Industrial Arts in Utah--Its Introduction and Development

Charles W. Hailes

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INDUSTRIAL ARTS IN UTAH--ITS INTRODUCTION AND DEVELOPMENT

by

Charles W. Hailes

A thesis submitted in partial fulfillment of the requirements for the degree
of
MASTER OF SCIENCE
in
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UTAH STATE AGRICULTURAL COLLEGE
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Charles W. Hailes
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INTRODUCTION

The need of the study

For the past few years many questions have been asked about the growth and development of the industrial arts program in Utah. Many of these questions could not be answered by leading educators. Thus, it is hoped that with the information presented in this report enlightenment may be given to unanswered questions.

The roots of present-day concepts and practices of industrial arts in Utah extend back about fifty years to the first schools established by the Mormon pioneers. The first school, in its simple setting, faced such issues as: What kind of industrial arts training shall be provided? How much will it cost? What will be its future?

Some of the outstanding developments in various periods of the history of the state of Utah illustrate the significance of the growth and development of the industrial arts program. Thus, the major purposes of the present study are to identify the more important policies and practices from the period of the introduction of industrial arts up to and including the year 1952. Additional purposes of the study may be stated as follows:

1. To encourage and assist lay citizens and professional educators to improve their understandings and to support more willingly the industrial arts program in the state of Utah.
2. To assemble evidence showing as clearly as possible the effects of the industrial arts program.

3. To cooperate with the public schools in Utah in assembling pertinent information regarding the introduction and development of the industrial arts program.

Such a study should help to center attention on the importance of an industrial arts program as a basis for determining those practices which are being carried on in the state of Utah today. Furthermore, it should indicate some of the most significant effects of the industrial arts program on the general educational program of today.

**Procedure in making the study**

The first step in planning this study was to make a list of the more common policies and practices found in the schools of the state of Utah during the time of this study. This list was prepared largely on the basis of materials found in the offices of the State Superintendent of Public Instruction; Board of Education offices in Salt Lake City, Utah; Board of Education offices for Granite, Jordan, Murray, Ogden, and Logan school districts; the Utah State Agricultural College, University of Utah, Brigham Young University, and the Branch Agricultural College. Personal contact was made with leading educators in the field of industrial arts. There was no attempt to prepare an exhaustive list of all policies and practices, but rather an effort was made to include those which are more important.
The next step, after developing the list of practices, was to classify these under appropriate headings. The headings used and the practices followed under each heading are given in the following sections of the report.
BACKGROUND

Fifty years—in terms of human beings—is a long time. To look forward is beyond imagination’s power for most of us; to look backwards is an experience.

Those who have taught industrial arts can be proud of the part they have played in the educational structure of Utah. Yet, as we look back we see that the foundations of our work were laid by those who preceded us. If we are to receive any tributes at all, it will be because we have followed in the footsteps of our earliest leaders, who were experts in the art of human understanding and its corollary, unselfish devotion.

There are certain movements and practices that are of major importance in the development of our present industrial arts program in Utah. An important turning point in the teaching of manual and industrial education was reached when an adequate teaching analysis had been made of the tool processes and construction methods employed in the mechanic arts. Until this point had been reached, progress was very slow; after that, with the aid of an analysis, progress was rapid.

The first evidence of an adequate mechanic arts analysis was made in the year 1869 when the Russian system of workshop instruction was devised by Victor Della Vos, and his associates, for use in the Imperial Technical School at Moscow, Russia.

In the year 1890, in the city of Moscow, there was
established a school for teaching trades and industries. The prevailing method of learning a manual art in this school was by the traditional imitative method of apprenticeship. Because of the slow arduous task of teaching skills by this method and because of the results of the great strides toward a teaching analysis of the mechanic arts, this school was soon replaced. By the Russian Imperial Decree of June 1, 1868, the school was reorganized, "raised to the rank of the leading polytechnic school of Europe," and became known as the Imperial Technical School. The main purpose of the school was to train civil engineers, mechanical engineers, draftsmen, foremen, and chemists. In principle, however, its purpose was to train engineers and skilled workers for building Russian railroads.

In order that an effective system of methods in shop instruction might be carried on, Victor Della Vos and his shop instructors put into operation a new system that involved the organization of instruction shops separate from construction shops. Students were permitted to work in the construction shop only after they had completed the required course in the instruction shop.¹

The students at the Imperial Technical School entered at about eighteen years of age. Some had received a small degree of work with tools, others had none. The work taught at the school was conducted on a productive basis. The course of study involved about twelve hours of shop work per

week until the final year, at which time approximately half the time was spent in the shop.\textsuperscript{2}

The goal sought in this new system was to teach the fundamentals of mechanic arts to all registered for instruction. The objectives sought under this system were to teach:

(a) in the least possible time;
(b) in such a way as to make possible the giving of adequate instruction to a large number of students at one time;
(c) by a method that would give to the study of practical shop work the character of a sound, systematical requirement of knowledge; and
(d) so as to enable the teacher to determine the progress of each student at any time.\textsuperscript{3}

This educational pursuit was the first of its kind to organize vocational education for groups as compared with individuals under the apprenticeship plan. The system of instruction was carried on in a formal manner. It consisted of making a series of exercise joints and models designed to give practice in those trades definitely needed in the building of railroads.\textsuperscript{4}

As a result of the new system of teaching the mechanic arts, Victor Bells Vos and his associates envisioned a much broader scope for the mechanic arts. They advocated teaching not only the engineers and the highly educated, but the carpenters, wood turners, metal turners, and forgere, or that group of people not generally classified with the educated. The reasoning for their convictions is basically brought out in the following statement:

\textsuperscript{2} F. Theodore Struck, \textit{Foundations of Industrial Education}, p. 27.
\textsuperscript{3} G. A. Bennett, \textit{History of Manual and Industrial Education 1870 to 1917}, p. 18.
\textsuperscript{4} John P. Friese, \textit{Source Making in Industrial Education}, p. 15.
Everybody is well aware that the mastery of any art—drawing, music, painting—is readily attained only when the first attempts are subject to a law of gradation, the pupil following a definite method or school, and surmounting, little by little and by certain degrees, the difficulties encountered. For all these arts, a method of study had been worked out, since they have long constituted a part of the education of the well-instructed classes of the people, and must therefore of necessity have been subjected to scientific analysis with a view to discovering those conditions under which the learning of the art may be as easy as possible. The same is not true, however, of such arts as carpentry, wood turning, metal turning, and forging which have been followed by the common and imperfectly educated classes of working men. There is not the slightest doubt as to the importance of working out a logical method of teaching these mechanic arts, not only for the benefit of the student of engineering, but for use in giving practical instruction to the working people as well. Such a method, too, would do much to perfect mechanical hand labor itself, which, on account of the introduction of special machinery, is year by year perceptibly deteriorating.5

Equipment of shops

All shops were well-equipped, having one working bench for each student: each student was supplied with a set of tools which were housed in a well-lighted closet, with a wire netting in front, allowing for ease of checking and examining tools. The tool set at each bench did not contain all the required tools. A few common tools were placed in a tool room—on a board—and a check was required from each student to check out the desired tool.6

5. Victor Della Vos, Description of the Collections of Scientific Appliances for the Study of Mechanical Art in the Workshops of the Imperial Technical School of Moscow, 1876, as cited by C. A. Bennett, History of Manual and Industrial Education 1870 to 1917, pp. 16, 17.

Objectives

In essence, the Russian system was essentially a "laboratory method" of teaching, the method being similar to other methods of laboratory teaching.

The main principles concerning the Russian system were as follows:

(1) Each art or distinct type of work has its own separate instruction shop; e.g., joinery, wood turning, blacksmithing, locksmithing, etc.
(2) Each shop is equipped with as many working places and sets of tools as there are pupils to receive instruction at one time.
(3) The courses of models are arranged according to the increasing difficulty of the exercises involved, and must be given to the pupils in strict succession as arranged.
(4) All models are made from drawings. Copies of each drawing are supplied in sufficient number to provide one for each member of a class. The drawings are mounted on cardboard (or, for the blacksmith shop, on wooden boards) and varnished.
(5) The drawings are made by the pupils in the class for elementary drawing, under the direction of the teacher of drawing with whom the manager of the shops comes to an agreement concerning the various details.
(6) No pupil is allowed to begin a new model until he has acceptably completed the previous model in the course. He must receive at least a grade of three, which is considered good.
(7) First exercises will be accepted if dimensions are no more than approximately correct; later exercises should be exactly to dimensions; therefore, the same marks given a student at different periods during his course do not express the absolute, but the relative, quality of his different pieces of work.
(8) Every teacher must have more knowledge of his speciality than is necessary merely to perform the exercises in the course of instruction. He must keep constantly in practice so that his work may be an example of perfection to his pupils. Such dexterity increases the authority of the teacher.

7. Ibid., pp. 17, 18.
Early developments in America

The system of mechanic arts, as developed by Bella Vos and associates, met with such great favor that it soon was introduced into all the technical schools of Russia. In 1876, the Imperial Technical School of Moscow exhibited its system of teaching the mechanic arts at the Centennial Exposition in Philadelphia. As a direct result of this display, the opening of the School of Mechanic Arts in Boston, and the adoption of the principles of the system by the St. Louis Manual Training School of Washington University were effected. These schools led the way which resulted in the movement of establishing manual training high schools all over the country. 8

John D. Runkle

The most important feature of the manual arts program is the direct cultivation of skills and knowledge of tools and processes of industry. For this need no efficient system of school instruction had been found in America. The need for such a system was felt by many educators in the field of mechanical engineering because their graduates were being obliged to supplement their protracted courses of academic training with months, and even years, of apprenticeship in order to fit themselves for positions in manufacturing.

The problem, though formidable, did not seem incapable of solution. It was in the hope of finding such a system that President John D. Runkle, of the Massachusetts Institute of Technology, visited the Centennial Exposition in 1876.

8. Ibid., p. 42.
He was not disappointed. He found just the system he was
looking for presented in the exhibit of the Imperial Technical
School of Moscow. In referring to his experience at the
Exposition, he said:

"At Philadelphia, in 1876, almost the first
thing I saw was a small case containing three
series of models—one of chipping and filing, one
of forging, and one of machine—tool work. I saw
at once that they were not parts of machines, but
simply graded models for teaching the manipulations
in those arts. In an instant, the problem I had
been seeking to solve was clear to my mind; a
plain distinction between a mechanic art and its
application in some special trade became apparent."9

In an address before the New England Cotton Manufactur-
ers Association, President Runkle said:

Russia, for the first time, has built up a
school for instruction—not construction, but
instruction—in the use of tools. We think that
they make this instruction just as systematic as
our instruction is in mathematics, chemistry,
drawing, or any other subject. The instruction
is given to classes.10

This system did not train to the mastery of any parti-
cular trade but rather it cultivated skill. This made the
Russian system valuable, in the opinion of its earliest
American sponsors, as a feature not only of the professional
training of engineers, but also of the general education of
the nontechnical schools. Runkle's report to the Corporation
of the Massachusetts Institute of Technology on the Russian
system of shopwork led to its adoption and to the establish-
ment of a school of mechanic arts, in which special emphasis

9. Charles H. Haz, Manual Training, the Solution of Social
and Industrial Problems, p. 332, as cited by
G. A. Bennett, History of Manual and Industrial Education
1870 to 1912, p. 320.
10. L. F. Anderson, History of Manual and Industrial School
Education, p. 158.
was given to handwork in connection with high school studies. The object was to develop the body and the mental powers in harmony with each other and with reference to the actual wants of life.

It was Hunkel's proclamation of his discovery of the Russian system and his plan for utilizing it—not only in engineering but, also, in general education—which marked the beginning of the manual training movement. The discovery of the Russian system of making tool instruction practicable in school "caused new and profound attention to be given to the subject of our public education."  

Calvin E. Woodward

Dr. Calvin E. Woodward became a champion of manual training in the latter part of the nineteenth century. In an address delivered at Saratoga Springs, New York, before a meeting of the National Teachers' Association and the American Institute of Instruction, he made the statement to the effect that before we could devote ourselves exclusively to the art of expression, we must cultivate all the faculties and encourage the growth of thoughts worthy of expression. The thought must precede its expression by any method, and in the cultivation of the thinking mind, the concrete should precede the abstract. He stated that we must give children clear and accurate thoughts of real things, of the material world we live in, of real plants and animals, of the law of materials, of quality and then of quantities, before we can venture into the field of abstraction.

11. Ibid., pp. 158-161.
Dr. Woodward said, "Before you cultivate the high arts, make sure of the low ones; without them as a foundation no superstructure of fine art can stand overnight." 12

In the statement, "Let's put the whole boy to school," Dr. Woodward expressed his feeling for the need of the practical arts in present-day education. In enlarging upon his ideas and beliefs, he said:

Teach language and literature and mathematics with a view to make each child a master of the art of verbal expression. Teach mechanical and free drawing, with the conventions to shade and color, and aim at a mastery of the art of pictorial expression. And, lastly, teach the cunning fingers the wonderful power and use of tools, and aim at nothing less than a mastery of the fundamental mechanical processes. To do all these things while the mind is gaining strength and clearness, and material for thought, is the function of a manual training school. 13

The life and influence of Dr. Calvin M. Woodward have been far reaching. His greatest work, probably, was the founding of the St. Louis Manual Training School, in 1880, under the auspices of Washington University. This school, based on the foundation of general education at a scholastic level of the public school, became the leading educational experiment of its time, and led others to follow suit. 14

As a professor of mathematics at Washington University, Dr. Woodward taught a class in applied mechanics. Because his students found a great deal of difficulty in visualizing some of the forms under consideration, he requested they make

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13. ibid., p. 627.
the forms from wood. To his great surprise he found they
could not use the tools. Instead of giving up his idea, he
proceeded to teach them the use of hand tools. Thus, shop-
work was first started without any direct or immediate trade
 motive, though it did appear soon after.

Dr. Woodward declared that the essential feature of
manual training was a systematic study of tools, processes,
and materials. Thus, he welcomed the very complete presenta-
tion of the Russian system of tool instruction which was
shown at the Centennial Exposition in Philadelphia in 1876.
He urged that such work be adopted by schools, not only to
aid those inclined towards industrial life, but as a means
to enable those who have no career in mind to discover their
inborn capacities and aptitudes, whether in the direction of
literature, science, engineering, or the practical arts.15

The school and mechanic arts

The spread of manual training was immediate in scope.
The demonstration of orderly and progressive instruction in
the use of tools, which the school afforded its numerous
visitors, and the continued agitation of the question of
educational handwork in the press and on the platform by
Runkle, Woodward, and soon many others, contributed to the
establishment of manual training schools during the first
half of the "eighties" in Chicago, Philadelphia, Cleveland,
Toledo, and Baltimore. All of these were established by
private means, furnished mainly by wealthy business men.

15. Proceedings of the Board of Education, Polytechnic
School, Washington University, St. Louis, Missouri,
Vol. 16, p. 515.
desirous of promoting a more practical and efficient system of education.

