became the most important part of his institution, but besides religious instruction, he gave practical instruction including several manual arts. He observed that children "of their own accord are always busy at building and working, and that this may very easily be turned to some useful end by the teacher." (1, page 76) His orphans were taught to spin, sew and knit (even the boys were taught to knit). This was done in part for economic reasons.

As early as the beginning of the eighteenth century some of the men who were working under Francke recognized the need for a new type of secondary school giving emphasis to science, art, and the trades and industries--one quite different from the usual classical school or gymnasium. They therefore organized a curriculum which included mathematics, mechanics, natural science, and handicrafts.

Rousseau. Rousseau, a French philosopher of the eighteenth century, recognized that skill of hand is necessary for young men. He believed that a trade involving

hand skills was a safeguard against personal want and poverty. Rousseau felt that a young man who has lost his station in society has little to turn to except a well developed skill. He urged systematic instruction and training in some form of manual industry. He believed in adjusting education to the natural impulses of the child.

Fellenberg. Phillip Emanuel von Fellenberg established the Hofwyl School in 1799 using many of Pestalozzi's principles and attracted much attention in Europe and America.

Fellenberg believed education must be reformed and extended, but that each class of people should be taught separately. Manual labor was used at Hofwyl for physical training as well as for practical experience. Agricultural, manual labor, and industrial reform schools in large numbers were established as a result of the development at Hofwyl.

Froebel. Froebel, a pupil of Pestalozzi, took another step in the direction of eliminating meaningless study and establishing the modern idea of self-activity. Froebel felt that children are creative and receptive and express themselves in action. He thought that education should come from things which the child knows, things which are a real part of his life.

In 1829 Froebel made the following statement regarding a proposed school:

> The institution will be fundamental, inasmuch as in training and instruction it will rest on the foundation from which proceeds all genuine knowledge and all genuine practical attainments; it will rest on life itself and on creative effort, on the union and interdependence of doing and thinking, representation and knowledge, art and science. The institution will base its work on the pupil's personal efforts in work and expression, making these, again, the foundation of all genuine knowledge and culture. Joined with thoughtfulness, these efforts become a direct means of instruction, and thus make of work a true subject of instruction. (1, page 164)

John Hernrich Pestalozzi. Pestalozzi was known as the father of industrial arts, was the first man to organize hand work as a regular part of a school program in his many schools and repeated the successful use of manual labor both skilled and unskilled. He also used the later of these two methods in instruction. "Either we go from words to things or from things to words." (10, page 119) The process of teaching from the real objects took the pupil into the fields and shops demonstrating the understanding of the skills desired. Although Pestalozzi never used actual tool instruction, his drawing and form study was definitely in the industrial arts field. As a direct result of his Industrial School established in 1774, many such schools were established in all parts of Europe immediately thereafter.

Apprenticeship. The apprenticeship system came into existence as the craftsmen progressed in knowledge and new skills were developed. It was in use even before any type of formal education was available to the lower classes of population. Apprenticeship, at one time, was used even

before any type of formal education was available to the middle and lower classes of population. Apprenticeship, at one time, was used as a final supplement to the formal education in about all types of industrial trades. Education was made available to the paupers and lower classes of the population in this way, since the apprentice was given benefit of all the master's knowledge. The industrial revolution created a need for skilled workmen faster than this process could prepare them; therefore, it became necessary to devise another method which was a vital factor in industrial arts education.

PART B

DEVELOPMENT OF INDUSTRIAL ARTS IN AMERICA

The development of industrial arts, as well as many of the social traditions, was greatly influenced by the changes as they took place in Europe. The idea of free education which prevailed in the Colonies afforded a better opportunity for the education of all social classes.

Early American Education. The first school in America grew out of the church as a direct result of the Protestant Revolt in Europe. The early settlers came to this country for freedom of worship, so the establishing of parochial schools was to be expected. In 1642 and 1647 laws were passed in Massachusetts which laid the foundation for the American Public educational system. These laws were concerned with compulsary education, standards

set and enforced by the State. As early as 1685, Thomas Budd proposed a plan for free public education to include art or a trade to be selected by the student. While this plan was not carried out, it shows a trend of thinking in the early days, of American education.

Colonial. The industrial training before colonization was of the same type carried on in the monastic schools of Europe. Schools were in operation in what is now New Mexico, California, and Florida, as early as 1630. These schools were started by Catholic missionaries. Instruction in tailoring, shoemaking, carpentry, carving, blacksmithing, brick making, and stone cutting, was given. The instruction was taken over by the natives as they became skilled. In addition to the crafts taught for men there was instruction for the girls.

