THE GROWTH OF INDUSTRIAL ARTS IN THE
SECONDARY SCHOOLS OF TEXAS
FROM 1927 TO 1948

APPROVED:

[Signatures and names of major professor, minor professor, director of the Department of Industrial Arts, and dean of the Graduate School]
THE GROWTH OF INDUSTRIAL ARTS IN THE
SECONDARY SCHOOLS OF TEXAS
FROM 1927 TO 1948

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CHAPTER I

INTRODUCTION

By 1927, industrial arts as a part of the curriculum of the secondary schools of Texas had experienced some growth. Shackles of tradition, public prejudices, and indifference had been loosened and in many instances had been completely shaken. Educators, law-makers, and the public in general had not only come to recognize the great need and advantages of practical courses, but were engaged in reconstructing their school curriculums to meet the needs of school youth. However, industrial arts as a part of the curriculums of the secondary schools was often questionable.

The modern idea of progress is much more than a theory of philosophy; it is an established creed. To most minds, progress is easily measurable and is interpreted, in the main, in terms of more and better. Since this age is chiefly conscious of material progress emphasis is being placed upon the guaranteeing of progress in the practical arts. At one time it was believed that the only ones who needed training were highly skilled workers and this training could be had in a few specialized technical schools. Many individuals fell into the category of "jack-of-all-trades-but-master-of-none."

With the advent of the Industrial Age which demanded "more skilful service, more efficient organization of social
endeavor and more physical, intellectual, esthetic and ethical satisfaction, 1 the schools of Texas tried to meet this demand with a better program of vocational education. The efforts of the educators to make the schools more democratic and more responsive to the needs of all school youth have encouraged interest in industrial arts.

Purpose of the Study

The purpose of this study was to determine the growth of industrial arts in the secondary schools of Texas from the year of 1927 to 1948. The study also involves a study of the growth of other related phases of the industrial arts offered in the high schools of Texas. In tracing the growth of industrial arts in the secondary schools of Texas the following factors were considered: 1. What was the growth in the number of accredited units in woodwork, metalwork, drawing, crafts, electricity, and auto mechanics in the secondary schools of Texas from 1927 to 1948? 2. What has been done toward securing better housing accommodations for shops in the secondary schools of Texas? 3. Have the qualifications of teachers teaching industrial arts improved? 4. Are the schools providing more equipment for their shops? 5. What per cent of the male scholastic population of the secondary schools of Texas take industrial arts?

1 A. B. Mays, An Introduction to Vocational Education, p. 69.
Delimitations

The study was limited to a study of the growth of industrial arts from 1927 to 1948, and this period of time was divided into three-year intervals. Data were obtained for the years of 1927, 1930, 1933, 1936, 1939, 1942, 1945, and 1948. The study was further limited to the courses of industrial arts taught and reported by those high schools that file an annual report with the State Department of Education and those schools that are members of the Southern Association of Colleges and Secondary Schools. The term "growth" included the accredited units in industrial arts, housing facilities for industrial arts, the number of students enrolled in woodwork, metal work, drawing, crafts, electricity, and auto mechanics classes.

Method of Procedure

A study of the historical background of industrial arts in the secondary schools of Texas was necessary in order to obtain a better understanding of the overall growth of industrial arts. The data for the historical background were obtained from books, magazines, bulletins published by the State Department of Education of Texas, and other theses treating the subject up to the year of 1927.

A thorough study and tabulation of the annual reports of the school superintendents which were filed in the Office of Division of Supervision in Austin gave the data concerning the
growth of industrial arts in the secondary schools of Texas from 1927 to 1948.

Definition of Terms

"Growth" in this study is defined as change in development.

"Industrial Arts is a phase of general education that concerns itself with the materials, processes and products of manufacturing, and with the contribution of those engaged in industry. The learnings come through the pupil's experiences with tools and materials and through his study of resultant conditions of life."^2

"Secondary schools" are the schools providing secondary education. For this study, this includes the four years preceding college level. During the eleven-year plan the grades were eight, nine, ten, and eleven. After the twelve-grade system has been in operation in Texas the grades included were nine, ten, eleven, and twelve.

"Accredited unit" is the credit given for one subject which meets the requirements of the State Department of Education in compliance with those standards set up as accepted college entrance units.^3

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^2Louis V. Newkirk, Organizing and Teaching the General Shop, p. 15.

"Accredited high schools" are those schools which meet the standards set up by the State Department of Education for accrediting.

"Housing facilities" means the space made available for housing industrial arts classes.

"Equipment" means the tools, machinery, and furniture used in the industrial arts shops.