Popular interest in the system seemed to increase. By 1891, a school subcommittee of Boston made the report, "All over our country, partly through private munificence and partly through public support, Manual Training High Schools have been established."15

Early-day objectives

Though vague and tentative, there are three or four aims of the manual training movement that stand out as fairly definite. First, it was held that by gratifying the constructive and creative impulses, it supplied what hitherto had been a serious lack of general education. It made it possible, as Woodward expressed it, "to send the whole boy to school." Secondly, it seemed to make general school work more directly contributory to the training of the young for some form of manual industry. While the leaders, Runkle, Woodward, and others, vigorously disavowed any intention of substituting vocational for cultural education, they did not fail to point out that the manual training in the arts underlying the various handicrafts constituted a valuable, though incomplete, preparation for any form of skilled handwork. A third result looked for was the cultivation of habits of industry. In the fourth place it was held that the recognition of the industrial occupations on the school program would develop respect for manual labor and tend to elevate

the social status of the working classes. 17

Defects of the Russian system

It is a noteworthy fact that while handwork has main-
tained its place in the general school program, the much
vaunted Russian system, to which it owed its introduction,
has not. Its merely-formal exercises, productive of objects,
neither of use nor of beauty, seemed to the pupils to lead to
nothing, and tended to become no less tedious than the formal
exercises in arithmetic and grammar. The first school to
adopt the Russian system in a program of general education,
the School of Mechanic Arts in Boston, ceased to exist alto-
gether as a non-vocational school after a lingering existence
of a few years. The first instructors in New England to test
the system thoroughly in private experimental schools were
soon led to abandon at least some of the purely-formal exer-
cises in favor of work that would appeal more directly to the
child's interests. 18

The Russian system of tool instruction was not accepted
in its entirety in the United States because the exercise
type of work did not appeal to the interest and imagination
of the American youth. Certain definite characteristics of
the Russian system, however, can be traced to the present-
day industrial arts system in America. Among these in-
fluences or practices which have come down to us today, the
following may be included:

The course of study was based upon

17. Ibid., pp. 164-165.
18. Ibid., p. 189.
occupational analysis.
Courses were built on the principle of working from the simple to the complex.
Subject matter was organized for teaching purposes.
Teaching methods were developed.
Pupils were trained in groups rather than singly.
Progress of the pupils could be determined at any time.
Both individual tool sets and benches and general tools were included in the equipment.
Pupils worked from drawings they had previously made.
Separate shops were established for the different equipments or trades.
Models and charts were hung on the walls of the shops.
The time required for learning a trade was shortened from that required under apprenticeship.
The accuracy required increased as the course progressed.
One model was completed before another was begun.\textsuperscript{19}

Influence of theloyd System

Uno Cygnæus (1810-1888) of Finland and Otto Salomon (1849-1907) of Sweden, were largely responsible for the development of "educationalloyd." Cygnæus started his lloyd work by first training the teachers, then putting the work into the folk schools which he had originated. The first class graduated from his normal school in 1867. Salomon started his work in 1872 in a school founded at Naas on the estate of his uncle, August Abrahamson, a successful and retired merchant who wanted to better the conditions of the common people. After some time Salomon saw the necessity of having adequately trained teachers for lloyd and so established a normal school in connection with his lloyd school.

In 1877 Salomon visited Finland and met Cygnæus, who

\textsuperscript{19} John F. Friese, Course Making in Industrial Education, p. 44.
influenced him greatly. Salomon was impressed with the idea that sloyd should be a fundamental part of the elementary schools and that rather than being organized on an economic basis it should be organized on a pedagogic basis so that its educational values would be emphasized. With these ideas in mind he made a careful study of sloyd and developed what he called "educational sloyd."

Some fundamental ideas about educational sloyd are as follows:

There are three outstanding characteristics of the educational sloyd as developed by Salomon: (1) making useful objects, (2) analysis of processes, and (3) educational method. The first was inherited from the home sloyd in its earlier manifestations, when the things made at the home fireside were such as were used in the home or on the farm, not from the home-industries period that followed, when the things made were sold and when the things to be made were determined by the condition of the market. All the objects made in educational sloyd were to be useful in the home.

With a different purpose in view, but with the same kind of analysis, Salomon, like Della Vos, based his course upon a series of elementary tool exercises and elementary forms of construction. Unlike Della Vos, however, Salomon combined his exercises into useful models. . . .

The source of the third characteristic, Salomon frankly attributes to Cygnæus. From him came the conviction that sloyd belongs in the folk schools as an integral part of a well-rounded elementary education. The great work of Salomon was in developing a system of instruction giving due prominence to each of these three factors, but especially to the third.20

In working out his system Salomon felt that he should reduce the many kinds of sloyd that had grown up out of the home industries, so he selected wood-sloyd as being the best for school purposes. He trained teachers for the work,

emphasizing the importance of well-trained teachers for educational sloyd. It is interesting to note that most of the effort in training teachers was to make sloyders out of teachers, rather than teachers out of sloyders, although the latter was done to quite an extent. In most cases, though, the first method proved to be more successful.

The influence of Salomon's system was not confined to the Scandinavian countries but was world wide. As time went on metal and other types of educational sloyd were developed. The Danish developed a sloyd, differing in some respects from the Swedish, but fundamentally quite similar. Sloyd recognized individual differences and made some provision for them. This was especially true in the Danish sloyd, much more, in fact, than in the Swedish. Eva Sodha developed a type of sloyd for primary grades which was quite popular.

By 1885 American educators were not entirely unfamiliar with sloyd. Teachers from all over the world had visited Salomon's Normal School at Hama and many had attended so that they might learn this interesting work. It was not until 1886, however, that sloyd really began to exert a strong influence in the schools of America. Prior to this time some sloyd work had been done in America as a result of John H. Griswold's enthusiasm over the work which he had seen in Sweden in 1882, but it was not of any great consequence. Lars Eriksen had been persuaded to come to this country to teach sloyd and it is thought that he gave the first lesson in Swedish sloyd taught in America on December 2, 1884, in Minneapolis. Eriksen did not have great success, however,
so it was not until Gustaf Larsson came to the schools of
Boston in 1888 that aloyd was important in this country.

With the coming of Larsson and the work he did, aloyd
was enthusiastically hailed because it came at a time when
manual training was getting a firm hold in the elementary
schools, and Swedish aloyd seemed particularly well adapted
for grammar grade work. It required few tools, not much
equipment, it clearly had no vocational significance, and it
was not beyond the powers of elementary school people.

Although the Swedish program had grown to include
various materials it was wood-aloyd that was almost invari-
ably given in this country. The work was more interesting
than that done under the Russian system of shopwork because
of the uses to which the models could be put after comple-
tion. It was not long, however, until many of the original
models were changed so that they would better fit conditions
in this country. As they lost their original characteristics
and new models came in it led to the making of projects
rather than just models, and here we see the birth of one of
the important parts of the modern present-day system.

Boston did a good deal of work in experimenting with the
best type of system and is probably responsible for develop-
ing a typical American system of shopwork for grammar grades.
After the Columbian Exposition in Chicago in 1893, to which
Boston sent exhibits,

It was recognized that by accepting some of the
so-called principles of Swedish aloyd while con-
tinuing to apply some fundamental practices of
the Russian system and harmonizing these with
the best American practice in the use of
woodworking tools, Boston had produced an American system of manual training that was pedagogically sound and practical.21

During the next few years there were many schools which introduced manual training into the upper grammar grades, and many of them used this system that Boston had devised.

Development

The development of the manual training movement in Utah parallels its growth in the United States, although it was introduced a few years later. It is practically an affair of the first half of the twentieth century. In a large measure it is only during the past fifty years that, in number and importance, it has come to rank with older systems of intellectual and professional training.

The industrial arts shops around the state reveal many evidences of the Russian system, such as the benches, the projects used for instruction, storage of tools in benches, tool cabinets, and the wide use of exercises—especially in wood and metal work.

The Swedishloyd system had a definite effect in that one of the courses for manual training, as taught at the University of Utah Normal School, was entitled "Woodloyd" and was almost an exact duplicate of the Lloyd woodwork as taught in New England.

21. Ibid., p. 434.
TRAINING IN UTAH

The history of industrial arts education in Utah is a record of educational movements of comprehensive and continuous development. The earlier of these movements was for the benefit of the Mormon pioneers in which they developed education along certain lines, such as music, art, dancing, social dramatics and public speaking. Later with the principles of free public education came broader movements for manual training and vocational training. Superintendent Oscar Van Gott of Salt Lake County, at Dr. John Park's request, revised and wrote the Allen Bill into the present public school bill under which the first high school in Utah Territory was opened in 1890 in the Fremont School building—a new building just completed under the trustee plan.1

At a meeting of the county superintendents, and others, held in the University building, April 8, 1893, a committee was appointed to prepare a course of study for the district schools of the territory. For the first time manual training was introduced into the school curriculum of Utah, to be taught in the first, second and third grades, the activities being calisthenics, modeling, painting, drawing and sand modeling.2 (See Exhibit "A")

John E. Dooly, President of the Board of Education, caught the spirit of the manual training trend and, in 1897,

submitted the following report:

The sentiment in favor of manual training is fast growing in every State, and Utah should not be behind in its advantages. The benefit of manual training schools is inestimable, as it places boys and girls in a position to go from the school room into active life. Manual training is practical and of great value to the State. It repays every dollar thus spent, as it makes better and more useful citizens. The work, when properly executed, is attractive and interesting; the pupil discovers his power to use the tools and to manufacture articles. Moreover, the discipline of continuous and effective work is valuable.

The study of mechanics is the forte of a large class of our pupils. With proper opportunity, this class will become excellent artisans and designers. If the State undertakes the education of its youth, it should be in lines eminently practical. This class of pupils is as much entitled to the aid of the State in the development of its talents, as that class which elects the present University Course. It is to be hoped that the school fund now being created by the sale of lands, donated to the State by the "Enabling Act," will permit of the addition of Manual Training to our schools. 3

While it is true that manual training in the secondary schools of Utah seemed to have been born full-fledged in plan, organization and courses of instruction, it should be noted that educators were having a hard time getting enough funds appropriated. In the year 1900, President E. W. Wilson, in his report to the Board of Education, Salt Lake City, Utah, stated the following:

To keep abreast with the best schools of the country, we should have manual training in our course of study. The hand, as well as the tongue, is a medium of expression and should, as well as the brain, receive instruction in the school. The criticism is frequently made that the pupil is educated away from work. Manual training dignifies labor; it develops the physical strength, as well

as the mental, and above all, it teaches how to apply knowledge.\(^4\)

The decade from 1895 to 1905 was a period of marked progress and heated discussion. The new type of high school was a popular success from the first. It filled a recognized gap in the American school system; it met a felt need. Yet, in so doing it aroused the active and sometimes highly emotional opposition of some of the more conservative people of Utah who did not recognize the value of manual training in general education. Undaunted, Superintendent D. H. Christensen sent the following report to the Board of Education in 1902:

The education of the child by the state has been regarded a duty that the latter owes the former. The child is, it has been maintained, the ward of the state, and as such is justly entitled to such equipment as will prepare him to face the stern realities of life. While this view still obtains, and perhaps justly, it is slowly making way for the new school of thought, namely, that "the promotion of the education of the young by good schooling must be regarded as neither more nor less than an investment, promising rich returns in the increase of the industrial, commercial, and intellectual wealth of the nation." In this progressive and utilitarian age, the humane aspect cannot consistently be considered to the exclusion of the economic. It is this commercial phase of the question that has given such prominence, of late years, to industrial training in the schools for both sexes. While the mind must be trained to think, the productive power of the nation can be enhanced only to the extent that the co-ordinate motor activities give tangible expression—be that expression a work, an act, or a concrete product.

It is this intimate and consequential relationship between impression and expression that industrial training aims to establish. And it goes one step further in that it serves to dignify manual labor, whether it be in the kitchen or in the shop. The boy learns to look with due respect

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on the dusty brow at the forge, and he finds it is just as honorable to work at the carpenter’s bench for $4.00 a day as it is to add figures for equal or less remuneration. The girl discovers with joy that a proper education does something more than provide a lady with a few so-called accomplishments. In fact, she finds pleasure in realizing that there is a science in cooking and an art in both cooking and sewing, and that the truly cultured woman should know something about each.

That manual training has become an essential part of the modern curriculum seems to be an established fact. In many of the best schools of our country it has passed through the experimental stage, and is as unlikely to be eliminated from the courses of prescribed school work as are the informational subjects of study. Its introduction in all of the public schools of the United States is, I believe, merely a matter of time. And we are not in any sense pioneers in the movement, as industrial training in the elementary schools and technical work in the secondary schools has for many years been the pride of leading European countries.

In my opinion, the time is now opportune for at least a beginning in the Salt Lake City Schools. I earnestly recommend that your honorable body establish a Manual Training Department for eighth grade boys with a one year’s course in mechanical drawing and wood work, and a Domestic Arts Department for seventh and eighth grade girls with a two years’ course in plain sewing.

Any ordinary well lighted basement room can be equipped with work benches for twenty-four boys and with all necessary tools and utensils for $500.00. An instructor thoroughly trained for this class of work, capable of directing the work in the whole city, and of giving instruction to one-half of the eighth grade boys, can be secured for a moderate salary. A capable and trained assistant could instruct the other half of the boys in a room similarly equipped in another part of the city.

This plan contemplates that each boy receive individual and regular instruction in mechanical drawing and wood work from one to two hours per week throughout the school year. The boys in any given class would be at the manual training room at a specified time on one or two days in a week, and arrangements could be so made as to occasion little loss of time in transit. With each class, the going or coming could take place before the sessions, at recess, or after the session, thus economizing time as much as possible. Each pupil
could contribute about twenty-five cents to pay for material during the year, or the whole quantity could be purchased by the Board at a nominal cost.  

The year 1903 brought another notable advance forward and during this year a definite note of confidence was struck that marked the turning point to which many leaders had been looking. The President's Report by President Arnold G. Giauque was submitted to the Board of Education of Salt Lake City, Utah, July 31, 1903. It read as follows:

The work during the past year, under the strong supervision it has had, has clearly proved the merits of manual training. It is no longer an experiment— it is a success in every way. The recommendation made by former Presidents of the Board for years past, that as soon as possible manual training be introduced in the schools was carried into effect under the Presidency of K. J. Neuman, a strong advocate of the system and the hopes of the past have been realized.  

A committee on teachers and school work submitted the following report for the same year showing the deserving place shopwork had found in the school after one complete year of progress.

The work in manual training has pleased parents and pupils and has been signally successful. The high percentage of attendance and punctuality of pupils during the year evidences a keen interest on the part of children and parents, and active and efficient work on the part of the teaching corps.  

At the same time Superintendent D. H. Christensen, Superintendent of the Salt Lake City Schools, submitted an

7. Ibid., pp. 73-74.
optimistic report in which he showed why boys need manual training and then definitely recommended the furtherance of shopwork for boys in the secondary schools. He said, "Manual training is popular because the pupils find delight in their work, and they find a feature of study that is entirely free from drudgery, and because it appeals to parents from a utilitarian point of view." Concerning manual training in the schools he submitted the following report:

For years various presidents of the Board and others connected with the administration of the schools have recommended the introduction of manual training into the course of study. The opinion, however, prevailed that the cost of maintaining this department would be quite high and the movement did not materialize. A careful inquiry into the cost of introducing and maintaining this work led to a favorable recommendation from the Committee on Teachers and School Work, and the Board of Education at a regular monthly meeting held August 1, 1902, adopted the same by unanimous vote. Provision was made for instruction in mechanical drawing and woodwork for eighth grade boys and plain sewing for seventh and eighth grade girls. The courses were patterned quite largely after the Chicago outline and they have satisfied our needs admirably. Although it was necessary to let this new work supplant the free hand drawing in the eighth grade, it is believed that the general standard of efficiency of the pupils has not suffered by reason of this substitution. On the contrary an impetus and a new interest have been given to other subjects, and with many pupils school life has assumed a new hue.

Manual training is popular because the pupils find delight in their work, and they find a feature of study that is entirely free from drudgery, and because it appeals to parents from the utilitarian point of view. This prevailing sentiment in favor of this department by reason of the utility of its training is evidenced in remarks frequently heard, such as, "My boy keeps gates and fences in good condition about the home since he has had manual training." "I have had to buy a chest of tools for John and he has more than paid for them in his work about our place." "I am astonished at my son's skill in using tools," etc.
And it must be admitted that manual training has a decided practical value, which although incidental to its main purpose, fully justifies all the necessary expense in its maintenance. Discussing this question, Dr. Dewey says: 'We are emerging from the time in which manual training and constructive work are regarded in the lower grades as a form of "busy work" or a concession to the desire of the child for amusement, and in the upper grades as having a distinctly technical, or even utilitarian and professional, aim.'

It was thought by some that the plan might be but partially successful unless benches and tools were provided in every building, which would entail sufficient cost to preclude further consideration. But the installation of but two centers, one in the Bryant building for east side pupils and one in the Union for those on the west side, has not perceptively diminished the success of the new venture. In nearly every case the going or coming trip is made before or after a session or during an intermission, thus economizing school time. No more than two or three schools are so distant located as to require more than fifteen minutes in transit.