The apprenticeship method of instruction carried on in the English Colonies was much the same as that practiced in England. Since the apprenticeship was under the control of town and colony authorities, and because there were no guilds, it developed more as an educational institution. Legislation was passed by most of the Colonies for the benefit of the apprentice. There were faults in the American Apprenticeship's instruction just as there were in Europe. Even though many of the masters were indeed artisans they could neither read nor write. This led to the establishment of the first elementary school in America.

In 1647, an order was given by the General Court of Massachusetts for every town of fifty families to select a teacher to be paid by the inhabitants. Industrial arts was not mentioned, but because of the puritan distaste for idleness this training was probably given in the home. The most important outcome of this court order was the establishment of the "free" schools in America.

In 1685, a plan for public education was proposed by Thomas Budd for Pennsylvania and New Jersey. This plan called for compulsory education for all children, the rich, the poor, and Indians. Budd proposed to teach each child that "Art, mystery, or trade that he or she most delighteth in." (1, page 12) There is no evidence that this plan was ever put into practice, but it may have had some influence on education of that day.

One of the notable schools established during the eighteenth century was De La Howe School at Abbeville, South Carolina, founded in 1787, attended by both girls and boys. The boys were primarily engaged in farming and gardening, while the girls practiced the household arts.

The Industrial Revolution. Before 1800, most families in America were self-sufficient since there was no industrial system. Soon after 1800, the importing of steam engines into Massachusetts from England and Eli Whitney's cotton gin introduced the Industrial Revolution in America. Although the United States did not become an Industrial country until after the Civil War.

Working conditions were deplorable, for many years. No attention was given to safety, health, worker's welfare, light, ventilation or sanitation. Frequent deaths and serious injuries were considered as a price that had to be paid for industrial progress.

The Modern Period. In the period of technological and industrial growth in America, the fact was recognized that industrial arts should contribute far more than disciplinary training and the development of hand skill. Charles Richards was the first to use the term "industrial arts", in the Manual Training Magazine in October, 1904. This was the beginning of the modern period in the development of industrial arts in America. During the period following the first World War, industrial arts assumed a vocational roll. Industrial arts subjects in high schools were conducted to prepare students as completely as possible for a skill trade or occupation.

> ..... After the first world war, it became common practice to justify industrial work in the schools on the basis of trade or prevocational values. (15, page 2)

By the third decade of this century, industrial arts was being accepted as a part of general education. The Smith-Hughes Act of 1917 and other acts provided for and made possible many vocational schools, opportunities, thereby relieving industrial arts of strictly vocational objectives.

> The assumption throughout is that the purpose of industrial arts in the intermediate years of school life is not to provide vocational education,

> but to prepare the way for such training. The general feeling, apparent on every hand has been that there exists a certain kind of native endowment known as manipulative ability, and that the chief guidance function is to determine whether or not it is possessed by a given individual. (13, page 7)

Industrial arts began to include many activities striving for more useful objectives. Since the immense development of industry, we now recognize industrial arts as a school subject, with the responsibility of providing a proper and adequate education which will prepare the student to live in the world today.

Woodward. Professor Calvin M. Woodward of Washington University, St. Louis, Missouri, was a vistor to the Russian exhibition. He was so impressed with the Russian system that he wanted to offer manual training in Washington University Polytechnic school. He visioned mechanical arts analyzed and taught under the same principles that other courses in the curriculum were taught. Woodward favored four to eight hours of instruction per week in the shops to give boys instruction in the use of common tools. He felt that manual skills would help to prevent boys from becoming idle or being employed in already overcrowded occupations.

Dr. Woodward claimed students who graduated from manual training high schools developed better intellectually and made better choices of occupations.

Bonser. In 1913, Frederic G. Bonser, Professor of Education at Teachers College, Columbia University, sought to help reorganize the curriculum of elementary education

by full use of industrial arts. Bonser says:

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

Gordan O. Wilber (1897-). Gordon O. Wilber received his Doctor of Philosophy Degree at Ohio State University. Dr. Wilber was an instructor of high school industrial arts for eleven years before he received an invitation to join Oswego, New York Teacher's College, as Director of Industrial Training. He is a member of the American Industrial Arts Association, American Vocational Association, Epsilor Pi Tau and Phi Delta Kappa. He was president of the American Industrial Arts Association in 1951 and 1952. (16, page 19) He is a contributor of articles to the Industrial Arts and Vocational Education Magazine. Dr. Wilber is the author of the books: Pewter Spun, Wrought and Cost; Aeronautics in The Industrial Arts Program, and Industrial Arts in General Education.