"Metal work" is a course in industrial arts in which the students are taught the basic principles of construction of articles made from metal.

"Woodwork" is a course in industrial arts wherein the students learn the basic principles of constructing articles made from wood.

"Mechanical drawing" is a course offered in industrial arts in which the students are taught the use of pen and instrument drawing.

Recent and Related Studies

A study concerning the history of industrial arts in Texas was made by Glenn Foster Fletcher in 1937. Fletcher secured data from the annual reports of the Division of Supervision of the State Department of Education. From questionnaires sent to approximately fifty high schools he secured information from various industrial arts teachers concerning the size of industrial arts classes and their opinions regarding desirable teacher loads. Other
information was obtained in personal interviews and letters from teachers in the industrial arts departments of some Texas colleges.

Fletcher concluded that with the exception of a few setbacks industrial arts gave evidence of fair progress.

In 1927, because of generally low standards, the Industrial Arts departments in 37 schools were warned and placed on the probation list, leaving a total of 58 reported as satisfactory. . . . The ill effects of the depression on the industrial arts program are undoubted; however, basing the progress of this work during the depression period (1930-1934) upon the increase in the number of newly accredited high schools departments, there is decided evidence of fair progress. 1933 was the only year of the four which failed to show a favorable gain in spite of the depression.4

Another aid to industrial arts in Texas was the organization of the Texas Planning Committee for Industrial Arts Education, which was formed in 1934.

This movement was not only of immediate value to the state program of industrial arts, but it received favorable comments from recognized authorities in the field from other states.5

The new Laboratory of Industries, which was made available to the public schools for installation and trial in the school term of 1934-1935, was apparently beneficial in that it made a broader field available to more students without too much expense to the schools.

By the close of the 1936-1937 school year, 26

5Ibid., p. 36.
schools had received a minimum of 1 credit, and one school had received 2 units. The State Planning Committee for Industrial Arts estimated the cost for installation of initial equipment which is summarized as follows:

"It requires between $800.00 and $2,000.00 for equipment. Any unit shop such as woodwork inventories between $1,000.00 and $1,800.00. A school may offer a laboratory of industries course of four divisions for about the same cost as a unit course."\(^6\)

In his survey concerning the student load per instructor, Fletcher found that the instructors had classes of from twelve to fifty students, but the majority had from twenty to twenty-five. Approximately 37 per cent of the shops were overcrowded and 16 per cent had equipment for more students than in attendance. A majority of the instructors who filled out questionnaires believed that 25 students per instructor was a desirable number. Fletcher says further that the Texas Planning Committee for Industrial Arts Education suggests four activities with six pupils per activity, and some sort of student personnel organization to assist in the general shop.

In an article by E. L. Williams these comments were found.

Just recently the committee on affiliation approved of industrial arts work being taught on the general shop basis. This will permit two or more activities to be taught in shorter units to the same class by the same teacher. This will broaden the opportunities for boys in the smaller high schools which could not, under the previous rulings, afford to equip unit shops. This new work may be affiliated for \(\frac{1}{2}\) to 2 units.

A recent study shows that 15 different phases of industrial arts are offered in Texas high schools. Woodwork and mechanical drawing are still in lead, but

\(^6\)Ibid., p. 39.
general shop work, electricity, auto mechanics, wrought ironwork, and printing are fast gaining favor.\textsuperscript{7}

In surveying some of the needs in the industrial arts work in the Texas high schools Williams stated:

Even with the excellent progress Texas had made in this field there are still more cities which do not offer this important type of education. The following number of towns offer no shop work whatever: 102 towns with a population between 2,000 and 5,000; 15 towns with a population between 5,000 and 10,000; and 7 towns with a population between 10,000 and 15,000.

Many schools boards and administrators argue that the costs are too great to equip departments for this work. Purchasing shop equipment is like buying an automobile, you buy according to your means. A Packard is nice, but if you do not have the funds, a Ford will get you there. Life is too short to sit and wait until you can do better. While waiting many pupils are being deprived of their right to an education. \ldots Your boys are entitled to this practical education and it will strengthen your academic deportment.\textsuperscript{8}

This writer advocated that the general shop should be used more widely in Texas in order to take care of such problems as finance and teacher load.

The historical background of industrial arts in Texas which is referred to in the introductory part of this chapter has been treated by various writers.

S. A. Blackburn made a study of "The Development of Vocational Education in Texas," in which he devoted part of his study to the history of industrial arts in Texas. Blackburn secured from the Department of Education files, from the

\textsuperscript{7}E. L. Williams, "Industrial Arts in Texas Schools," \textit{Texas Outlook}, XV (September, 1931), p. 27.