The first department of manual training was set up in Salt Lake City and commenced in the fall term of 1902, under the direction of Samuel Boxey, the first supervisor. He was assisted by one director and two teachers. Two rooms with all the necessary benches and tools were fitted up for the boys, one in the "Eastside High School" and the other on the "westside" in the Union school. All the boys of the eighth grade and some of the boys in the seventh grade were accommodated in these rooms. Mr. Boxey's report is as follows:

The program has been so arranged that the Manual Training teachers could receive the boys from the different schools, at regular times, each week, and give two hours' instruction to each class. The sewing teachers would be engaged in the respective buildings, with the girls while the boys were in the Manual Training rooms.

The wasted time could be utilized to good advantage by the boys if we had Manual Training rooms opened up in the larger buildings, and the work in Manual Training and in sewing could be done by the regular teachers of the buildings. This plan would bring the work into perfect harmony with all the other department work in the schools. It would necessitate close supervision, but the encouragement that has been given it by teachers who have a desire to be instructors in the work leads me to think that it would be successful.

The cost of fitting up a room for Manual Training, including necessary tools and benches, would amount to between $225 and $350. The equipment for sewing would amount to but a few dollars for each room. The Manual Training and Domestic Arts work may be extended and carried on successfully with little additional expense to the board.

There have been 1600 pupils do work in the department the past year, 501 boys in the Manual Training classes and 1109 girls in the sewing classes. The cost of material for the year for Manual Training was $194.55; for the sewing classes, $89.65. The average cost for material for each pupil in the department was 11½ cents.

In shop work, pupils have first made a scale drawing of the article they were to make. The scale has varied from full size, 1/4 size, 1/2 size, and twice the size of the object. They have acquainted themselves with the scale, first by making it, then by using it in their work throughout the year. The boys have learned the use of the common tools of carpentry, and have had considerable experience in making articles from many different kinds of wood. The course has been closely followed, but many students have made articles not in the course. These articles have been suggested to them from scale and free hand drawings, which have been before them in the shop. Some boys have made useful household articles for their parents. With the exception of a few samples, the articles made and drawings produced have been returned to the students.

Great interest has been manifest by both boys and girls in the work during the year. We have been greatly encouraged, not only by the enthusiasm of the pupils, but by the hearty approval expressed by the parents. The teachers have noticed that as the work progressed the enthusiasm of the pupils has increased. Some of the parents who were opposed, in the beginning, and reluctantly permitted their children to take
up Manual Training and sewing, are now as ardent supporters of it as those who were friendly in the beginning. Many students who failed to accomplish the desired result in the school room have taken this work and as a result have been stimulated to greater efforts in the class room. The practical value of Manual Training will lend impetus to all other work in the grades.

The work has been marked by a steady, enthusiastic and prosperous growth. Much credit is due the teachers of the department for the difficulties they have overcome and the success they have met with in the opening of this new department, and they are thankful to the grade teachers, principals, Superintendent and the Board of Education for the enthusiastic support received from them.

We have started with a small beginning, but the encouragement we have received from principals, teachers, pupils and parents leads us to suppose that there is a bright future for Manual Training and Domestic Arts in our schools. 9

The manual training program was successful to a very high degree. It had met all the hope of its warmest advocates. It had passed the experimental stage and had gained too many friends in the community to have its rights to a place in the course of study seriously questioned.

A center for manual training in woodwork was established during 1903, in the Fremont school for pupils from the west side, and in the Bryant school for the east side pupils. The work expanded from the eighth grade pupils to include many seventh grade boys, and experiments had been performed with the fifth and sixth grade pupils at the Fremont school. The results were so satisfactory that strong public sentiment favored the permanent establishment of bench work in all of the grammar grades.

Five hundred thirteen boys were enrolled in manual training woodwork. All of these boys had been instructed by

9. Ibid., pp. 110-112.
Mr. D. W. Parrett and Mr. Samuel Doxey. Mr. Doxey said, "Their work has been neatly executed and the course has been progressive and practical." Mechanical and free-hand drawing preceded the making of all articles. Many useful articles were made for the home. An exhibit was placed in the State Fair, and the department was awarded a special prize of two gold medals by the committee on education for excellence and neatness of the work. An exhibit was also sent to the fair at St. Louis, Missouri.

The enthusiasm for the manual training work was so high that a committee recommended to the Board of Education that some of the large buildings be equipped so that the work of the boys may be carried on in each school in Salt Lake City, and that a room be equipped in the Westside High School or in the Union School, to be used exclusively for high school boys. An additional recommendation was made to the Board of Education to furnish equipment and supplies for forging, foundry work, pattern-making and machine-fitting.

The Board of Education acted upon the recommendations of the committee and secured work benches and tools for twelve buildings. The manual training program was carried on for the year 1904-1905 in the Grant, the Lafayette, the Lincoln, the Union, the Jackson, the Washington, Fremont, Oquirrh, Lovell, Uintah, Webster, and the Emerson schools. Other schools sent their boys in the upper grades to one of these buildings, such as--the Riverside to the Lincoln, the Sumner to the Oquirrh, and the Hamilton and Wasatch to the Webster.
Most all the boys in the grammar grades received instruction in manual training. The instruction for this training was conducted by Mr. Samuel Doxey, Mr. A. B. Kesler, and Miss Ann L. Corbett.

Manual training also moved into the primary grades with work such as pasting, cutting, folding, basket making, and clay modeling. Weaving and braiding were carried on in a few schools. The total cost of materials for the manual training department for the school year of 1904-1905 was $364.52. The number of students taking the work was 1376, making a cost of 26 cents for each pupil.

With three years of background work in Salt Lake City and from the exceptional progress made, other areas of the state started investigating the manual training movement. During the school year of 1904-1905, Mr. D. W. Farrett made himself available at the City and County building each Wednesday between 4 and 5 P.M., where principals and teachers could come and inquire about the work.

After a thorough investigation of the program in Salt Lake City, Mr. J. E. McKnight, principal of the State Normal Training School, wrote the following report:

Salt Lake has reason to be proud of the manual training work now being done in the public schools. It was my privilege and good fortune recently in company with Supervisor Farrett, to make a little tour of inspection among some of the schools in which manual training has a regular place on the program along with reading, spelling and arithmetic. I was surprised at the extent of the equipment and at the number of teachers who have qualified themselves to specialize in this line of work—lady teachers, I mean. I was delighted,
too, with what I saw. Every manual training shop we visited was a hive of joyous industry. Boys of the higher grades are learning to do things with their hands, and, to a boy, they are interested in their work and proud of their skill. There is no loitering on the way to the shop; there is no frittering away of time in the shop, and there is no vacuous waiting for the gong to announce the end of the period. In fact many of those boys clamor for the privilege of putting in extra time in the shop. They are willing to come early and stay late for that purpose. What other kind of school work so takes hold of a growing, active, pleasure-loving boy? What is the secret of it all? Why, that is work and puts the whole boy to school. It calls into activity every power of muscle, mind, and heart. He is no longer a passive recipient; he has something to do, something to give. He plans, designs, executes. He is an artist and a creator. It is work with a purpose, and we never work so effectively as when we do things for ourselves or others under a strong and worthy motive. The reaction from no other kind is so truly educative in its effects.

I have seen the best manual training products of nearly all the western cities, and that of some of the eastern cities, and I do not hesitate to place Salt Lake and Seattle, for soundness and pedagogy and excellence of work, in a class apart.

One feature of the Salt Lake work that particularly impresses me is the simplicity of line, contour, and structure; and another is the absence of taudry and meaningless decoration. Oilings, finishing, staining, filling, and varnishing are resorted to in order to bring out or enhance the natural beauty of the wood, but pyrography has small place and water colors on other paints none. Lines are simple, surfaces are plain, proportions are excellent, joints are well made, and the structure so good that the thing completed looks as if it really had some reason to be.

Besides the necessary exercises in wood--these reduced to a minimum in number--and the small articles common to manual training shops some of these boys are making, and have made, larger and more significant pieces of furniture to be used at home. Some of these in quarter-sawn oak are really beautiful. Among them are tables, chairs, taburets, writing-desks, and book cases.

Salt Lake is to be congratulated, and so are its corps of earnest teachers. But most of all the boys and girls of Salt Lake are to be congratulated upon the opportunity they have of
doing something with their hands and for the way in which they respond to the excellence of their teaching. The girls, it may be said in passing, are doing equally as good work in some lines of domestic art.

Expanding process

As might be expected, because of the immediate success of the schools in Salt Lake City, other schools established the manual training program during the next few years. These schools followed the curriculum very closely; however, local conditions, changing ideas and experience brought about some departure in other areas of the state.

For the biennial period ending June 30, 1910, the Ogden City Schools recorded the following statement:

We have now succeeded in developing manual training in our schools to some extent. Recently a course in manual training for boys has been added in the eighth grade and in some of the schools in the seventh grade. We look for much advancement in the line of industrial work during the next biennial period. Good courses are conducted in this line in the high school.

In a letter addressed to the Hon. A. J. Nelson, State Superintendent of Public Instruction, the Superintendent of the Logan City Schools wrote the following:

I have the honor to submit the biennial report of the Logan City Schools for two years ending June 30, 1910. There are many conditions in our small system which need to be improved; yes, without a feeling of egotism, I believe that we are justified in claiming considerable growth during the last two years. I shall mention briefly a few of the most important

advancements. Arrangements have been made for some industrial education this coming year. Boys of the seventh and eighth grades will be given shop work.12

G. M. Munford, Superintendent of Murray Schools, wrote the following:

While much benefit has accrued from the enactment of a compulsory school law, there are yet too many pupils who reach the age limit and leave school before graduating. This is especially true of boys. In my opinion our school curriculum is, to some extent, responsible for this condition. More time and attention given to the development and education of the motor activities through the hand, may it not be possible that these pupils could be induced to complete their work in the grades.13

In the year 1912, Provo City Schools started laying the cornerstone for the introduction of the manual training movement into the curriculum. The Superintendent said:

We are looking forward to the day when Industrial Education will form an important part in our curriculum. At present, such industrial work as may be carried on under the direction of the teacher, is done. The children are being taught a number of things that are of value to the child, and an aid in the home.14

The following year under the direction of Mr. Albert Ruish the manual training was started at the Provo High School.

The program of manual training had spread to most of the state by the summer of 1920. It was this year that Dr. Irvin S. Noell became State Supervisor of Trade and Industrial Education, with an added responsibility of Manual

12. Ibid., pp. 346, 345.
13. Ibid., p. 354.
Arts Education. He made a trip throughout the state to ascertain what was being done and what needs existed and how he might be able to help. In many areas he found rather well-developed classes in woodwork and mechanical drawing. In Salt Lake City the program had been expanded to include machine shop, forging, foundry, pattern making, auto mechanics, electricity, printing, welding, and sheet metal work. Other areas in the state—mainly Jordan, Granite, Box Elder, Logan, Heber City, and some of Utah County Schools—in addition to woodwork and mechanical drawing, had also enriched the program with the addition of forging and auto mechanics.

The greatest needs were for more space and more facilities although, with the passing of the Smith-Hughes Law in 1917, considerable impetus was given to manual training. Even though the Smith-Hughes Law was mainly for trade, industrial training, and farm mechanics there was a definite trend for the farm mechanics and manual training to be taught in the same shop and by the same teacher; therefore, in some respects the manual training was helped because there were offered more space and facilities than had heretofore been available.

With the passage of the Smith-Hughes Law, the great emphasis changed from the manual training movement to that of preparation for a vocation. Milton Clauser showed a great deal of concern over the qualifications of the teachers, and wrote the following report entitled "Certification:"

Until we get some relief from certain present conditions Manual Training in Utah will have a very hard road to travel.
Under the present scheme of certification, providing he can get an appointment, any man holding a normal diploma can get a license to teach manual training in the elementary schools; and, any man having a college degree, a license to teach manual training in the high schools. Whether the man knows anything about his subject is not taken into account by the present requirements. On the other hand, no matter how successful a teacher he may have been in his line of work, or how many years he may have taught, if he does not hold a degree, he will be required to take six credits of college work—whether in geology, advertising, nature study, the drama or law is immaterial—until he has his degree.

The above conditions, together with the fact that men do not leave home unless with some advantage, make it exceedingly hard to import good teachers of manual training unless Utah pays three or four hundred dollars more than the states pay where they prepare them.

In this connection I would like to say that some of our teachers have done very creditable work, at an expenditure of considerable time and effort, in connection with instruction given at teachers' meetings and with work in the Public Library. I would like to suggest that if some channel were provided for presenting proofs that such work had been done, and if suitable credits were given therefore in order to encourage such efforts, more good would result than if credits are given in unrelated subjects.15

In the year 1921 Dr. Irvin S. Marshall made another trip around the state from which he determined that there was a great need of broadening and expanding the manual arts program. It was felt that, particularly on a junior high school level, there was a great need for a more adequate representation of the mechanical experience than a boy could receive at home and the kind of experience a boy could get to help him better carry on his home responsibilities. Also, it should provide a basis of interest and approach for occupational

15. Annual Reports 1913-1920. Twenty-sixth and Twenty-seventh Annual Reports of the Public Schools of Salt Lake City, Utah. pp. 177-178.
uses and for hobby interests. None of the schools had developed a broad manual arts program on this level. However, there was in Salt Lake City a Mr. Christian Axeloon, who had transferred from Sanpete County. He had had quite a variety of practical experiences as a workman in that area.

Mr. Axeloon began teaching courses in sheet metal work and electricity and developed a relatively large number of interesting projects. At this time Mr. George A. Eaton was acting supervisor of manual arts as well as Assistant Superintendent of Schools in Salt Lake City. Mr. Eaton encouraged the men to meet together as often as possible and exchange ideas with one another. (See Exhibit "S") The teachers went from one shop to another where a teacher would show a new project he had developed or a new technique of teaching. It was not long before fairly well developed courses in sheet metal, electricity, ornamental and wrought iron work were being taught in Salt Lake City schools. During the school year, 1922-1923, the units of work, as taught in Salt Lake City, were incorporated into the state course of study.

In the year of 1921 the State Board of Education passed a ruling requiring all high school teachers to have a Bachelor of Science degree. This had a direct effect upon all of the teachers of manual training. They all were men who had come into teaching from the practical fields of industry, with very little or no college training. Manual training teachers were called from all parts of the state and as a result of this conference an agreement was reached where teachers would have to take college training consisting of 90 hours of work.
This could be taken through correspondence, extension, or summer school.

In 1924, Dr. Irvin G. Nocil made a trip to the Utah State Agricultural College at Logan and met with the shop teachers at the College. He discussed with them the Allen plan of job analysis and the organization of instructional material. Mr. Aaron Newey, a member of the College Faculty, became particularly interested in the idea and applied it to his work in the machine shop at the college. It soon became apparent that it could be applied quite generally to manual training teachers. Accordingly, Mr. Newey was appointed to teach job analysis, methods of teaching, and shop organization and management to the manual training teachers in summer schools. These training courses were added to the regular school curriculum during the early part of 1930. From this point on, the Utah State Agricultural College made some effort to provide teachers for the junior and senior high schools of the state. However, because of the depression, low salaries, war service and many other factors, few were enrolled in this work. Just after the close of World War II, a great many veterans came back, used their training privileges and elected to enter the industrial arts field.  

With the enactment of the Smith-Hughes Law, federal funds became available for vocational training; also, a new philosophy of manual training came into existence. In a report to the Board of Education on June 30, 1919, Mr. E. W. Geaswein,  

Supervisor of Industrial Arts in Salt Lake City, asked and
was granted permission to establish pre-vocational training
in the junior high schools and establish industrial classes
to give varied experiences in industrial processes. In order
to carry out this experiment Mr. Geesevin asked for
(1) teachers, (2) equipment, (3) time:

1. It is impossible to make a good indus-
trial teacher of a man who has had all his train-
ing in the academic classroom, nor can a man teach
successfully who has not the slightest knowledge
of pedagogy. A good teacher should have had
practical experience and at least a high school
education. Such men are in demand and are being
paid high salaries. If we fill our vacancies with
low salaried people, rather than find teachers with
adequate qualifications, the character of instruc-
tion is sure to suffer.