Educators today are aware of the fact, that correlating subject matter gives students a broader view of the subject. Chapter IV of this report tells why correlation of subjects should be carried on in schools today.

CHAPTER IV

CORRELATING AND INTEGRATING INDUSTRIAL ARTS WITH SOCIAL STUDIES

Industrial Arts used for educational purposes, include a phase of general education which provides opportunities for observation, study, and experiences centered on tools, machines, and processes through which man has adapted his physical world to serve his needs. This chapter is concerned with the philosophy of general education, industrial arts, history and civics, and the ways and means by which materials and products used in daily living are obtained and prepared. The changing of a piece of rough wood to a finished product, the making of pottery, and the preparation of fibers for weaving are some of the simple processes within the industrial arts area which students can understand and which contribute to their adjustment in our complex technological culture.

Philosophy of Social Studies: The citizens of the United States have participated in two wars within a span of twenty years. During the period between these wars they have experienced the most severe depression in American history. Yet the fabric of American culture has endured. Democracy has not only been maintained but has acquired new meaning, new strength, and a new resolution. A resolution that wars shall end and peace be maintained; that economic well-being and high standards of living shall be held and increased; and the values of Democracy

shall be more broadly achieved in a wider equality of opportunity, greater mutual respect, and a fuller realization of the ideal of the brotherhood of man.

To realize this philosophy of social studies, American people will require a high level of competence. The development of this competence is a major obligation of public education. This is especially true in the field of the social studies. The support of this belief by such founders of this country as Jefferson, Franklin, and Madison is well known, and Washington in his Farewell Address said:

> "..... Promote, them as an object of primary importance, institutions for the general diffusion of knowledge. In as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened. (7, page 169)

The soundness of Washington's advice concerning education has been well substantiated by the history of the United States. In approaching a consideration of the education of the young citizens, it is good to trace the development of the social studies instructions within the framework of American culture.

Philosophy of General Education: In the days of Jewish civilization, the father had the task of educating the boy. The boys were taught to hunt, fish, and fight by their fathers or some male member of the tribe. The girls were taught by their mothers the art of cooking, sewing, and caring for the smaller children. This primitive type of education which seems to be far different from the present day educational program, contained the same theory

which educators of modern time hope to develop in youth today. Therefore, the philosophy of general education can be described as that which transmits a way of life.

Philosophy of Industrial Arts: The philosophy of industrial arts has developed from many situations and many leaders in the field of industrial arts over a period of many years. Friese said:

> "Learning and developmental experiences in Industrial Arts, through types of experiences not otherwise available, are essential in the complete social education of every boy in a dominantly Industrial Democracy." (14, page 58)

This statement is used more than any other of the many statements on the philosophy of Industrial Arts.

CORRELATIONS

Place of Industrial Arts in the Curriculum: Traditionally, industrial arts has been thought of as the study of tools and machines. The concept which defines this area as the "techniques of changing raw materials for man's use" and relates industrial arts closely to the study of human relations is a new and developing concept in the school. New meaning has developed due to the changing culture, the present world crisis, and the increased need to develop well-informed citizens. This concept is a part of the changing techniques of teaching and the development of a new and integrative curriculum. Industrial Arts, therefore, should be an effective part of the school program which is carefully planned around a "core" curriculum.

The curriculum of today's school usually consists of a series of carefully selected units which use the social studies as the center of study. Important information from the social sciences of geography, history, economics, and others are used to help children understand man's problems in relation to his social and physical environment as well as his historical heritage of institutions and values.

Because human activities are influenced by such things as climate, natural resources, communications, and technological inventions, a core unit will draw upon other subject matter areas for information. Art, physical and natural sciences, language arts, mathematics, industrial arts may be used to make more meaningful the problems which arise from the study of human relations.

Understanding of Productive Processes and Materials: Whether or not industry produces cheap and unsatisfactory materials or materials of the best quality will depend largely upon the intelligence of consumers of tomorrow, who are the students of today. The understanding of products is the responsibility of the producer and citizen. For the producer, industrial arts teaches an understanding of changes made in raw or natural forms of materials and how to be intelligent and responsible in the control of industrial production. As consumers, children learn through industrial arts experiences to be efficient in selection, care, and use of the products of industry. Both of these economic and social functions are important

to the life of every citizen in a democracy.