\textsuperscript{8}\textit{Ibid.}, p. 27.
minutes of committee meetings and board meetings, and from
newspaper articles, personal interviews and letters, facts
concerning steps leading to the first manual training class
in the Austin High School and the development of manual
training throughout Texas until 1927.9

In relating the facts of the introduction of industrial
arts into Texas schools, Blackburn gave the following ac-
count: John T. Allen bequeathed his property to the city
of Austin to be held in trust for the establishment of an
industrial school. After settling problems of space, and
supplementary salary from state funds, the first manual train-
ing course was introduced as a part of the high school course
of study in Austin. N. S. Hunsdon from the Woodward Manual
Training School in St. Louis was brought to Austin as the
first manual training teacher in Texas. With the organization
of a committee for the promotion of industrial education in
Texas definite steps were soon to be taken in favor of indus-
trial education. The twenty-eighth legislature passed the
first bill which gave aid to schools desiring to introduce
manual training. In 1909 the state legislature passed a bill
authorizing the state board of education to require the teach-
ing of manual training in state normal schools. The passage

93. A. Blackburn, "The development of Vocational Educa-
tion in Texas" (Unpublished Ph. D. Dissertation, Dept. of
Education, University of Texas, 1930), pp. 292-306.
of this bill brought about a general broadening of the curriculum in the field of manual arts. The Smith-Hughes Act passed by Congress in 1917 gave federal aid to vocational work in industrial subjects. The Rural Aid Bill of 1925 helped to carry the industrial arts work into the rural schools of Texas. By 1926 industrial arts had emerged in an established place in the Texas schools.

10Ibid., pp. 130-144.
CHAPTER II

HISTORICAL BACKGROUND OF INDUSTRIAL ARTS IN
THE SECONDARY SCHOOLS OF TEXAS

A comprehensive view of the growth of industrial arts in Texas during the period of time from 1927 to 1948 cannot be had without first taking a look into the past influences, beginnings, and developments which had the most direct bearing upon industrial arts in the secondary schools.

School training for the trades and industries has a history much like that of the other divisions of vocational education. After many centuries of apprenticeship and after the rise of the factory system, the need for school training for industrial workers arose. In the United States this need was met through unit-trade schools or evening school. "The first schools were either private schools conducted for profit, or privately endowed institutions."¹ During the years following the Civil War there was a remarkably fast industrial expansion, and there resulted great concern over the shortage of skilled mechanics and the lack of adequate means of training industrial workers.

The controversies between organized labor and

¹A. B. Mays, Principles and Practices of Industrial Education, p. 34.
employers over apprentice training, which began during
the early years of the century, had almost destroyed or-
ganized apprenticeship.2

It seemed evident to many that the only way to continue
in industrial growth was to solve the problem of trade edu-
cation. W. T. Barnard, in 1892, said in his Eight Annual
Report of the United States Commission of Labor:

Skilled labor must be had from some source, and we
cannot afford to import it in bulk, if for no other rea-
son than its expensiveness. Our own people have the first
claim upon our industrial occupations, but if we are to
compete for foreign trade they must be so trained as to
make and keep them, in knowledge and skill, at least the
equals of foreign workmen.3

Many educators early realized the need for such train-
ing in the general educational system; however, no definite
steps were taken until after the Civil War. The movement
which introduced manual training into the school systems of
a few of the larger cities of the United States was the out-
growth of a type of education first formally introduced into
the schools of Scandinavia and Russia.

In 1858 manual training was introduced into the schools
of Finland by Otto Cygnaeus. Later his influence carried man-
ual training into the schools of Sweden. Cygnaeus, a strong
advocate of handwork for pupils in the public schools, outlined
a plan, adopted in 1866, by which some form of manual train-
ing was made compulsory in Finland and all primary schools for

2Ibid., p. 35.
3Ibid.
boys in rural districts and in all training schools for male teachers.  

Sweden followed the example of Finland by introducing handwork into the schools for boys and after a few years organized the Sloyd Seminarium to train teachers to conduct the work in the governmental schools.

At the Philadelphia Centennial Exposition in 1876 the Imperial Technical Institute of Moscow, Russia, had an exhibit which had an immediate effect on American educational handwork.

The Russian exhibit was a system of fundamental tool instruction based upon the application of the methods of formal discipline or transfer of training, to instruction in handwork. It was wholly vocational in its objective. Instruction was given through a system of models, many of which were abstract in their application and of no intrinsic worth.

In 1877, soon after the Russian exhibit, Runkel established the Mechanic Arts School of Boston in which shop courses were the important part of the curriculum. By 1882 the Scandinavian system gained a foothold in the schools of Boston which made that city a great experimental center for educational handwork in America.