2. Our shops are constantly improving and
meet the changed character of the work very much
better than the shops have done in the past. How-
ever, they are not as yet adequate for our needs.
The shop itself should be larger, to provide
room for assembling. One storeroom is not suf-
ficient. There should be four rooms, or large par-
titions in connection with the shop, which would
provide a place for lumber, finishing, display
and storeroom.

3. The shortest possible time which should
be allowed for shop work is a 30-minute period.
It is planned to devote part of the shop period
to demonstrations, lantern slides study and
socialized recitation. It can readily be seen that
a shorter time would be disastrous to the work.
The industrial art teachers, art and domestic
science teachers would unanimously oppose a reduc-
tion of time.17

Following this experiment we again see the effects of
the vocational aspect coming into prominence. Mr. Geesevin
said, "This year the industrial arts department has been
very definitely defined. Dimensioned drawings for every model
have been supplied, materials and supplies have been on hand

the Public Schools of Salt Lake City. pp. 85-86.
and shop records and reports kept. During the school year of 1919-1920, the program was expanded and divided into three divisions—fifth, sixth and seventh grades being termed elementary; seventh, eighth and ninth grades were junior high school; and the tenth, eleventh and twelfth grades were senior high school. The character and purposes of the work in each section was distinct:

Elementary Schools: In the elementary schools, pupils come to the shop for only one and one-half hours a week. In that length of time it would be impossible to teach proficiency in the use of tools; further, it would be a mistake to attempt real vocational training with pupils so young. There is a world of ideas these boys are eager to express in concrete form. In the shop they make as best they can, airplanes, automobiles, windmills, etc., and the teachers attempt to show them their industrial and social significance. Tool operations is only incidental.

Junior High Schools: In the shops of our Junior High Schools a beginning has been made in prevocational experiences. Four important industrial subjects have been selected—electricity, sheet metal, cement and carpentry. Five months are spent in the study of each subject and by that time a boy who has had the actual experience of handling the various mediums is better able to determine whether or not to elect them as his future vocation. Further and most important, his experience has been enriched by having had the opportunity of expressing his ideals in iron, wood, electricity and cement.

Senior High School: At the West High School, I believe, that great progress has been made toward placing the shops on an efficiency basis. We offer there a course in automobile repair, cabinet-making, pattern-making, forging, foundry work, mechanical drawing and acetylene welding. These courses are taken by boys intending to follow engineering at the University and also by boys who are specializing in a vocation and intend to enter the trades.

The teachers in the department and the character of the work must meet the requirements set by the government in the Smith-Hughes Law on Vocational Education. Government officials inspecting the work during the year stated that it measured up to the standard in every particular.
Advances of the year: The most noteworthy changes this year have been: (1) the adoption of the short unit course of ten weeks for the first year and a half, which permits a boy an experience in all lines of work before electing his specialty; (2) a change from individual project work to production work for school use or other purposes; (3) the addition of an acetylene welding department, and the employment of an extra teacher in automobile repair work, and two additional teachers in mechanical drawing.

The demand for industrial arts work in our schools is constantly growing. The enrollment at the West High School, where we had the facilities for handling the pupils, has doubled. At several of the Junior High Schools, where only one teacher was employed, a large percentage of the pupils could not be accommodated.

After one year of experimental work, it was apparent that teachers with different degrees of experience, training, and ability had a tendency to emphasize one phase of the work more than another. One school, in charge of a practical teacher, might stress technique and sacrifice theory and related information, while another teacher proficient in drafting might place undue emphasis upon that.

It was necessary, therefore, to maintain a well-balanced course of study so that the boys in different shops could receive equal training. For this purpose frequent meetings and institutes were held where various phases of the work were discussed, working drawings, outlines, and models supplied, demonstrations were given, and visits to different shops arranged.

The nature of the work in the shop of this day was quite different from that given in public schools some forty years before when manual training was first introduced in the

United States. It was now logically conceded that it was only of value as a school subject in that proportion to which it contributed to the boys' general educational developments. Skill and a beautifully finished project were no longer considered the goal, but rather a fuller knowledge of the arts and sciences gained through actual experience in the shop.

It was essential, therefore, to select carefully models that would hold the boys' interests and were rich in educational content. In the elementary grades pupils came to the shop for one and one-half hours a week. The projects consisted of such models as doll beds, windmills, airplanes, automobiles, and periscopes. The boys were encouraged to experiment and invent, and the teacher gave considerable of the mechanical data related to each model.

Facts of social and industrial significance were studied in relation to the work. Tool operations were not emphasized for it was believed they were naturally acquired during the construction of the models.

In the shops in the junior high schools the work was more intensive as it was given five periods, or 250 minutes a week. Here a beginning was made in pre-vocational work. Boys in the eighth and ninth grades received training in four subjects: namely, cement, carpentry, sheet metal, and electricity. No attempt was made in the course to prepare a boy for a trade. He did, however, acquire a generous understanding of the methods and principles involved in the various industries. Further and more important was the experience gained by the opportunity of expressing his ideas in iron,
Although the work was carried on in the three divisions the most gratifying accomplishment was in the development of the Pre-Vocational work of the junior high schools. Charles H. Skidmore, State Superintendent of Public Instruction said, "Boys of the seventh, eighth and ninth grades have done splendid work in sheet metal, cement, wood and electricity. Some of the shops have produced results that would be the pride of the best junior high schools in the country." The subject of electricity was taught in connection with the making of simple models such as a motor, electric toaster and radio receiving sets. The thought prevailed that through industrial arts a new scientific interest had been awakened in many boys and had created a desire to continue their studies in school.

Mechanical drawing was taught with varying success, due to the fact that many teachers did not have the necessary qualifications to handle the subject.

The manual training, or industrial arts as it is now called, was not a spectacular success in the elementary grades, although Mr. G. W. Gesswein said, "It did register one of the happy periods in the school day, and its loss will be keenly felt."

In a report dated June 7, 1922 and addressed to Mr. G. M. Child, Superintendent of Salt Lake City Schools, Mr. Gesswein wrote:

It is not a technical or pre-vocational subject, but stands for the social and practical element that I consider essentially important in education. The idle shop may be an economic waste, but it does not lessen the value of hand work. If all the children, from the kindergarten up, could take this work in one shop under a competent instructor, the shop could be filled to capacity and the efficiency of the work increased considerably. I trust when the work is reorganized it will be taught less as a technical, specialized subject to a few of our boys and girls for a short period a week, but that a work room will be provided in every school, used every minute of the day, where the children from the kindergarten to the high school will have the opportunity of experimenting with concrete materials.

I witnessed the elimination of industrial arts from the elementary school with a feeling of sincere regret.20

With the elimination of industrial arts from the elementary school, a pattern seemed to be set for the following year. Mr. George A. Eaton wrote:

An educational loss, although, perhaps, not so vital in its consequences, appears in the industrial subjects, manual training, sewing and cooking. The falling off in numbers from the eighth to the ninth grade is even greater here than in the languages. In the majority of cases there can be no question that those who begin the work in the eighth grade would do better to continue this work in the ninth. There is no repetition in this grade, for the course is so outlined as to be progressive every step of the way. It should be emphasized, too, that any pupil wishing to pursue the industrial or commercial courses in the senior high school, should take the beginning of these courses in the junior high school. Again, the need of educational guidance is apparent.21

The course of study for the junior high schools was revised and rewritten in 1928. It was printed in four separate reports.

Manuals each prepared by a special committee. Manual No. 1 contained general statements concerning the objectives to be achieved, required and elective courses to be given, organization of work, and methods in instruction, together with suggestions relating to the use of tests for evaluating the effectiveness of instruction. In Manual No. 2 were outlined the courses in practical arts (including mechanical and agricultural arts), homemaking, agriculture, fine art (including drawing, design, color work, lettering, etc.), and music. The subjects outlined in Manual No. 3 were as follows: mathematics, history, geography, civics, general science, biology, and physical education (including health and hygiene). Manual No. 4 comprised the language-arts courses. It contained outlines on English (including grammar, composition, literature, spelling, and writing), and the foreign languages: Latin, French, German, and Spanish.

The different committees which prepared these manuals worked in much the same way as did the committee having the responsibility of revising the course of study for the elementary schools; they called to their assistance many school officials and classroom teachers. Therefore, each manual was a product of cooperative effort.22

Due to the great stress being placed upon vocational education, the development of trade and industrial education was making slow but substantial progress in Utah schools. This work was subsidized by the Federal Government.

followed three main lines: namely, part-time education for employed minors, trade preparation training for high school students, and evening school training supplementing the employment need for adults.

The part-time instruction, based upon the 1919 law which required full-time attendance of all children from 16 to 18 years of age, provided that persons who were eighth grade graduates of 16 years of age may be permitted to enter employment and attend school on a part-time basis. In 1919, less than one-half of the school population between 16 and 18 were enrolled in any school. This number gradually decreased until during the year 1929-1930 less than 700 out of the school population of 146,525 remained unaccounted for and fewer than 4,900 were legally excused; hence, while 3.5 per cent were excused under the law, 96 per cent of all children 6 to 18 were enrolled in school.

During the spring and summer of 1930, Granite, Jordan, Weber, and Salt Lake districts conducted a program of placement and supervision in employment for part-time students. This represented an effort on the part of the schools to help those who were leaving the regular school to work, to secure more satisfactory employment relations, and to secure better training from work experience. Reports of the placement workers indicate highly gratifying results, notwithstanding the severe shortage of employment during 1930.23

In line with this new development—a need for the vocational training offered in the junior high schools and

23. Ibid., p. 90.
the changes taking place in the industrial arts program throughout the country—the State Board of Education set up new certification requirements for industrial arts teachers. This was a step toward the achievement of new objectives in this work. The general education of every public school pupil—his cultural development—is incomplete without concepts, understandings and appreciations regarding manufacturing, science, invention, skill and the hoot of workers in these various fields. Industrial arts merged into trade preparation at this time when general education objectives were changing to specific training objectives. A new and modern approach to this problem was being worked out in many of the industrial arts departments in the junior and senior high schools of the state. Teachers were becoming better qualified through summer schools and in-service training, to interpret and put into operation the type of industrial arts program that meets the need of pupils in this industrial world. Special training courses were offered at Utah State Agricultural College in Logan. Fifty-five industrial arts teachers enrolled for the special courses during the summer school of 1938. In addition to the summer school, a new four-year curriculum was organized to train industrial arts teachers to handle an enlarged and broadened program. A person finishing this course should have been able to teach all units of a modern industrial arts program in the junior and senior high schools. (See Comparison of State Certification Requirements and U. S. A. C. Graduation Requirements—Exhibit "C"; also, see Requirements for Class A Five-Year
Certificate in Industrial Arts—Exhibit "D").

With the new era of industrial arts ushered in, new hope, new visions, and greater enthusiasm were manifest by supporters. In June, 1939, the State Superintendent of Public Instruction, Charles H. Skidmore, wrote in the Character Education Bulletin for the Elementary and Secondary Schools of Utah. The following report of industrial arts was included:

The administrator or instructor who has real insight into educational and character values and who recognizes the effect interplay of the teacher, the situation, and the motivating interests of the students, will recognize in the Industrial Arts some of the richest opportunities in the school for the growth of permanent interests, the training in skills to meet the common tasks encountered in the home or at one's place of business; the cultivation of leisure time activities; and the development of desirable habits and attitudes. Whether or not these values are realized will depend, not only upon their full understanding and appreciation by the teacher and his insight into human nature, but also upon his skill in utilizing the many opportunities which arise from day to day in the free activity permitted in the classroom.

In the first place, students have a keen desire to make things. There are scores of things they would have if they could only make them. They see work going on around them, shrouded in mystery. They seek manual activity and escape from classroom work. The shop offers the open door to things they want to do, and the objects they want to acquire. To be successful, the shop must produce an adequate volume of projects; but it must also teach the science behind the art.

The student's pride is fatally shattered if he labors at a project, only to have it seriously criticized when he takes it home. He wants to be proud of his product. It is important that the instructor suggest or approve tasks that are reasonably within the student's ability, and that he teach the processes and direct the operations until the product approximates the student's capacity. With the unlimited range of projects from which to select, there is no excuse for permitting a student to dawdle on work that is too simple, or to fail and become discouraged on work that is too difficult.
Confidence comes from achievement. Half-hearted work can be turned to earnest application through a word of praise and appeal to the pride that will come from the commendation of parents and friends when the project is taken home, where it will become an article of utility or beauty. Students thus motivated will do their best. It is important, therefore, that care be exercised to adequately cover learning difficulties and all tool and construction techniques. The thoroughness of one's teaching is reflected the same way in the response and efforts of the students.

The student needs many tools and supplies. He is impatient to be at work. This necessitates good housekeeping and proper care of equipment. Yet he is impatient in putting things away, clearing up his bench, or sharpening his tools. He feels that every moment so used is wasted. The Industrial Arts Department offers one of the best opportunities for teaching the law of cause and effect. If he saws a nail, he ruins the saw and cannot have a saw fit for wood until someone spends his time sharpening it. The injury or neglect of a tool is a failure in cooperation and an evidence of poor sportsmanship. If he drives nails in his bench, he will injure his tools or his materials. If he is careless in his measurements, cuts, or construction, his work is valueless. Even the headstrong boy who will not accept suggestions can be brought to time by being allowed to go his way until his error is apparent, even to himself.

A well arranged tool room with a place for everything and everything in its place and a daily routine which requires the accounting for every tool is good character training and if well learned here, with applications in home practice clearly developed, will have a lifelong value. Similar values will come from the practice of an adequate clean-up and storage of materials after every work period.

In everyday life there are many short cuts by which one may cover up poor workmanship. To be careless in leaving glue on materials, to leave bruises and sandpaper scratches on surfaces which show, in the hope that stain and varnish will cover them over, leads to a sad disillusionment and may be the occasion for hours of extra work. To learn to do each unit well, lest it ruin the whole job, is not without its values. The instructor who is alert will see and capitalize these many opportunities.

Students often complain that they can see little or no value in other school subjects, notwithstanding efforts of teachers to provide
examples and illustrations. One single experience in the shop in which the student cannot proceed without the understanding of a principle in mathematics or science; or one situation where a student must find scarce or qualities of materials, often may be sufficient to turn him back to some other study prepared to follow it through to a satisfactory mastery.

The student who has accomplished a fine piece of work will also have acquired a new sense of values for materials and for the labor of others. A sort of kinship will grow out of experience in common. There are values fundamental to the basic structure of character which may be readily used by the understanding teacher.

Character also has a time value. The boy who makes a book cabinet, a leather purse, or repairs an automobile, receives a new insight on life's requirement, when he learns that the productive value of his time is three cents an hour.

These opportunities for the boy and his teacher to come face to face with reality provide a setting for close companionship and understanding. The common bonds and the helpful interest of the teacher in aiding and directing the student in the solution of his difficulties also permit the teacher to learn his other needs and to offer assistance which will be received with the same confidence as is placed in his shop's suggestions where the results of compliance are immediately apparent. Few instructors other than the industrial arts teachers will find the setting for the stimulation of effort and the giving of personal guidance so inherent in the situation or so rich in opportunity for character development.24

The new and progressive program for the industrial arts had no sooner started when a new and unforeseen foe started taking its toll. The school children of the state were in session but were facing the problems thrust upon them by total war. The teachers trained in industrial work could find employment elsewhere with much higher pay. The teachers who were left were faced with responsibilities of developing

some form of thinking pattern, or in developing usable skills to assist the students in this emergency.

The schools of the state, like other schools of the nation, were faced with the enormous task of changing the curriculum to meet the conditions of total war. A special curriculum committee was established to study the needs and then to indicate the change that must be made in order to have the school program contribute its share to the students' needs, community needs and national service.