Enriching the Goals of Social Studies: Activities which explore the industrial processes with authentic materials will help students understand the problems that people in all parts of the world and during their past life, have faced in changing raw materials for their use. This is the special contribution of industrial arts to the general education of students who live in an industrial technological culture.

Students need to know how and why man utilizes natural resources and materials according to his needs; they require an understanding of the difficult processes in a machine based society.

> "Well planned industrial arts will also pay big dividends in the acquisition of an understanding of human insights, relationships, and institutions as they relate to the industrial nature of our society. Not only will proper guidance develop such understandings, but it will also promote growth in skills, habits, and attitudes concerned with planning, thinking, sharing, evaluating, and judging because work in the industrial arts lends itself to problem-solving methods of learning." (13, page 288)

Industrial Arts is more than developing a technique or knack of using hand tools. Industrial arts students are taught the intellectual and social significance of a product or process, as well as the physical and manipulative phase. Broader concepts are sought than the mere demonstration, for example, the operation of a hand loom. Students should know how the loom is constructed as well as the basic operation. They should be taught to develop an appreciation and understandings which relate the small

hand looms to the larger and more powerful machine looms. They should learn how such machines make their present day life more healthful and economical. The field of industrial arts thus contributes to the study of man's work activities in the social setting and in his cultural environment, which he has created through inventions, tools, and processes. Industrial Arts cannot be an isolated, separate subject because the techniques and processes with which it is concerned are a part of man's life and way of living; they have been dependent upon, and in turn, have affected human relations.

Providing First Hand Experiences: The opportunity to have a "doing" experience through manipulative activities and through working with things in specific processes give students hand experiences in supplementing the aims of social studies into the industrial arts program. These firsthand experiences are an important part of the make-up of industrial arts. These activities provide reality of personal experiences and bring clear meaning to problems of social significance. The development of manual dexterity, traditionally emphasized in industrial arts, is actually a secondary outcome of these manipulative activities; the major function is the stimulation of the student's thought-processes.

The many tools man has devised to change raw materials into the things he can use is one of the factors that has made civilization possible. The understanding of the file, saw, and other tools is only a part of the experiences

contributed by industrial arts. The use and study of these tools in relation to social situations are provided. Through use and study, students relate tools to a concept of technology which becomes more clear to them.

The Problems of Life Related to Industry: Industrial Arts develops an understanding of the problems of life that are related to changes in raw materials. Industrial Arts supports and supplements the aims and outcomes of the social studies through the primary emphasis of industrial arts upon the changes in raw materials. The social maladjustment associated with technical progress can best be understood by those who understand technology. The problems resulting from changes in social values and from changes in social arrangements made to conform with rapid advances in technology and in use of scientific tools and materials present a great challenge to democracy. Through industrial arts experiences students are made aware of the social results such as mass production in industry, specialization, introduction of plastic, and modern transportation and communication. The conditions and problems of many specific industrial situations are studied and appreciated. With these appreciations, children can develop an intellectual and permanent interest in the changes and development of industry and the consequent social problems.

Chapter V of this report will give the summary of the findings and concluding statement for the materials found in this report.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

For the purpose of illustrating the correlation and integration of industrial arts with social studies, only the processes that deals with the two curriculum units were presented in this report. The summary, conclusions and recommendations of the materials found in this report will be given in this chapter.

Summary: In correlating and integrating industrial arts with the social studies, Bonser and Mossman give a definition of industrial arts that fits very well in this report. The industrial arts shop offers the materials such as tools and equipment, for the opportunity to make the changes in raw materials as stated in the definition of industrial arts: only activities which contribute to the industrial-arts concept. Most of the Industrial Arts activities included in this report deals with the processes and changes of raw materials, communication, and transportation.

Conclusion: The experiences gained in industrial arts justifies the following conclusion with regard to correlating the industrial arts with the social studies.

> " (1) What a child can do with his hands is a good indication of his understanding. (2) Doing things with the hands should be an integral part of the learning activities in any area or subject. (3) Pupils enjoy the chance to prove their knowledge or understanding by doing handwork. (4) Teachers can make their teaching more effective and practical by working in the shop with their pupils.