It is believed that the industrial arts movement having the most direct influence upon the beginning of industrial arts

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in Texas was the St. Louis Manual Training School of Washington University. In St. Louis there had developed slowly since 1857 a plan for handwork instruction in secondary preparatory schools associated with Washington University. This plan became the St. Louis Manual Training School in 1879. Calvin M. Woodward was the real founder of the school.

In 1873, before the founding of the Manual Training School, Woodward advocated the introduction of handwork instruction as a part of education of all boys regardless of their educational aims. On this ground he has been considered the real father of manual training. The school he established in 1879, however, was not organized for the purpose of giving handwork as a part of cultural education.

The funds for the manual training school were provided for by public-spirited individuals, and these funds would not have been made available if the school had been founded on the basis of giving handwork as a part of cultural education.

Several years passed before it was recognized that there was not a definite line drawn where industrial education ended and cultural education began; however, Woodward's ideas about manual training as a cultural subject did become evident.

Professor Woodward's vision was of shopwork being placed on the same educational plane with other school subjects. He saw the mechanic arts analyzed, pedagogically organized, and taught under the guidance of the same principles that have influenced methods of teaching the sciences, mathematics, and even the languages. The mechanic arts so taught were not to teach trades. (Thus he avoided the current fear in teaching shopwork in schools.) The products were to have no market value; therefore the shop must be supported in the same way as science laboratories.

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7 C.A. Bennett, *op. cit.*, p. 337.
With these beginnings, industrial arts still had to fight for a place in American education. Much controversy was aroused in the National Education Association from 1882 to 1889; however, some definite plans were soon to take form.

In 1893 the Western Drawing Teachers' Association, which later developed into the Western Arts Association, was formed. The establishment of teacher training work on a broad scale at Bradley Polytechnic Institute, Peoria, Illinois, in 1897 marked another important step in the development of manual training in the Middle West. In 1899 the Eastern Arts Association was formed. By 1913 various state and regional manual arts associations had been organized.8

The direct influence of the finished useful product of the Scandinavian sloyd, of the technical trade influence from Russia, and the Woodward influence which turned the Russian idea into the realm of general education was now started on a period of country-wide expansion and growth. The value of pupil interest, initiative, and originality was becoming recognized as an important factor in education, especially in the secondary schools. Even so, there were many misconceptions as to the aims of manual arts and the most outstanding of these was that large trade values were to be derived. Nevertheless, many educators had come to realize that education in a democracy should provide at public expense training in occupations other than the so-called "learned professions."9

8 John F. Friese, op. cit., pp. 15-16.
9 Ibid., p. 17.
It was while there were great differences in public opinion on the subject that manual training was introduced into the schools of Texas. During the years following the Civil War conditions called for some plan of practical education; yet the white leaders had not come to recognize the fact that they and their children might have to use their hands in the process of making a living. The sentiment was that training in manual labor was humiliating to white children and, from the Southern point of view, courses of that type were suited only to the Negroes; therefore, these practical courses were first introduced in Negro schools.

The teachers were for many years white men and women from the north, who looked upon the task as missionary work; but as fast as negro teachers were trained, the whites withdrew. The catalogue of Prairie View Normal for 1888 indicates the establishment there of a well organized and functioning department, and an honest effort being made by the members of the teaching staff to remove prejudices against labor with the hands. The negro men were instructed in carpentry and agriculture.10

The man who was responsible for the introduction of manual training into the white schools of Texas was John T. Allan. Allan was born in Edinburgh, Scotland, in 1821, and there he received his early education. He left Scotland for Jamaica, but because of a yellow fever there he disembarked at New Orleans. After living in New Orleans and Alexandria, Louisiana, from there to Macadoches, Texas; then to Little Rock, Arkansas, he finally came in 1860 to Austin, Texas to live where he followed his trade as cabinet maker, until 1863.

10 Blackburn, op. cit., p. 131.
He then studied law and in 1877 was appointed State Treasurer. He died in 1888. On January 24, 1888, the *Austin Daily Statesman* related that John T. Allan had bequeathed to the city of Austin his property to be held in trust for the establishment of an industrial school. Further statements in regard to the will were in the *Austin Daily Statesman* of January 26, 1888.

The will was short and to the point. After a few minor bequests he left the bulk of his estate for the purpose of founding a school in which, to quote his words, "Shall be taught the practical use of tools as well as scientific principles."11

The administration of the funds, which grew from $35,000 to $75,000, gave rise to some problems. It was doubted whether or not public school funds could be used to supplement this fund in order to pay a teacher's salary.