There was more need for science and mathematics; vocational training and industrial arts program should receive more emphasis and increase with the continuation of the war and prepare for the industrial changes that would follow. The charge placed on the schools of the state and nation were to train the students for war first and then for the peace that would come.

The armies, being composed of specialists highly trained to meet the need of motorized and mechanical warfare, turned to the schools of the nation for aid. With this objective in mind the curriculum was expanded to include courses which would assist in training in a specific way to meet the needs of war. These courses were set up in the industrial arts and vocational education departments. Instructors were now teaching in compliance with outlines furnished by the Army Air Corps, Army and Navy Signal Branches, the United States Office of Education and the Civil Aeronautics Authority. The courses included preflight aeronautics, motor equipment maintenance, auto mechanics, machine
shop practice, welding, fundamentals of radio and electricity, aircraft design, mechanical drawing and blue print reading, metalcraft and leather work, woodwork, and model airplane building. 25

Although there could be no "school as usual" the table following indicates the rank of high school subjects according to students enrolled as of October, 1943: (Total enrollment in schools, 31,750 — in 73 of 75 senior high schools.) 26

<table>
<thead>
<tr>
<th>RANK</th>
<th>SUBJECT</th>
<th>ENROLLMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>English</td>
<td>29,230 *</td>
</tr>
<tr>
<td>2.</td>
<td>Social Studies</td>
<td>26,172 *</td>
</tr>
<tr>
<td>3.</td>
<td>Physical Education and Health</td>
<td>24,076 *</td>
</tr>
<tr>
<td>4.</td>
<td>Sciences</td>
<td>20,536</td>
</tr>
<tr>
<td>5.</td>
<td>Mathematics</td>
<td>18,466</td>
</tr>
<tr>
<td>6.</td>
<td>Commerce</td>
<td>16,288</td>
</tr>
<tr>
<td>7.</td>
<td>Music</td>
<td>16,560</td>
</tr>
<tr>
<td>8.</td>
<td>Industrial Arts</td>
<td>8,952</td>
</tr>
<tr>
<td>9.</td>
<td>Home Economics</td>
<td>8,774</td>
</tr>
<tr>
<td>10.</td>
<td>Agriculture</td>
<td>4,241</td>
</tr>
<tr>
<td>11.</td>
<td>Art</td>
<td>2,304</td>
</tr>
<tr>
<td>12.</td>
<td>Speech</td>
<td>2,095</td>
</tr>
<tr>
<td>13.</td>
<td>Foreign Languages</td>
<td>1,495</td>
</tr>
</tbody>
</table>

*Starred classes are required.

As a direct result of the war and the high salaries in industry, it was very difficult to get industrial arts teachers to continue in the field. During the years 1942–1944, one person completed the curriculum for industrial arts teacher training which had been established at Utah State Agricultural College. There was a serious dearth of

qualified industrial arts teachers. Many of the schools had taken men with some trade experience and attempted to carry on the industrial arts work. During the year of 1943-1944, twenty industrial arts programs were closed because teachers were not available.

In 1943, in cooperation with the Utah State Agricultural College, William E. Mortimer and Don E. Greenwood were employed to help improve industrial arts in the junior and senior high schools in the state. This in-service training of industrial arts teachers was organized to accomplish the following:

1. Organize facilities for industrial arts departments.
2. Establish systems of management for industrial arts departments.
3. Train industrial arts teachers.
4. Prepare and use course materials in industrial arts.

During the year 1943-1944, the following services were given to industrial arts departments in the state:

1. Twenty-six surveys were made of industrial arts departments and recommendations for improvements given to superintendents.
2. The men employed to help improve industrial arts, carried out the recommendation in four schools. This included such work as building benches, re-organizing toolrooms, rearranging machines and equipment, and giving teacher training to the instructors.27

27. Ibid., p. 62.
Utah's program of industrial arts is a national outgrowth of programs of yesteryears. The "mechanic arts" or "manual training" idea which flourished at its best a generation ago laid the foundation for our present shop programs, and in some schools, these old philosophies of shop teaching are the current major guiding influence of the present programs. While many values were evident in the old manual training idea, modern thinkers in the field of industrial education are prone to discount these values when compared to the results which can be achieved from a modern industrial arts program.

Industrial arts functions in five basic fields of industry

In Utah the Industrial Arts Program recognizes the following five basic fields of industry as important enough to warrant study in the school shop: drawing, woodwork, electricity and radio, metals, and crafts. The "crafts" field should include work with such materials as leather, plastics, ceramics, the finer metals, lapidary, etc.

As the present State Plan is organized, it is recommended that schools generally, and especially junior high schools, offer as much instruction as possible in as many of the above fields as is practicable. Thus students will become more thoroughly acquainted with the industries of the world in which they live, and they will be able to recognize, use, and understand the industrial materials, tools and processes which they contact in their daily lives.

A questionnaire which was sent out from the State Department to approximately 175 school shops in January, 1946 was completed and returned by 131 different Industrial Arts teachers. The information reported in this questionnaire bears out the contention that the breadth of the Utah Industrial Arts Program is not as inclusive as it should be. Of the 131 schools shops reporting, 94 reported that they were teaching woodwork, 73 reported that they were teaching drawing, 70 reported they were teaching some form of craft work (either leather, plastics, jewelry or other), 62 reported that they were offering training in electricity. If the State Plan were adopted throughout the State, the great
majority of these 131 school shops would be offering instruction in each of the fields mentioned above rather than a percentage ranging from 71% in the case of woodwork to 30% in the case of electricity.

Some other interesting facts brought out by this survey include the following:

a. There were 474 girls registered in school shop classes in the 131 shops. Most of these girls were registered for courses in either arts and crafts or home mechanics.

b. There were 12,533 boys registered for Industrial Arts work in these schools. This makes a total shop enrollment for the 131 schools of 13,007 students. According to the 1943-44 statistics, there were 58,308 boys and girls registered in junior and senior high school enrollment, the survey indicates that only about 22% of the boys and girls in junior and senior high schools are availing themselves of the opportunity of participating in Industrial Arts training programs.

c. The average Industrial Arts class consisted of approximately 22 students (22.2).

d. Forty-two of 131 school shops reporting were used either concurrently or at separate hours for farm mechanics classes.

Broad and adequate program of industrial arts

During the biennium ending June 30, 1946, the state department of public instruction attempted to organize and put into operation a broad and adequate plan of industrial arts which would satisfactorily meet the needs of Utah's communities. There was a great amount of work to be done, and for this reason the state department of public instruction employed Don B. Greenwood as the first full-time Supervisor of Industrial Arts Education for the state, a position he held for a period of nine months. After this time, the

position was vacant until 1951, when Algot E. Andersen was appointed. Mr. Andersen still holds this position. The work was carried on as an added responsibility by Howard B. Gundersen and later by Von Robertson until Mr. Andersen was assigned to the position. The state supervisor’s responsibility is to raise the professional standards of industrial arts teachers through the organization of adequate courses of study material, in-service teacher training programs, and teacher training curricula which would qualify student teachers to take their places in the school shops of Utah as efficient and competent industrial arts teachers. The industrial arts education division of the state department of public instruction was ready to aid all local school districts in such matters as:

1. Making suggested layouts of school shops and aiding the instructors and administrators in organizing the instruction offered that the objectives of modern Industrial Arts will be attained in the school shop.

2. Aiding the instructor in setting up systems of shop management.

3. Making suggestions to administrators as to available qualified teaching personnel.

4. Providing information relative to educational films and other teaching aids and devices for use in shop classes.

5. Aiding the instructor in the preparation and use of courses of study material for the various units of work included in the local shop program.

6. Advising instructors and administrators regarding the type and size of equipment to be purchased for installation in school shops.

7. Advising administrators as to the specific type of Industrial Arts program which will best suit the needs of the community and which will best meet the objectives of Industrial Arts education.

This supervisory help which is being provided by the State Department is being given for the sole purpose of improving instruction in
school shops throughout the State of Utah, and it is important that local school administrators do their utmost to enrich the Industrial Arts offering in their respective schools, and that they stress the importance of Industrial Arts as a part of the general education of the youth of Utah. 29

At the close of the biennial period, ending June 30, 1950, it was noted that only one of the recommendations made in the previous report for the advancement of industrial arts was carried out. There was continued policy of replacing marginal teachers with teachers trained at the State Teacher Training Institution and certificated according to standards of the state plan for industrial arts. Through this policy there had been a definite improvement in the quality of industrial arts instruction during the past two years, particularly in the junior high school levels. The industrial arts training department at the Utah State Agricultural College had developed into one of the leading institutions for the training of industrial arts teachers. Not only did its teachers fill vacancies in Utah, but they were being placed in many other states.

Because of budget restrictions, two recommendations for continued advancement of industrial arts during this biennium were not carried out. The department of public instruction had not been able to employ a state supervisor of industrial arts, nor had there been funds to employ a part-time specialist to develop the course of study materials or to organize and coordinate the activities of teachers in the development of instructional materials.

29. Ibid., p. 47.
The acceptance of industrial arts as an integral part of the secondary education curriculum was much wider at the end of this biennium than at the beginning. New school buildings being built and additional shop space being provided indicated that school administrators were seeing the need and value of the exploratory and pre-vocational experiences provided in industrial arts classes. In Salt Lake City four new industrial arts shops were provided during this time. In every new secondary school building approved by the State Board of Education, industrial arts facilities were made more adequate and suitable to carry on the type of program recommended in the state plan.

Salt Lake City also made provision that every boy graduating from high school must have completed one year of industrial arts instruction in a general shop program. In Utah's growing industrial economy, this was a definite step towards better guidance and pre-vocational preparation for boys who enter industrial activities.

There was still evidence of need to strengthen and improve the industrial arts program in many of the senior high schools. A definite lag was evident in the interest of students in the 10th, 11th, and 12th grades. This was because: (1) too much of a tendency to repeat in these grades the activities students experienced in the 7th to 10th grades; (2) a lack of depth and challenge to older boys in the industrial arts program as then conducted; and (3) a definite lack of facilities for teaching advanced industrial arts courses and a lack of experience and interest on the
part of many industrial arts teachers to develop courses sufficiently heavy to challenge student interest.

Present-day concepts of industrial arts—Developments

From the beginning, industrial arts has adopted methods which promote good thinking habits, effective ways of attacking problems, and creative activity. Its methods are concerned with enabling "his hands to labor to the profit of his mind." Hence, emphasis upon analysis, planning, beauty of design, knowledge and interest take precedence over attention to skill, speed, and quantity production. The teacher's first problem is that of stimulating and maintaining interest. This usually is accomplished by means of talks, pictures of industrial products and processes, exhibits of products, factory visitation, library assignments, and pupil reports. Text books rarely are used except as reference materials, although shop manuals and notebooks often are used to advantage. Some teachers use job sheets; others use operation sheets, information sheets, problem sheets, and assignment sheets; still others use a combination of all. Whether or not instruction sheets are used, it seems to be axiomatic that skills are learned best from imitation of a master followed by frequent repetition by the pupil.30

With the influx of quite a number of non-members of the Church and the merging of the volunteer schools into a territorial school system, there came the decision that religion no longer could be taught in the schools. Consequently, in 1875, the first Church school was established—the Brigham Young Academy at Provo, Utah. A few months later the Brigham Young College in Logan, Utah was started. The charters of these schools provided that not only the regular courses were to be given, but, also, courses in theology and practical religion, agriculture, mechanic arts, and home economics. The founder, Brigham Young, considered that an education should include the ability to make a living. He expressed the hope that in time the funds of these schools would permit a young man to get not only a good education for a vocation, but that on graduation he should receive $500.00 with which to buy the equipment he needed that he might at once become a producer. At this time—1875-1876—the schools of the United States had not yet begun any of this industrial work.¹

Although the pattern was set by Brigham Young in the year of 1875, the first course in mechanic arts was taught during the school year 1892-1893. The course was for two years and consisted of the following:

First Year

1st Semester
3.20, Grammar A.
2.20, Composition A.
5.20, Arithmetic B.
5.20, Geography B.
5.20, Drawing A, Mechanical.

2nd Semester
5.20, General History A.
5.20, Algebra A.
5.20, Geometry A.
5.20, Drawing B, Mechanical.

Second Year

1st Semester
5.20, Physics A.
5.20, Geometry B.
5.20, Drawing C, Mechanical.
5.20, Shop Practice, 2 hours per day, iron and wood.

2nd Semester
5.20, Trigonometry A.
5.20, Mechanics A, Elementary.
5.20, Drawing D, Architectural.
5.20, Shop Practice, iron and wood.

President Brigham Young, seeing that the tendency of the educational system of the day was to exclude entirely the teaching of religious principles, thought that the result would be unbelief and infidelity. He was moved upon to inaugurate among the Latter-day Saints a system that would provide for the complete development of the individual—physical, religious, and intellectual: a system of which the principles of the Mormon Church would form an important part of the educational system. In accordance with the desire expressed and through the efforts of the Stake Presidency and other leading church men, the Sanpete Stake Academy was organized at Ephraim, Utah on November 5, 1888.

2. Circular of the Brigham Young Academy and Latter-day Saints' Normal Training College, Provo, Utah, 1891-1892, pp. 20, 29.
In 1894, on the recommendation of Dr. Karl G. Haesser, the Church Board of Education granted the Academy a High School Charter, and a three year high school course was planned. From the large attendance of students during the year of 1895, they could see that a larger building was needed. The North Ward School House was secured. This building had a seating capacity for two hundred students. This new home of the students marked an epoch in its history: two competent teachers were added to the faculty; the high school course was extended to a full four-year course; the one-year normal course was extended to a two-year course; music, commercial law, carpentry and blacksmithing were added to the curriculum. To meet the requirements of the school in the tenth academic year (1897-1898), another room was added. This room served two purposes— as an office, and when needed, as a classroom. The seating capacity was again insufficient. During the year from 25 to 50 applicants (young men and women), were turned away because there was no room for them.3

The work of manual training in the academies had hardly started, however, when the people of the state manifested an indifference to the advantages which the young people might have enjoyed. During the school year of 1900-1901, Dr. Joseph M. Tanner stated a concern in that only fifteen students registered for manual training classes in blacksmithing and carpenter work. Dr. Tanner stated, "This does

not speak well for the state, and every effort should be used to arouse the people from this condition of indifference toward what ought to be a matter of deep concern to them."

In 1895, The Contributor, representing the Young Men's Mutual Improvement Associations of the Latter-day Saints, published an article by the editor entitled, "Manual Labor and Mental Training." The editor said:

We often hear complaints to the effect that young people who attend the high schools, colleges and universities of the country are valueless for manual labor when their school season is passed. We regret that there is any foundation for this feeling. Where this is the case, however, there is some defect in the educational methods, for every student should be taught, and be made to understand, if possible, that manual labor is just as noble and as necessary as is mental exertion. Indeed, it is more necessary for the welfare of the human race.

In this Territory we note the disposition of the young people in some places to look with disfavor on manual labor, one result of which is that few of our young men are acquiring trades. Were it not for the emigrants who come to Utah from abroad who have been trained to various occupations, Utah would soon be in a very bad condition as far as mechanics and artisans of various kinds are concerned. For this and other reasons we would feel pleased to see schools of manual training established in connection with our Church academies, where young men and young women could be trained in various industries, which are necessary to the establishment and perpetuation of a commonwealth such as ours.4

By the year 1906 the Church had established about seventeen schools in the territory. Seven academies had been established in Utah, all of which were teaching mechanic arts—consisting mainly of carpentry and woodworking. These academies were: Snow Academy at Ephraim, Utah; Brigham Young

Academy and Latter-day Saints' Normal School at Provo, Utah; Summit Stake Academy at Coalville, Utah; The Murdock Academy at Beaver, Utah; The Millard Stake Academy at Hinckley, Utah; and the Emery Stake Academy at Castle Dale, Utah. (See Exhibit "E" for course work carried on in these various schools.)