> (5) Several teachers can work together effectively in providing hand activities for children learning about various things. (6) Effective tool skills can be acquired through this program of correlation. (7) Correlation vitalizes each subject concerned. (8) Correlation gives more interest in acquiring information and greater satisfaction in expressing ideas through action as well as through words. (5, page 5)

Recommendations for Further Study: There are many more processes that could be introduced in this report. Much more could and should be written on each topic, because each one could be a topic for a report or thesis.

Much research and further study should be made on correlations and integration of not only industrial arts and social studies, but attempts should be made to correlate every subject in the curriculum whenever possible.

A SELECTED BIBLIOGRAPHY

Books

1. Bennett, Charles A., History of Manual and Industrial Education to 1870, The Manual Arts Press, Peoria, Illinois, 1926, 401 pages.

2. Bennett, Charles A., History of Manual and Industrial Education 1870 to 1917, The Manual Arts Press, Peoria, Illinois, 1937, 566 pages.

3. Bining, A. C. and D. H., Teaching the Social Studies in Secondary Schools, McGraw and Hill Book Company, Inc., New York, 1935, 376 pages.

4. Bonser, Frederick G., The Elementary School Curriculum, The MacMillan Company, 1930, 466 pages.

5. Bonser, Frederick G. and Mossman, Lois C., Industrial Arts for Elementary Schools, The MacMillan Company, New York, 1924, 491 pages.

6. Breasted, James H., The Conquest of Civilization, Harper and Brothers Publishers, New York, 1926, 717 pages.

7. Commager, Henry S., Documents of History., Appleton-Century-Crafts, Inc., New York, 1948, 759 pages.

8. Desston, Henry, Desston Tool Manual for Schools Shops, Henry Desston and Sons, Incorporated, Philadelphia, U.S.A., 1927, 206 pages.

9. Friese, John F., Course Making in Industrial Education, The Manual Arts Press, Peoria, Illinois, 1946, 297 pages.

10. Graves, Frank P., A Student History of Education, The MacMillian Company, 1921, 445 pages.

11. Hjorth, Herrman, Machine Woodworking, The Bruce Publishing Company, Milwaukee, Wisconsin, 1949, 254 pages.

12. Reinoehl, Charles M. and Ayer, Fred C., Classroom Administration and Pupil Adjustment, D. Appleton-Century Company Incorporated, New York, 1940, 525 pages.

13. Schweickhard, Deam M., Industrial Arts in Education, The Manual Arts Press, Peoria, Illinois, 1929, 367 pages.

14. Weeks, Ruth M., A Correlated Curriculum, D. Appleton-Century Company, Inc., 1939, 325 pages.

15. Wilber, Gordon O., Industrial Arts in General Education, International Textbook Company, 1949, 401 pages.

Periodicals

16. The Industrial Arts Teacher, Vol. 14, No. 5, June 1955.

VITA

Raymond F. Grey

Candidate for the Degree of

Masters of Science

Report: CORRELATING AND INTEGRATING INDUSTRIAL ARTS WITH THE SOCIAL STUDIES

Major Field: Industrial Arts Education

Biographical:

Personal data: Born at Sapulpa, Oklahoma, September 28, 1921, the second son of Robert G. Gray and Earlene Foshee Gray.

Education: Attended grade school in Sapulpa, Oklahoma; graduated from highschool, Sapulpa, Oklahoma in 1939; received the Bachelor of Science Degree from Colorado State Teachers College, Greeley, Colorado, with a major in Industrial Arts Education in August, 1947; completed requirements for the Master of Science Degree at Oklahoma State University of Agriculture and Applied Science in July, 1957.

Professional experience: Entered the United States Army Infantry in September 29, 1942, spent 18 months in the European Theater of Operations, and one year in the Asiatic Pacific Theater of Operations, honorable discharge in February 1946. Teacher of Industrial Arts and Social Studies, Dunbar High School, Okmulgee, Oklahoma, 1947 to 1957.

REPORT TITLE: Correlating And Integrating Industrial Arts With The Social Studies

NAME OF AUTHOR: Raymond F. Grey

REPORT ADVISER: Cary L. Hill

The content and form have been checked and approved by the author and thesis adviser. "Instruction for Typing and Arranging the Thesis" is available in the Graduate School office. Changes or corrections in the thesis are not made by the Graduate School office or by any committee. The copies are sent to the bindery just as they are approved by the author and faculty adviser.

NAME OF TYPIST: Anna Lee Godfrey