The question was referred to the State Superintendent of Public Instruction, Oscar H. Cooper, who replied that there could be no question "that the board of trustees of the City of Austin have the right to pay the salary of such experts as it may be necessary to employ to give manual training in the schools from the funds derived from the state and local taxes for the support of the schools."11

The other problems to be considered were the question of space in which to give manual training courses and the securing of a teacher who would have to be brought from without the state as no such training was given by any institution in Texas. The course was finally introduced as a part of the high school course of study in Austin, and M. S. Hunsden from the Woodward

Manual Training School in St. Louis was brought to Austin as the first manual training teacher in Texas. According to the bulletin issued by the manual training department of Austin City Schools in 1904:

He organized the course of study along the lines of that prescribed for the St. Louis school. The work was started September 21, 1896, in the temporary capital building on 11th street, where the department remained for many years. . . . An exhibit of their work in 1897 won many converts for manual training.\(^{12}\)

The enrollment in manual training during the first six years increased from eighteen to eighty and the male attendance increased more than one hundred per cent.\(^{13}\) It was soon realized that manual training was an incentive for boys to remain in school who would otherwise have dropped out.

Industrial arts had made a favorable beginning in Austin High School and had made progress in converting public opinion in its favor throughout Texas. Concerted efforts were now needed for the necessary stimulus to send industrial arts on its progressive way into other secondary schools of Texas. These efforts came in the form of addresses, committees, resolutions, and legislative appropriations. Judge V. V. Grubbs of Greenville, as editor of the Greenville Headlight and an advocate of industrial education in general, was able to exert a great deal of influence. Because of his suggestion, C. M. Woodward was brought from Washington University to address the

\(^{12}\)Bulletin issued by Austin City Schools, 1904, cited by \textit{Ibid.}, p. 139.

\(^{13}\)\textit{Ibid.}, p. 135.
Texas legislature in favor of manual training. After his address a meeting of persons interested in industrial education was called in Austin. A number of resolutions setting forth the value of industrial education in Texas were adopted, and Chairman J. S. Kendall, who was state superintendent, appointed a committee made up of one person from each senatorial district to promote industrial education. According to the May 1, 1899, edition of the Dallas Morning News, "The committee met at the close of the legislature and formulated plans for the promotion of industrial education." These plans laid the foundation for industrial arts in Texas.

Arthur Lefevre, who became state superintendent in 1901, issued the following official report:

Our state has not yet recognized in any way the need of this generally educative industrial training as a part of our general educational system. It has not yet been seen that this work is something more than a mere technical training for a specific occupation, that it is a part of all true education, and that the boy or girl who passes through school without it goes out into life deprived of his just need of intellectual, moral and physical training, as well as handicapped in the battle of life, by the lack of a fund of useful knowledge about the more necessary affairs of life.

In 1903 the twenty-eighth legislature passed the first bill which gave aid to schools which desired to introduce manual training. The sum of $10,000 was set aside annually for the biennium 1903-1905 to be spent in duplication of any

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14 Ibid., p. 136.
amount not less than $100 and not more than $500 that should be appropriated by the trustees of any common or independent school district for the purpose of purchasing equipment for the teaching of manual training.\textsuperscript{16} Two schools in Texas had previously introduced manual training, and with the passage of the bill in 1903 the number grew to eleven independent school districts and one common school district.\textsuperscript{17}

The greatest stimulus to the development of industrial arts came in 1909 when the state legislature passed, first, a bill authorizing the state board of education to require the teaching of manual training, domestic economy, and agriculture in all existing and future state normal schools; second, $18,000 was appropriated for the school years 1909-1910 and 1910-1911 for the purpose of providing rooms, equipment and teachers for practical subjects. The state funds supplemented the funds of the local school board in amounts not less than $500 and not more than $2,000.\textsuperscript{18} From the 1910 report of the committee on educational progress the following report was submitted: "The response to those bills was prompt. From the fifteen schools reported to be teaching such subjects before 1909, the number rose at once to 42."\textsuperscript{19}

\textsuperscript{16}\textit{Laws of Texas}, 1903, Vol. 12, Chapter XLVIII, p. 66.
\textsuperscript{17}S. A. Blackburn, \textit{op. cit.}, p. 139.
\textsuperscript{18}General Laws of 31st Legislature, Chapter XVII, Sec. 7.
\textsuperscript{19}"Report of Committee on Educational Progress Within the State," in \textit{Proceedings of Texas State Teachers Association}, 1910.
The most definite result of the appropriations of 1909 and 1911 was the general broadening of the curriculum in the field of manual arts. The work was made more practical. There was a wider variety of courses and the equipment used was more in line with that used in industry. The courses offered were shop work in woods and metals, mechanical drawing, forging, auto mechanics, machine-shop practice, and architectural drawing.