Conference reports

During the Seventy-third Annual Conference of the Church of Jesus Christ of Latter-day Saints, Elders Joseph M. Tanner and Reed Smoot gave full reports of the development of the Church school system and its efforts in the direction of manual training. The conference was devoted mainly to the effort of introducing manual training into the Church schools. Elder Tanner expressed the need for the youth of the Church to have training for the manual arts. Elder Smoot said he had seen the evils that exist from lack of manual education for the youth of the Church.\(^5\)

In his opening address at the Seventy-sixth Annual Conference of the Church of Jesus Christ of Latter-day Saints, President Joseph F. Smith came to the aid of the mechanic arts and manual training. He said that the General Authorities of the Church had sought to encourage the establishment of manual training in the Church schools. He also asked for assistance from the wealthier men to give aid for this cause.\(^6\)

(See Exhibit "F" for full reports.)

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5. Conference Reports, April, 1903 to October, 1907. Seventy-third Annual Conference of the Church of Jesus Christ of Latter-day Saints, pp. 50, 51.

6. Conference Reports, April, 1903 to October, 1907. Seventy-sixth Annual Conference of the Church of Jesus Christ of Latter-day Saints, p. 5.
Consolidation of schools

During the years 1892 to 1922 the Church academies occupied an important part in the mechanic arts training in Utah. The high schools, as they are known today, were only beginning to develop in the rural areas of the state. They were the direct outcome of the consolidation of schools as set by the State Legislature vote of 1910. Since 1922, the Church policy has been to withdraw from the field of secondary schools, leaving the responsibility for industrial arts education to the educational system of the state of Utah.
The system of education in Utah, for which we owe a debt of gratitude, aimed to raise the standards of educational achievement. Its aim was to make this democratic country a literary nation. The basic subjects taught—reading, writing and 'rithmetic, known as the three R's—may have served as an adjunct to industrial arts training, but they also contained the extrinsic merit of fitting students for better citizenship.

Statehood in 1896 clearly marked the beginning of a new social era. Much of the Latter-day Saint and "Gentile" conflict had been resolved. The economic views of the state of Utah had been broadened to include mining and industrial developments. Progress in education was trying to keep pace with other branches of human activity.

**University of Utah**

The State Normal School of the University of Utah endeavored to keep pace with educational progress. In the year 1896, the first teacher training course was taught for preparation in manual training, under the direction of Mr. Bond.

The reason for including manual training in the curriculum of the Normal School was explained by William Stewart in the Utah University Quarterly of December, 1896, and read as follows:

"This is a practical age, one of material development. The school has been criticized for unfitting the child, rather than fitting him for the practical
duties of life. No doubt there is occasion for such criticism. It is to correct this that manual training has been made a part of the qualifications of the modern teacher. Such a department was added to the Normal School at the beginning of the present year, and has for its end the development of respect for manual labor, the acquiring of habits of order and neatness, and the development of the creative instinct. The course consists ofloyd carpentry, constructive desk work in cardboard, and theory and practice of educational manual training to prepare teachers for giving regular class work in wood lloyd and cardboard and for skillfully applying methods of teaching and training that require hand work. While manual training in the Normal School is solely for the benefit of students who expect to become teachers, still it is necessary that the children of all grades occasionally do this work that the student teachers may see and understand its educational value in the common schools. Children look forward to their manual training period with delightful anticipation. This sphere of usefulness in education can scarcely be estimated. Pupils who are stupid in school and take no interest in their books, are often more inventive, persevering, and industrious in manual work. I believe manual training, properly adapted to the grades will settle the question of truancy and render unnecessary the truant police. I hope in another year that the usefulness of this department will be increased.

Legislation was passed in 1897 creating a Branch Normal School of the University of Utah in Cedar City. The University Branch Normal School prospered and, under the guidance of John M. Tipton, rooms were provided in a new building for manual training workshops. These rooms were well equipped with apparatus, tools and materials necessary for the successful completion of the work offered in the department. Manual training was taught as part of the four year course. The work shop was provided with a lathe, forge, and tools.

for work in light metals. Tools were also provided for work in cardboard, paper cutting, and clay modeling.

The University Normal School and the State Board of Education worked closely together from 1896 to 1915, in raising teacher certification standards in all phases of education. In 1916 the State Board of Education entered upon an era of teacher specialization. Four basic professional curricula were offered:

(1) An art education course
(2) Science-education course leading to degree, and an elementary certificate.
(3) Kindergarten-education course leading to a kindergarten diploma at the end of two years, and
(4) A series of highly specialized vocational teacher-training courses in the practical arts.

Special teacher-training courses were eliminated by 1928-1929. The manual training course was thus eliminated, also. A trend toward general high school certificates became prevalent at that time. The general certificate holder held a regulation bachelor's degree with a particular major and minor teaching combination, as opposed to the earlier special subject certificate granted at the end of two years of college work.

Brigham Young University

Since 1883, when the first work in drawing and mechanics was offered in the old Brigham Young Academy, industrial arts and drawing have been consistently taught. Seventy years of constant service has been given to students attending
the Brigham Young University. Many successful artisans and teachers of the practical arts have filled and are now holding prominent positions in the state of Utah as well as other parts of the United States.

At the beginning of the school year 1904-1905, E. H. Eastmond was made the first head of Manual Arts Training, a position he held until June, 1919. Mr. William Snell, upon receiving his B. A. Degree in the spring of 1916, was engaged as a full-time instructor. In 1919-1920, a departmental change was made and Carl F. Eyring became director, with William H. Snell assistant director of mechanic arts. In the autumn of 1922 the College of Applied Science was established. The mechanic arts was placed in that college, with William H. Snell as head. Mr. Snell still holds that position.

Under the guiding influence of Mr. Snell many competent teachers of industrial arts have been trained and now hold positions in the state of Utah, Teacher training at the Brigham Young University was curtailed, however, when the new State Certification Requirements became effective on June 30, 1939. 2

Utah State Agricultural College

During the spring and summer of 1890 preparations were made for the opening of the Utah State Agricultural College at Logan, Utah. Mr. J. W. Sanborn became the first president of the College and soon issued a prospectus entitled,

"The Utah Agricultural College Announcement of Its Opening Year." The pamphlet was a program for the future. He set forth the purposes of the College as stated in the Morrill and Lund Acts and announced that the proposed courses would cover four distinctive lines of instruction and three special courses. There would be courses in Agriculture, Domestic Arts, Mechanic Arts, and Civil Engineering. The special courses to be offered were: a three years' course in Agriculture, course in Mining Engineering, and a course in Irrigation Engineering.  

In the Utah School Report, 1896-1898, the Superintendent of Public Instruction made the following report concerning the Agricultural College:

The agricultural college antagonizes the old system of education which was satisfied with words and ignored the value of things. . . . There is a higher consideration than that for the establishment of these schools of agricultural and mechanical industry. Manual training, which is a special feature of the agricultural college, is not merely for the farmer, the carpenter, the blacksmith, the machinist. . . . "Its need rests on the imminent being of man more than on a transient industrial need. While therefore this manual training gives skill for industrial pursuits and lifts work to a high place in the respect and gratitude of the child, it supplies imperative needs of permanent self-expansion as no other educational agency can do. With proper guidance this systematic manual training becomes the most powerful agency in securing for the pupil the habit of success, a calm sense of power, a firm conviction of mastery, which are so essential to fullness of life and almost indispensable to the success of the school."

Manual training, therefore, does not simply mean a knowledge of tools; nor does it imply an

3. The Utah Agricultural College Announcement of Its Opening Year, 1890-91, p. 13, as cited by Joel E. Ricks, A History of Fifty Years—1882-1932, p. 27.
expert knowledge. Manual training in the workshop and on the farm of the agricultural college does not mean a knowledge that can be acquired on any farm or in any workshop. It is a prominent but not a dominant feature.

The agricultural college will make a better artisan than the workshop; because, while the student is acquiring manual dexterity, he is at the same time getting a better mental discipline, than it is possible for him to secure in any of the "old-line" institutions of learning.

But the practical side, the industrial aspect of this education, cannot be lost sight of. Industrial education is of paramount importance in our own State. The need of skilled artisans, of mechanical and civil engineers, is probably nowhere more imperative than in Utah. By encouraging the purely industrial features of the Agricultural College, the State is doing more probably than it could do in any other direction towards encouraging the establishment of manufacturing enterprises and in opening up avenues of employment for our surplus population. It is as much the business of the State to encourage industrial education as professional, and in doing so it is not only fitting the student for a special vocation in life, and there are vast numbers of our young men that need a special vocation, but it is at the same time indirectly but very potently helping the State to develop her dormant resources; because the more skilled artisans, civil engineers, and mechanical engineers a State possesses, the more likelihood there is that the natural resources of the State will be developed and that manufacturing enterprises of all kinds will flourish. Moreover, a man with a special industrial education cannot follow his vocation, cannot engage in industrial pursuits without at the same time benefiting the State, for the product of his labor, unlike the product of some other kinds of labor, does not become a tax upon the people of the State; it may fairly be considered an asset of the State. And there is no good reason why Utah should languish, as she does, in industrial activity. From the mere mercenary point of view, therefore, without considering it as an aid in intellectual training, the Agricultural College is a good investment for the State.4

For the purpose of training high school teachers as

specialists in Agriculture, Domestic Science, and Mechanic Arts, arrangements were made whereby students of the State Normal School could enter the technical courses in these subjects at the Agricultural College and receive credit toward a degree for work done in the Normal School. Students who were preparing to become special teachers of the subjects named above were advised to take their professional work at the Normal School and their technical training at the Agricultural College.\footnote{Utah School Report, 1909-1910. Eighth Report of the Superintendent of Public Instruction of the State of Utah, p. 130.}

In order to make the mechanic arts division of the work at the College more efficient it was reorganized in 1910. Mr. W. S. Drew was employed as the director. The result of this change was very evident as most of the shops were crowded to their limits.

The cooperative plan for teacher training did not prove to be too satisfactory; hence, between the years 1912 and 1925, there was no formal teacher training for industrial arts teachers at the College. During the year of 1925-1926, Dr. Irvin S. Noall visited Logan and met with the mechanic arts teachers and discussed with them the Allen plan of job analysis and the organization of instructional material.

Mr. Aaron Newey, a member of the college faculty, was particularly interested in the idea and applied it to his work in the machine shop. It soon became apparent that it could be applied quite generally to industrial arts teachers and, accordingly, Mr. Newey was appointed to teach job analysis.
methods of teaching, and shop organization and management to industrial arts teachers in summer school. By the year 1930 these courses were added to the regular program. Henceforth, the Agricultural College made an effort to provide industrial arts teachers for the secondary schools of the State of Utah. However, because of depression, low salaries, and war service, not many were enrolled in this work until after World War II. Then a great many veterans came back, used their training privileges and elected to enter the industrial arts work. By this time a regular curriculum had been established under the direction of Ernest Jeppson and William E. Mortimer. Since then the college has attempted to supply the needs of the state of Utah with well-selected and well-trained men.6

Ernest C. Jeppson left the school December, 1949, at which time William E. Mortimer took charge of the Department of Industrial Education. During the year 1950 he was appointed acting head of the department and, in 1951, was appointed head. From 1944 to 1952 there was a tremendous growth in this department. The numbers of graduating students holding Class A Industrial Arts Certificates are as follows

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6 Personal interviews with Dr. Irwin S. Noall, Salt Lake City, Utah; and Professor Aaron Nevey, Logan, Utah. August, 1952.
CONCLUSION

Since the advent of the first secondary school shop in the United States many changes have taken place. The objectives have changed somewhat; the type of shop has changed considerably. Industrial arts education is essentially a part of general education which forms a general foundation and background upon which specialized vocational education may be built. It is the connecting link between broad, general education, offering opportunities of an exploratory nature in many areas of activities and specialized vocational education.

With this in mind, the fundamental teaching methods which receive special consideration are:

1. The demonstration or showing method.
2. The lecture or telling method.
4. Discussion or conference method.
5. Discovery or problem-solving method.

A critical observation may be made here pertaining to the fundamental teaching methods:

A minute analysis of the necessary operations or the facts or principles that make up the teaching unit to be presented is basic to successful teaching. If this concept is kept in mind, it will then become imperative that such an analysis be made before the steps of teaching procedure are determined upon. . . .

Not only is it essential to have an analysis of operations and facts pertinent to the presentation, but these must also be arranged in instructional order before they can be presented effectively to the class.2

1. E. E. Ericsson, Teaching the Industrial Arts, p. 45.
2. Ibid., pp. 66-67.
Present-day objectives

The assumed outcomes of industrial arts work are present-day objectives, to be considered as cumulative and unified:

1. Interest in Industry. To develop in each pupil an active interest in industrial life and in the methods and problems of production and exchange.

2. Appreciation and Use. To develop in each pupil the appreciation of good design and workmanship, and the ability to select, care for, and use industrial products wisely.

3. Self-discipline and Initiative. To develop in each pupil the habits of self-reliance, self-discipline, and resourcefulness in meeting practical situations.

4. Cooperative Attitudes. To develop in each pupil a readiness to assist others and to join happily in group undertakings.

5. Health and Safety. To develop in each pupil desirable attitudes and practices with respect to health and safety.

6. Interest in Achievement. To develop in each pupil a feeling of pride in his ability to do useful things and to develop worthy leisure-time interests.

7. Orderly Performance. To develop in each pupil the habit of an orderly, complete, and efficient performance of any task.

8. Drawing and Design. To develop in each pupil an understanding of drawings, and the ability to express ideas by means of drawing.

9. Shop Skills and Knowledge. To develop in each pupil a measure of skill in the use of common tools and machines, and an understanding of the problems involved in common types of construction and repair.

Thus, our present-day objectives for the industrial arts can be stated in many ways. In general, it may be said that the nature of industrial arts in Utah is an effort on the part of the school to help the individual understand and develop in the mechanics of industry, and to choose wisely his

vocational and leisure-time pursuits.

Those who have taught industrial arts in Utah can be proud of the part they have contributed to the educational structure in the state. The important turning point came when Victor Bella Vos of Russia developed an adequate teaching analysis. The Russian system of instruction was adopted in the United States and met with immediate success. Popular interest seemed to increase rapidly and by the year 1991 had spread over the entire country.

Utah first established the manual training school in 1902 in Salt Lake City. The results were so satisfactory that strong public sentiment favored the permanent establishment of the work. Because of the success of the schools in Salt Lake City, other areas of the state established the manual training program during the next few years. By the summer of 1930 the program had spread to most of the state. By the year 1952, only Piute school district did not list industrial arts as part of the regular school curriculum.

Success or Failure

It is apparent that the success or failure of the program is dependent upon a number of factors—chiefly, on the amount of cooperation that can be developed between the industrial arts teachers and the supervisors. If this team can be developed and established on a wide basis in every community, the program can be shaped to meet not only the needs of the present era, but that period which lies ahead. The industrial arts program in the state of Utah has been built upon a firm foundation.
Suggested further work

This study revealed other closely related problems:

1. A study of the growth and development of the physical facilities for industrial arts.

2. An historical background study on the teacher-training for industrial arts teachers.

3. A study of the leaders in the early industrial arts movement.

4. A study of the influence the Smith-Hughes Act had upon the industrial arts movement of Utah.
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(34) Church Academy Annual Announcements.

- Emery Stake Academy, Castle Dale, Utah. Eighteenth Academic Year, 1912-1913.
- Brigham Young Academy and Latter-day Saints' Normal Training School for the Twenty-second Academic Year 1897-98. Provo City, Utah: Cannon Publishing House, 1897.
(35) Personal interviews with:
Miss Mary Mayne, Salt Lake City, Utah. August, 1952.
Dr. Irvin E. Snell, Salt Lake City, Utah. August, 1952.
Professor Aaron Newey, Logan, Utah. August, 1952.
APPENDICES

Exhibit - A

Course of Study—1893
Salt Lake City Schools
The following is the outline of the course as prepared by the committee. It was thought best to leave details and directions to be filled in by each County Superintendent for his county. It is hoped by the committee that this outline will suit the County Superintendents and that they will adopt it for their respective counties.

D. H. Allen,
For the committee.

FIRST GRADE
(First half year)

Language.—
Reading, phonics by imitation, blackboard and chart.
Writing,
Spelling,
Observation lessons.
Numbers, Partition to 6 and count to 50.

Manual Training.—
Calisthenics,
Modeling,
Painting,
Drawing.

Morals.—
Conduct,
Music.

(Second half year)

Language.—
First Reader, Phonics by slow pronunciation, blackboard and chart.
Writing, position and movement.
Spelling,
Observation lessons.
Numbers, Partition to 10, count to 100.

Manual Training.—
Calisthenics,
Modeling,
Painting,
Drawing.

Morals.—
Conduct,
Music.

SECOND GRADE
(First half year)

Language.—
Supplementary First Readers phonics.
Writing,
Spelling,
Observation lessons.
Numbers, Partition to 20 and even parts of 100.

Manual Training.—
Calisthenics,
Sand Modeling,
Painting,
Drawing.

Morals.—
Conduct,
Music.

(Second half year)

Language.—
Second Reader, phonics, dictation marks.
Writing,
Spelling,
Observation lessons.
Numbers, Partition to 40, simple mathematical language.

Manual Training.—
Calisthenics,
Sand modeling,
Drawing.

Morals.—
Conduct,
Music.
THIRD GRADE  
(First half year)

Language.--  
  Reading.  Supplementary Second Readers  
  Seaside and Wayside No. 1.  
  Writing.  movement, form, position.  
  Spelling.  
  Oral Geography, the three kingdoms.  
Numbers.--  
  Harper's First Book for Use of Teacher.  
  Partition of numbers to 60.  
Manual Training.--  
  Calisthenics,  
  Modeling,  
  Drawing.  
Morals.--  
  Music,  
  Conduct,  
  Health talks.  

(Second half year)

Language.--  
  Third Reader.  Phonics, diacritical marks, use of  
  dictionary, gem thoughts.  
  Writing.  Spencerian Copy Book No. 1.  
  Spelling.  Modern Spelling Book.  
Numbers.--  
  Harper's First Book in Arithmetic.  
Manual Training.--  
  Calisthenics,  
  Drawing.  
Morals.--  
  Music,  
  Conduct,  
  Health lessons.  

Note:  No Manual Training listed after Third Grade.  
Course of Study covered Six Grades.
Exhibit - B

Mechanic Arts Meetings
The Mechanic Arts Section of the U. E. A. held its annual meeting today, October 26 at 2 P.M., in the Smith Memorial Building, room 11. Professor Aaron Newey, (sic) associated-professor of Machine Work, Agricultural College, Logan, Utah, discussed a course of study pertaining to shop work. This was followed by a general discussion of the Mechanic Arts Teachers.

A committee of three, composed of Mr. Aaron Newey, Mr. W. C. Crook and Mr. Frank Thatcher, all of Logan, Utah were appointed to formulate the needs and requirements of the Mechanic Arts Teachers of the State in view of employing a director of this work to assist in carrying on a general supervision, throughout the State, that may be of value to the various teachers of the subject. The conclusions of this committee are to be reported in the U. E. A. Review.

A three reel film, "A Romance of the Hard Woods" was thrown on the screen.

The election of officers followed, Mr. Roy Egbert of the Agricultural College, Logan, Utah, was elected president, Mr. L. J. Christensen of the West High School of Salt Lake City, Utah was elected secretary. These are the newly elected officers for the Mechanic Arts Section of the U. E. A. for the following year.

Meeting adjourned.

Signed,

Edw. W. Gesswein
Secretary
Milwaukee, Wis.,
Oct. 25, 1927.

Mr. H. B. Tanner,
Salt Lake City, Utah.

My dear Mr. Tanner:

Would it be possible to obtain from you a brief report of the meeting of the mechanic arts section of the Utah Education Association, held October 20 to 22? We should like to have a report to print in the next issue of the Magazine which will be out on November 15.

Thanking you for your courtesy, we remain,

Yours very truly,

THE BRUCE PUBLISHING COMPANY.

signed Wm. C. Bruce
Editorial Department.
Jordan Jr. High School
11-3-27

Mr. Wm. C. Bruce, Editor,
Bruce Publishing Co.,
P. O. Box 1635,
Milwaukee, Wisconsin.

My dear Mr. Bruce:

In reply to your inquiry of October 25th I give you
below a report of the "meeting of the mechanic arts sec-
tion of the Utah Education Association" held at Salt Lake
City, Utah, October 21, 1927 at 2 P.M. under the direction
of President J. R. Miller:

1. "The Mechanic Arts work as related to creative and
productive industry" by D. K. Christensen, former superin-
tendent of public schools, Salt Lake City, Utah.

Mr. Christensen read his report to the Board of Education
of Salt Lake City of twenty-five years ago recommending the
adding of manual training work to the curriculum. He
stressed the value of the work and its future as he saw it
then. "The shop teacher has a two-fold responsibility:

First: That of giving his course real educational
value
Second: That of training his students so they can
effectively measure up in the world of indus-
try."

He stated that there is now and will be a greater opportuni-
ty for advancement and growth in the vocational lines than
ever before. The future captains of industry will all be
technically trained men and the responsibility for their
training will rest upon the industrial arts instructors.
He further stated that within the range of his observation
the contractors who are succeeding best today are practical
men technically trained.

2. "The report of the progress on the State of Utah
School Program for industrial arts for the past year" by
L. H. Humphreys, Supervisor of Agriculture for State of Utah.

3. "Shop Kinks" or teaching devices were next present-
ed by a number of teachers. Mimeographed illustrations and
explanations accompanied each.

4. "The Utah Vocational Association and its relation-
ship to the mechanic arts teachers and the American Vocational
Association" by I. J. Noell, State Supervisor of Trades and Industries and President of the Utah Vocational Association, Teachers voted unanimously to join the U. V. A. and through it the A. V. A. Efforts were then made to organize a motor ing party to the American Vocational Association convention at Los Angeles next December.

5. Election of officers for year 1927-1928:

President: Henry B. Tanner,
50 South 10th East,
Salt Lake City, Utah.

Vice Pres.: Jesse M. Woodhouse,
Bingham High School,
Bingham, Utah.

Secretary: Miss Mary Mayne,
East High School,
Salt Lake City, Utah.

6. After adjournment of sectional meeting a demonstra tion was given on what lacquers are, how made and used by representatives of the Murphy Varnish Company.

Yours Very truly,

signed H. B. Tanner
Secretary, Mech. Arts Section,
Utah Educational Association,
1926-1927
Exhibit - C

Comparison of State Certification Requirements and U. S. A. C. Graduation Requirements

Printed: April 10, 1938

Became effective: June 30, 1939
### COMPARISON OF STATE CERTIFICATION REQUIREMENTS AND U. S. A. C. GRADUATION REQUIREMENTS

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<td>Principles &amp; Methods of Teaching</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Total Prescribed</td>
<td>78</td>
<td>112</td>
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In addition to these prescribed courses there must be:

- Electives: 36 hours
- Major: 30-50 hours
- Minor: 18 hours

**Senior College Cr.:**

54 hours

There are 2 hours of English and 3 hours of Physical Education required by the College and not by the State. The College also requires that students have a minimum of 36 hours of free electives. Adding these to the 78 hours required by the state makes a total of 119 hours that are set. This leaves 67 hours to be used in setting up the teacher training curriculum.

- 78 Required by State
- 36 College Requirements in excess of state
- 186 Required for Graduation
- 112 Set for Teacher Training Curriculum
- 67 For Teacher Training Curriculum
Exhibit - D

Summary of Requirements for Class A Five Year Certificate in Industrial Arts
STATE DEPARTMENT OF PUBLIC INSTRUCTION  
Charles H. Skidmore, Superintendent  
Division of Industrial Education  
E. B. Gunderson, Director  
Salt Lake City  

SUMMARY OF REQUIREMENTS FOR CLASS A FIVE YEAR CERTIFICATE IN  
INDUSTRIAL ARTS  

<table>
<thead>
<tr>
<th>Home</th>
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<tbody>
<tr>
<td>Date_____________ Name_______________________ Address_____________</td>
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<td>School_________________________ Address_________________________</td>
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<tr>
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<tr>
<td>Language Arts</td>
<td>10</td>
<td>Edu. Psychology</td>
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<td>Machine Work</td>
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<td>(Composition -</td>
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<td>Org. &amp; Adm. of Ed.</td>
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<td>2</td>
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<td>6 hours)</td>
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<td>Voc. Guidance</td>
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<td>Forge Practice</td>
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<tr>
<td>Social Science</td>
<td>10</td>
<td>Physical Education</td>
<td>3</td>
<td>Ornamental</td>
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<tr>
<td>Biological Science</td>
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<td>Driver Ed. &amp; Train.</td>
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<td>2</td>
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<tr>
<td>Physical Science</td>
<td>10</td>
<td>Prin. &amp; Obj. of I.A.</td>
<td>3</td>
<td>2</td>
</tr>
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<td>School Health &amp;</td>
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<td>Methods of Ind. Arts</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Hygiene</td>
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<td>Shop Org. &amp; Mgt.</td>
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<td>Observe &amp; Prac. Teach.</td>
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<td>Articulation of Ed. Units</td>
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Note: 1. The groups may be filled from the above recommended courses or their equivalents.  
2. One minor is required, two are preferred.  
3. It is recommended that the minor for the high school certificate be in a subject other than industrial  
   arts.

Prescribed courses 125  
Electives 62  
Total 187  

Certif. Status: ____________________________

Courses Taught and Periods Per Day: ____________________________
Exhibit - E

Church Academies

Courses of Study
Explanation of Subjects
Description of Subjects
Notes of Interest
Faculty
Woodwork. (p. 22)

J. C. McGurrrie.

A. Elementary Woodwork.—Care and use of tools, sawing, planing, mortising and tenoning. Eight hours practice each week. Fee, $2.00 for material. First Semester.

B. Continuation of Course A. Dovetailing, braceframing, and practice in making useful things such as work benches, tool chests, brackets, foot stools, ironing boards—the things needed about the home. Fee, $1.50. Second Semester.

C. Woodwork.—This course embraces a general line of practical work, the use of the steel square, joints and framing used in building hay sheds and other farm buildings.

This course will also include the making of plain furniture in hard wood. Fee, $1.00.

D. This course embraces principles necessary in highest grades of cabinet work and those used in practical carpentry.

The object of Manual Training in the high schools is not to give the student a trade but rather to develop his taste and help him to discover himself.

In addition to this, however, we hope to give our students some practical ideas which they can work out, with profit, around their own homes.

We cannot hope to turn out finished tradesmen in two or three years of class work, but we can teach the fundamental principles and ideas which will enable those naturally inclined to this line of work to follow with a fair chance of becoming master mechanics.

Credit will depend upon the amount and quality of work done.
for efficient service.

Carpentry Course. (p. 15)

First Year.
*Theology (a) Book of Mormon. One-half unit.
*Mathematics (a) Algebra. One unit.
*English (a) One unit.
*Drawing (a) One-half unit.
*Carpentry (a) One unit.

Second Year.
*Theology. Life of Christ. One-half unit.
*Mathematics (b) Geometry. One unit.
*English (b) One unit.
*Carpentry (b) One unit.
*Physiography (a) One-half unit.

Third Year.
*Theology (a) Old Testament. One-half unit.
*Mathematics (a) Solid Geometry. One-half unit.
*English (a) One-half unit.
*Physics (a) One unit.
*Carpentry (a) One unit.
*Mechanical Drawing. One-half unit.
*History (a) One-half unit.

Note—The subjects marked (*) are required.

Manual Training. (Carpentry) (p. 17)

This course covers three years, and is designed to lay the foundation for good, intelligent, practical carpentering, so that every student who takes the course, if compelled through force of circumstances so to, would be enabled to put up his own granary, barn or house, and if further necessary construct the most simple articles of furniture necessary for household use.

Carpentry. (p. 24)

A three years' course is outlined, and comprises instruction in all the fundamental principles of woodwork, including turning, carving, polishing, and staining. Cabinet making is the principal phase of the work, but third year students are required to take mechanical drafting and are given special instruction in the art of house building, such as framing, roofing, stair building and finishing work.

Two hours per day are required of each student. The shop hours are from 1 to 5 P.M. Those who complete the full three years' course will be awarded a certificate of graduation. The student, at the close of the year, is permitted to take to his home at a nominal expense, as a
permanent possession, all the articles he has made.

The courses are as follows:

a. Exercises in sawing, planing, mortising, dovetailing and general joinery, and the application of these in simple furniture. Sharpening and adjusting carpentry tools. Plain cabinet work. Staining and varnishing.

b. Cabinet work, construction of a standard carpenter's tool or some similar piece. Saw filing, wood turning. Construction of a book case, or something similar.


The HUDGELL ACADEMY ANNUAL. Beaver, Utah, 1909-1910.
Published by the Hudgell Academy, Beaver City, Utah.

Educational Aim. (p. 5)
The high aim of the School is to offer instruction:
1. in the principles and doctrines of the Church of Jesus Christ of Latter-day Saints;
2. in the building of character;
3. in the arts and sciences as given in primary and secondary schools;
4. in such general training as will fit young people for practical life.
The aim, in short, is to promote man's complete development—physical, intellectual, moral, and spiritual.

Faculty. (p. 5)
John G. McGurrin.
Instructor in Missionary Class and in Woodwork.
Fifteen years' experience in house building; President of the Eastern States Mission 1899-1908.

Industrial Course. (p. 18)
(Note): In the Industrial course, the following subjects, called industrial subjects, may be substituted for each other to any extent possible, provided the total number of hours credit of industrial work be not diminished:
Agriculture, Woodwork, Domestic Science, Domestic Art, Dressmaking.
Students specializing in Woodwork may substitute Geometry and Draughting for any courses of equal credit except Theology and English.

Description of Courses. (p. 32)
Woodwork.
A. Elementary Woodwork.—Care and use of tools, sawing,
planning, mortising, and tenoning. Five hours' practice each week. Two hours' credit, first semester.
Fee, $2.00
B. Elementary Woodwork.—Continuation of course A. Dovetailing, mitre-sawing, bracket-framing, and practice in making simple articles such as dovetail-boxes, drawers, shelves, toilet-cabinets. Required Woodwork.
A. Five hours' practice each week. Two hours' credit. Fee, $2.50.
C. Advanced Woodwork.—This course embraces a general line of practical work. Principles previously learned utilized in practical cabinet-work. Part of the time will be devoted to exercises in turning. Required Draughting A. Eight hours' practice each week. Four hours' credit, first semester. Fee, $1.00.
D. Advanced Woodwork.—This course embraces all principles necessary for high-grade cabinet work and most of the time will be devoted to construction of the same. Design A. and Draughting required. Ten hours' practice each week. Four hours' credit, second semester.
E. Advanced Woodwork.—Harmony and proportion; plain stair-building, and a general line of practical exercises with instruction on the construction and finishing of high-grade cabinet work. Ten hours' practice each week. Course D and Draughting C required. Credit and hours arranged with instructor. First semester.
F. Advanced Woodwork.—Theory of building from drawings with practical illustration in roof-building, in plain and complicated forms, and a general line of carpenter work. Eight hours' practice each week. Required Draughting D. Hours of credit and work arranged with instructor. Second semester.
G. Advanced Woodwork.—Practical building from approved plans, including the building of cottages, buildings for domestic animals, etc. Ten hours' practice. Four hours' credit. First semester.
H. Advanced Woodwork.—Continuation of G. Second semester.

Iron Work. (pp. 33-34)
A. The making of hooks, chains, clevises and simple welds. Six hours' work a week; two hours' credit. First semester.
B. The welding of iron. Six hours' work; two hours' credit. Second semester.
C. The making of chisels, punches, and hammers. Hours and credit as in A. First semester.
D. The welding of steel. Hours and credit as in A. Second semester.
E. Fitting shoes; shoeing horses, etc. Hours and credit as in first semester.
F. Filling wheels, setting tires, etc. Hours and credits as in A. Second semester.
G. Making and repairing. Ten hours' work; Four hours'
credit. First semester.