The Smith-Hughes Act passed by Congress in 1917 supplemented state salaries paid in the training of vocational workers and administrators. The federal funds cannot be used for buildings or equipment; these must be provided by the state. The purpose of the Smith-Hughes law was to provide funds for the training of those already engaged in vocations or preparing directly to enter a trade. In this way subjects are taught which will help train the students to begin a life's work upon high school graduation.

Realization that small and rural schools were not financially able to offer more than the three R's under inexperienced teachers working with poor equipment led to the passage of the Rural Aid Law of 1925. This law provided state aid to the amount of not more than $250 to any school in a district which would provide for proper instruction and demonstration of farm mechanics, carpentry and other vocational subjects.\(^2\)

\(^2\)39th Legislature, S. B. No. 408, Chapter 113, Section 7.
The next legislature raised the amount that might be spent for equipment from $250 to $300, and also provided $100 for maintenance so long as the school met the requirements laid down by the State Department of Education.21

By 1927 industrial arts had emerged in an established place in the Texas high school curriculums. From 568 accredited high schools, approximately eighty-eight schools offered affiliated units in shopwork and mechanical drawing. Of the 166 affiliated units offered, there were 70½ in woodwork, 84½ in drawing, 4 in metalwork, 5 in auto mechanics, and 3 in printing. The requirements set up by the State Department of Education for the accrediting of shop work and mechanical drawing were as follows:

1. All subjects taught under the head of shop work shall be taught by specific subjects as follows:
   - Bench woodwork.
   - Furniture constructions, etc.

2. All mechanical drawing shall be taught under three headings: a. A general course in mechanical drawing to be the foundation work and to cover as much as two years. b. A maximum course of two years in architectural drawing to follow course under (a).

3. No school giving shop work or drawing shall be affiliated for less than one full unit of either subject as listed below. a. One unit for shop work is allowed when not less than ninety minutes for the school year is devoted to the subject. b. One unit is allowed for each year's work in mechanical drawing when not less than fifty-five minutes per day for the school year is devoted to the subject, and when the course of study as outlined in bulletin 214, or its equivalent, is followed.

4. A year's course is not to be made up of parts of courses ... but must consist of a year of straight work of one kind.22

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2140th Legislature, 3. B. No. 408, Chapter 113, Section 7.

The following courses were subject to affiliation:

Bench woodwork - 1 to 2 units of credit.
Furniture construction - 1 to 2 units.
Machine cabinet work - 1 to 2 units. (mill work)
Wood turning - 1 unit. (lathe work)
Forging - 1 unit.
Machine shop work - 1 to 2 units.
Auto mechanics - 1 to 2 units.
Sheet metal work - 1 to 2 units.
Electrical work - 1 to 2 units.
Concrete and cement work - 1 unit.
Printing - 1 to 2 units.
Retail selling - 1 to 2 units.
Mechanical drawing - 1 to 2 units. (general courses
  to train draftsman)
Mechanical drawing - 1 to 2 units. (training for
  machine design draftsmen)
Mechanical drawing - 1 to 2 units. (training for archi-
  tectural drawing)

A brief review of the first thirty-one years of industrial arts in the secondary schools of Texas gives rise to the question of what developed in the field of industrial arts during the years following. What was the growth in the number of accredited units in industrial arts? What has been done toward better housing accommodations and equipment for industrial arts shops? Are the industrial arts teachers better qualified? What does the percentage of enrollment of the male scholastic population indicate? How did World War II affect industrial arts in the secondary schools of Texas? Statistics and figures compiled in the following chapters will endeavor to give some interesting facts concerning the developments in the industrial arts of Texas secondary schools during the years from 1927 to 1948.
CHAPTER III

THE GROWTH OF WOODWORK IN THE SECONDARY SCHOOLS
OF TEXAS FROM 1927 TO 1948

After the passage of the Smith-Hughes Act in 1917, the interest shown in trade and industrial work in the part-time and evening classes grew rapidly. In the scholastic year 1927-1928, N. S. Hunsdon, Supervisor of Trade and Industrial Education, set forth the following needs in his annual report.

There should be a person on a half-time basis between the trade and industrial work and the high school manual arts work. The shop work and drawing is in need of more supervision than we are able to give in this office since our work has expanded so greatly. . . . School superintendents and educators in general should study the industrial education program and cooperate more fully in helping to promote it.¹

Because of financial aid from the federal government and because of a plan of state supervision, trade and industrial education had emerged with a uniform program throughout the state. Educators realized that the uniformity was also essential in the high school manual arts work, so that students transferring from one school or city to another would find themselves familiar with the course of study followed in regard to manual arts subjects. This uniformity was brought about to some degree by setting up standards to be met in

affiliating manual arts subjects. The supervisory staff reported, "Generous aid had been given to the high schools of the State in planning courses in shop work and drawing to meet the requirements for affiliation of these subjects."