Mending and repairing. Ten hours' work. Four hours' credit. Second semester.


Shop Work. (p. 31)
Primarily for High School.

This course is arranged for students desiring to become acquainted with the use of tools in the working of wood, on the theory that all men, whatever be their pursuit in life, should have some knowledge in this line. The course covers four semesters work, and considers the most important points in carpenter-work.

A. Care and use of tools, sawing, planing, mortising, and tenoning. Four hours practice each week required. Two hours credit. (First and second semester. -- B. T. Higgs.)

B. Glue joining, dove-tailing, wood carving, and wood turning. Four hours practice each week required. (Two hours, first and second semesters. -- B. T. Higgs.)

Primarily For College.

1. Cabinet-building, theory in House-finishing, Harmony and Proportion, plain Stairbuilding, and a general line of the most practical exercises. Four hours practice each week required. (Two hours, first and second semesters. -- B. T. Higgs.)

2. Theory of building from drawings with practical illustration in roof building, in plain and complicated forms, and a general line of carpenter work. Four hours practice each week required. (Two hours, first and second semesters. -- B. T. Higgs.)

3. Pattern making. Instruction in the making of patterns for actual castings. Students may make pattern of castings they desire, and be instructed by the instructor in charge. Hours arranged with the instructor.

4. Foundry work. Practice will be given in moulding in sand, preparatory to running off heat. Pattern made by students will be moulded and cast, students assisting in all the steps. Hours arranged with the instructor.

5. Forge shop. Different steps of blacksmithing will be explained, and students will make many articles, such as chains, hooks, chisels, tongs, ladles, etc. Special stress placed upon the subject of tempering steel. Hours arranged with the instructor.
6. Machine shop. Practice will be given in the use of machines, in the construction of machinery. Students may, if they wish, build an engine, dynamo, or any other machine. Hours arranged with the instructor.


Carpentry. (p. 20)
The work comprises a course in mechanical drawing, explanations of tools and how to use them, instructions in planing, sawing, chiseling, rebating, splicing, mortising, dovetailing, truing, etc. The excellent work that has been done in this department has surprised the public, it speaks well for the Course and the Instructor. As this part of the school has to maintain itself, there will be a charge of $6 for the year. Working hours are from 1 p.m. to 5 p.m. during the school week. The shop is large and well furnished with apparatus.

Blacksmithing. (p. 20)
The work in blacksmithing embraces the drawing, bending, cutting and welding of iron, the forging of steel, the welding of steel to iron and iron to steel. The application of these principles is in making bolts, devices, links, fitting horse shoes, sharpening plows, etc. This department is also self sustaining, therefore a tuition is charged.

Note:—The trades should receive the attention of the young men. The Normal, Business, Law, Scientific, and Medical departments are crowded, while the Mechanical department has but a few applicants. Even though he follow some other vocation, every young man should learn a trade. The country needs good mechanics, and offers them more than the average wage. Most of the skilled workmen hail from other lands. Should not each country produce its business men, mechanics, lawyers, doctors, etc. The education that forgets the training of the hand along with the head is a failure.

Faculty. (p. 6)
Andreas Olson,
Mechanical Drawing, Carpentry.

Alfred Dahl,
Blacksmithing.
Carpentry. (p. 40)
This department is prepared to meet all the requirements
in this direction for the students who are mechanically
inclined. The good work performed in this department
resulted in an extra appropriation for more tools and
machinery. The General Superintendent has made it a
special point, in conformity with the general author-
ity of the Church, to foster mechanical training.
For this reason more accommodations are forth-coming
to meet the demand in this line of education and skill.
The course consists of mechanical drawing, general car-
pantry, cabinet work, house building, jointing, and
stair building in all its details. No extra charge is
made for this course. Shop is open from 1 p.m. to
5 p.m.

Catalogue of the SUMMIT STATE ACADEMY for 1908-1909,
Coalville, Utah. Published by the Academy, July, 1908.

It is the aim of the Academy to provide a thorough
high school training for the young, and, at the same time,
to give them the moral and spiritual training which makes
for true manhood. Faith in God is made the basis of all
work, as it is the basis of all being.
The principles of the Gospel are systematically studied
from the standard works of the Church. Students belonging
to other churches may be excused from taking theology by
application to the principal.
In addition to the regular school work the students are
given opportunity to engage in various activities which are
designed especially to prepare them to face the problems of
life. Athletics, class organizations, debates for the
Evans Cup, the Girls' V. G. F. Club, the Clee Club, the
Choir and the presentation of plays and operettas will each
receive special attention. The Lecture Course given by the
school, does much to bring the students into touch with the
best thought of the nation.

Manual Training. (pp. 19, 20)
In the Manual Training the following work will be given:
Woodwork—First Year.
Manual Training, a—Drawing, care and use of tools,
sawing, planing, and a few simple joints. Four
hours per week, two hours credit, first semester.
Manual Training, b—Drawing, mortise and tenon, dowel
and dovetail joints, and a few simple articles of
furniture, made in soft wood. Four hours per
week, two hours credit, second semester.
Woodwork—Second Year.
Manual Training, 6—Drawing, some of the hard woods will be introduced and a few pieces of furniture made. Instruction in furniture and house decoration. Four hours per week, two hours credit, first semester.
Manual Training, 4—Drawing, cabinet work, and wood turning. Four hours per week, two hours credit, second semester.

Faculty. (p. 4)

Randall Lunt Jones,
Registrar.
Graduate of Branch Normal, Cedar City, 1899;
Student at University of Utah 1900-1901.
Manual Training and Drawing.

Catalogue of The Summit Stake Academy for 1910-1911.
Faculty. (p. 4)

Parley Powell,
Student Brigham Young University.
Manual Training and Mathematics.

Catalogue of The Summit Stake Academy for 1911-1912.
Faculty. (p. 2)

Vernon Searles,
Graduate of the Brigham Young University, 1911.
Mathematics and Manual Training.

Catalogue of The Summit Stake Academy for 1912-1913.
Faculty. (p. 4)

Vernon Searles,
Manual Training.

High School Course.
The work offered by the Academy is based on the General High School Course as outlined by the General Church Board of Education. It is not possible for the Academy to give all the subjects of the General High School Course in any one year. In order, therefore, to give the students who attend the school as wide a choice as possible in the selection of their studies, it has been found advantageous to offer some subjects one year and others the next.
Theology and English are required studies. From the
other studies offered in the course the student may elect not to exceed four and one-half units in any one year. The recommended work is four units. A unit represents 180 forty-five minute recitation periods per year, or a total of 8100 minutes of recitation, plus appropriate preparation per year. In drawing, music, domestic arts, domestic science, manual training, and laboratory work in science, two periods will count as one.

To graduate from the High School Course sixteen units are required.
Exhibit - F

Church of Jesus Christ of Latter-day Saints — Conference Reports
Elder Joseph M. Tanner
Elder Reed Smoot
President Joseph F. Smith.
Report by Elder Joseph N. Tanner during the Seventy-third Annual Conference of the Church of Jesus Christ of Latter-day Saints:

I have enjoyed very much the spirit and instructions of this Conference, and I trust that I may have your interest while I report the work that has been placed in my charge. We have an organization which we call the Church schools. Twenty of these institutions are located in Utah, Arizona, Idaho, and Old Mexico. They are attended by about 5,000 of our young people, and the increase of late has been quite marked. Last year we had 940 students more than the preceding year.

I was very gratified yesterday to hear President Smith speak upon some matters of education to the people at large, and manifest to them the same desire that he has manifested to the Church board of education and the board of examiners. I am very pleased to say that we are making special efforts to introduce manual training into these schools. In Salt Lake City—and what is true of this city is true of other places—we have hundreds of young men who leave the schoolroom during the summer season, and for three or four months are without employment, left to pastime that leads them into idleness and frequently into frivolous lives. The question arose as to what should be done with these young people during these summer vacations. If we had in the City of Salt Lake a manual training school, hundreds of our boys within a very few summers might learn much that goes to make up a trade.

Looking to these particular needs, President Smith appointed a committee to make investigation and report to the General Church Board of Education the status of affairs in this respect, and also what, in the judgment of the committee, could be done to remedy the evils that are so apparent among us. A report has not been made, and therefore I cannot give you the findings of that body. But I desire to call your attention to one item of their investigation. After a careful computation of the industrial situation in this state, from the standpoint of the tradesmen, it was found, reckoning on a conservative basis, that we are paying out every year something like eight millions of dollars to tradesmen; that our own people are diminishing in numbers in this class; that many of the older ones are, so to speak, out of date, not having kept up with the demands of the times; that we are gathering few from foreign countries who learn trades in their native land, and that we are having few or no apprentices among us. One of this committee
(several of which are at the head of industrial concerns in this city) made the remark that during the 30 years he had been in charge of a building firm they had not educated one single apprentice. We feel the necessity of this training. We feel that the people should give it their support. I am perfectly free to say to you this afternoon that many of the Latter-day Saints are overly-anxious that their sons should become bookkeepers. We have 10 young men anxious to become bookkeepers, where we have a place for one of them when they are educated. We do not have one young man learning a trade where there is and will be a demand for 50 of them within the next few years. So they are preparing in great numbers for that which they are not likely to need, and neglecting that which they ought to have in the course of their education. One of the reasons for this is the sentiment which the parents inculcate in the hearts of their children by encouraging them to pursue some branch of study that is called culture. I would like to relate an anecdote that explains much of our educational culture in these times. Some few years ago, when I was at Harvard, the dean of the scientific school said to me that our educational culture was so empty and so worthless that he never used the word "culture" when he could possibly avoid it. Then he related an anecdote of two farmers who were cultivating their land near the town of Cambridge, where the Harvard university is situated. These two farmers came to the partition fence one day, and one of them said to the other, "John, what is culture?" "Why," John says, "Don't you know what culture is?" "No," said he, "I hear these school teachers that come by here on their way to Arlington Heights in the summer time, talking about culture. They say, he is cultured, or she is cultured, or they are cultured, and "Oh, my, how I do love culture! How, what are they talking about?" "Why," said John, "you know what potato culture is?" "Yes, I know that." "And you know what wheat culture is?" "Yes, I know that." "Well, you take out the wheat, and take out the potatoes, and then you have the culture."

Our education has been provided in a large measure by the state, and it has made its demands upon us, and that education has been almost exclusively confined to books. In some of the eastern states wealthy men are contributing their means for the establishment of technical institutions, where young men can learn mechanism; and these institutions are most interesting. In some of the states the government itself is establishing schools of technical training, in
order that the citizens may be more useful. I ex-
cept to see the day in Utah when the men that are
possessed of means will contribute likewise for
the establishment of similar institutions in the
state and in the Church, that our young people
may become more useful in building up the country.
For mechanism has in it something that is stable.
It educates the judgment, and it gives wisdom to
the men and women who are trained to use their
hands along with their brains. Its importance
to us cannot be overestimated.

A few months ago I had the opportunity of
traveling through Canada and some of the cities
of the east. I found in many of those large
cities schools of technical training. I found
they had a very beneficial influence upon the
minds of the people. For example, these schools
were kept up from morning until ten o'clock at
night. During the middle of the day you would
see the bootblack, after his work was over in the
morning, wind his way into the school; and the
newspaper, after he had sold his morning edition,
was going into this technical school, that he
might learn him a trade. (sic) I am told that
some of these boys have already graduated from
these schools, and that instead of blacking boots
or selling newspapers they are now mechanics,
earning good wages and are valuable citizens in
the communities where they live. I remember very
well when visiting one of these polytechnic
schools in Brooklyn, the men took us into a room
and said, "These benches and this work are all
ready for the men who come here at night." I
asked him who these men were. He replied, "They
are mostly clerks from the stores and men that
are driving teams. After their work is over at
six o'clock in the evening, they go home at once
to supper, and they are here by seven o'clock.
It is only a question of two or three years until
their services are demanded in some of the shops
of the city, and some of them now are
earning large salaries." Many of our young men
find themselves compelled to take up vocations
in life for which they are not suited. They are
clerking in stores when they have that mechanical
talent that would make them most useful in that
line.

We are encouraging some of our young men to
go east and work up in these technical schools.
One or two are now at work, and it is hoped that
others will go as soon as they possibly can, and
fit themselves for the demands that must be made
upon them in the near future. We not only de-
sire that these schools should be organized in
the Church, but it is only a question of time
when they will be organized in the state and our
Legislature will be as anxious to appropriate
money to teach men to be artisans as they are to
teach them Latin and Greek and foreign languages
that they have no use for; but we can hardly
make some of our legislators today realize that
manual training and that the artisan is as im-
portant to our state as the student of Greek
and Latin. I desire to say that we shall respond
as far and as rapidly as we can to the instruc-
tions which our President has given us. We real-
ize only too well the truth of his remarks in this
respect. . . .
I have indeed enjoyed the practical remarks made at this Conference. Ever since I was twenty-two years of age, I have said on many occasions that, if God blessed me with sufficient means, I would some day establish a school of manual training. I have noticed the lack of this in our schools for many years. Many, perhaps, have said that I was a crank on this subject. But, I have been placed in a position, at the Provo Woolen Mills, where I have seen the evils that exist in the lack of manual education for our children. I can go to Provo today and put up a notice for common laboring men at a salary of a dollar and a half a day and the next morning, more than likely, there would be dozens of applications; but just let me post a notice that we want a competent finisher, head of a department, or a dyer, and there would not be a person in all of the state of Utah make application, that is qualified for the position. I desire to say to the people of Utah that we are on the verge of an opportunity for wonderful growth, and, while we may have reverses and hard times at intervals, there will be an impetus come to this state that we little dream of at present. There will be great iron manufactories in the south, and many great smelting plants in different parts of the state. The time will come, and it is not far distant, when the manufacturing interests of this state will be the greatest of her industries. Are we preparing for this? I take it for granted that the smelters we have today can get all the common laborers they want for two dollars or two dollars and fifty cents per day; but, if they require a man who knows the business thoroughly, and who could take charge of it, I guarantee that they can not find him here, but will have to look to some eastern city where people, through necessity, have learned that, in order to get along in this world, they must be thoroughly educated in some particular line or calling. . . .
Report by President Joseph F. Smith in his opening address of the Seventy-sixth Annual Conference of the Church of Jesus Christ of Latter-day Saints:

... We have a number of Church schools established in Zion. I have not taken the pains to post myself as to the exact number, but I believe there are about 17. The Brigham Young University in Provo, the Latter-day Saints' University in this city, and the Brigham Young College in Logan, are institutions of which the whole Church has reason to be proud. The Trustees-in-Trust, by and with the advice of the First Presidency and the Council of Apostles, has given as liberally as possible, consistent with other obligations for the maintenance of our Church schools, we have sought to encourage in our Church schools the establishment of departments of mechanic arts and manual training; and, so far as I know, everything possible is being done, at least in the principal schools, for the training of our youth, not only in the regular mechanic arts, but also in the art of agriculture. An agricultural course has recently been started in the Brigham Young University, and one of our most proficient scientists has been called to take charge of the class. I am happy to say that sons of our oldest farmers are delighted with the information they have obtained by attending this class. ...

So we are teaching agriculture in our schools, as well as the mechanic arts. The Brigham Young College is putting up a building wherein are to be taught all sorts of industries; where our youth will be able to learn carpentry, blacksmithing, domestic arts, and other things that will be useful to them. Yet, we find it a drag to induce anybody that is possessed of means to contribute very largely to it. Some of our wealthiest men felt they were doing their utmost when they donated perhaps a hundred dollars towards a building that will cost eight or ten thousand dollars, if not more. I mention this for the reason that in my opinion the Church schools are laying the foundation for great usefulness among the people of God, and they should be sustained by the people and by the Church. The Church is sustaining them and as we acquire more means and become more free from obligations which have been resting upon the Church for years, we will be more freethanded to administer to the needs of our Church schools, as well as other requirements of that nature.