Table 1 shows the growth of affiliated units in woodwork from 1927 to 1948 by three-year intervals. During the scholastic year of 1927-1928 there were 70 1/2 affiliated units in the 596 accredited high schools in Texas.

**TABLE 1**

GROWTH IN NUMBER OF AFFILIATED UNITS IN WOODWORK 
FROM 1927 TO 1948 BY THREE-YEAR INTERVALS 3

<table>
<thead>
<tr>
<th>Years</th>
<th>Number of Affiliated Units</th>
<th>Decrease</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>70 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1930-1931</td>
<td>136</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933-1934</td>
<td>164</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1936-1937</td>
<td>245 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1939-1940</td>
<td>306 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1942-1943</td>
<td>276</td>
<td>30 1/2</td>
<td></td>
</tr>
<tr>
<td>1945-1946</td>
<td>329</td>
<td></td>
<td>53</td>
</tr>
<tr>
<td>1948-1949</td>
<td>474</td>
<td></td>
<td>45</td>
</tr>
</tbody>
</table>

In 1928, the State Department of Education issued the following regulations governing accrediting of shop work:

Shop periods shall be at least 60 minutes long and

2Ibid., p. 80.

the work shall be given five hours per week for eighteen weeks in order to receive a credit of one-half unit.

The following rules go into effect September 1, 1928:
(a) A detailed outline of the course pursued for each term of 18 weeks by subject for which credit is requested must be sent with your application.
(b) A copy of the daily program of each type of shop work showing the amount of time devoted to the work and time of day class is held. Since a full term of not less than sixty minutes (60) per day for eighteen weeks is required for one-half unit of affiliation in each shop subject, schools not meeting this standard should not apply for affiliation.
(c) Since the term's work of eighteen weeks is required for one-half unit of affiliation in each, drawing or shop work, the work shall not be alternated on the nine weeks period but pupils shall be required to take the work for the entire eighteen weeks term.
(d) Submit a set of drawings of the shop course pursued when these are used as a part of the course.
(e) Every well organized course should require each pupil to keep a standard size notebook 8½x11 inches in which shop notes, sketches of problems worked on and working drawings, bills of material, etc., are kept. Send two of these books for each course offered to show what is required along this line.
(f) Send photographs of size not less than 3x4 inches, showing work produced as representing the entire course offered.
(g) If any text on shopwork is used or followed as a course, a simple reference is not sufficient. A detailed outline and statement of what is done each 18 weeks must accompany the application for credit.4

The divisions of woodwork which were subject to affiliation were bench woodwork, furniture construction, machine cabinet work, and wood turning (lathe work).

Table 1 shows that the number of affiliated units in woodwork increased steadily, with one exception, from the 70½ units in 1927-1928 to 474 units in 1948-1949. These units

represented the number found respectively in 596 and 1,450 accredited high schools. This was a total increase of 403½ affiliated units in woodwork and an increase of from 11 per cent woodworking units in the 596 accredited high schools to 32 per cent woodworking units in the 1,450 accredited high schools. The years showing the smallest increase in affiliated units were from 1930-1931 to 1933-1934, with an increase of only 28 units, less than half that of any previous year. The probable cause for this change was the depression of the early thirties which may have had some effect on the curriculum of schools. Financial aid was limited, making it difficult to maintain established shops and almost impossible to equip new shops. Industry suffered its worst setback since its beginning, leaving thousands of industrial workers without jobs.

Data in Table 1 indicate that by 1936 the affiliated units in woodwork had increased 61½ units for that three-year interval and 81 units by 1942-1943, which was the largest growth for any three-year period. This rapid increase could possibly be accredited to the fact that under the influence of the Works Progress Administration many school buildings were built, remodeled, and added to, making space for new shops. It is possible that renewed possibilities in industry led to renewed interest in industrial subjects.

During the three-year period ending in 1942-1943 there was a decrease in the number of affiliated units in woodwork.
The number decreased from 306$\frac{1}{2}$ units in 1939-1940 to 276 units in 1942-1943, a loss of 30$\frac{1}{2}$ units. At this time World War II was using all available manpower and supplies. Lumber needed in woodshops was a scarce item. Many industrial arts teachers went into the service or into war plants. A balance was maintained by women teachers teaching more mechanical drawing; however, woodwork units decreased temporarily and did not again regain their normal growth until 1945-1946 after the close of the war.

From a survey of the high schools belonging to the Southern Association of Colleges and Secondary Schools data were compiled concerning the degree of professional training of those industrial arts teachers who teach woodwork. In Table 2 the teachers are divided into four groups: those having a bachelor's degree and teaching in their field of training; those having a master's degree and teaching in their field of training; those holding a degree but not in industrial arts; and those with no degree and majoring in subjects other than industrial arts. The four groups were then divided into two groups. For this study, the first group includes those teachers having professional training in industrial arts, and the second group includes those teachers having no professional training in industrial arts.
### Table 2

**Professional Training of 634 Teachers Teaching Woodwork**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number with Bachelor's Degree in Major</th>
<th>Per cent</th>
<th>Number with Master's Degree in Major</th>
<th>Per cent</th>
<th>Number with Degree Teaching</th>
<th>Per cent</th>
<th>Number Holding No Degree and Teaching Out of Field of Training</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>17</td>
<td>33</td>
<td>2</td>
<td>4</td>
<td>13</td>
<td>25</td>
<td>19</td>
<td>37</td>
</tr>
<tr>
<td>1930-1931</td>
<td>20</td>
<td>60</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>1933-1934</td>
<td>47</td>
<td>71</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>15</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>1936-1937</td>
<td>53</td>
<td>74</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>11</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>1939-1940</td>
<td>48</td>
<td>60</td>
<td>14</td>
<td>17</td>
<td>4</td>
<td>5</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>1942-1943</td>
<td>60</td>
<td>70</td>
<td>11</td>
<td>12</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>1945-1946</td>
<td>66</td>
<td>63</td>
<td>13</td>
<td>12</td>
<td>15</td>
<td>14</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>1948-1949</td>
<td>101</td>
<td>60</td>
<td>36</td>
<td>19</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 2 presents data for all the school years with the exception of the years from 1936-1937 to 1939-1940 and from 1942-1943 to 1945-1946 showing that the per cent of teachers holding bachelor's and master's degrees increased steadily from 37 per cent in 1927 to 89 per cent in 1948-1949. With the exceptions of the same two intervals the number of teachers having no professional training in industrial arts decreased steadily from 62 per cent in 1927 to 8 per cent in 1948-1949.

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The number of teachers having professional training surpassed the number having no professional training in 1930. From there the percentage of professionally trained teachers gained until 1939-1940, when the percentage dropped from 81 to 77, rose to 82 in 1942-1943, and dropped to a low of 75 per cent in 1945-1946. A probable cause of this decline was that increased employment encouraged industrial arts teachers to leave the teaching profession for better paying jobs. World War II further drained the supply of professionally trained industrial arts teachers which was not to be replenished until 1948-1949 when the number was to reach an all time high of 89 per cent.

Table 3 was compiled from that part of the superintendent's annual reports filed with the Southern Association of Colleges and Secondary Schools which gives the years of teaching experience. The reports indicated how many years the teacher had been in his present position and how many years he had taught in other schools. For this study the figures were combined to give the total number of years of teaching experience.

In 1927-1928 there were 26 per cent of the teachers in woodwork who had five or less years' experience; 28 per cent had 6 to 10 years' experience; 30 per cent had 11 to 15 years' experience; 13 per cent had more than 15 years' experience. In 1948-1949, 35 per cent of the teachers had 5 or less years' experience; 15 per cent had from 6 to 10 years'
experience, 13 per cent had from 11 to 15 years' experience; 36 per cent had more than 15 years' experience.

TABLE 3

NUMBER OF YEARS TAUGHT BY 608 WOODWORKING TEACHERS*

<table>
<thead>
<tr>
<th>Year</th>
<th>0-5 Years' Experience</th>
<th>6-10 Years' Experience</th>
<th>11-15 Years' Experience</th>
<th>16 or More Years' Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>1930-1931</td>
<td>5</td>
<td>13</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>1933-1934</td>
<td>12</td>
<td>25</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>1936-1937</td>
<td>26</td>
<td>17</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>1939-1940</td>
<td>20</td>
<td>23</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>1942-1943</td>
<td>17</td>
<td>21</td>
<td>14</td>
<td>31</td>
</tr>
<tr>
<td>1945-1946</td>
<td>19</td>
<td>16</td>
<td>12</td>
<td>54</td>
</tr>
<tr>
<td>1948-1949</td>
<td>49</td>
<td>21</td>
<td>19</td>
<td>51</td>
</tr>
</tbody>
</table>

*Data secured from superintendents' annual reports

Table 3 shows that in recent years there are more woodworking teachers having more than 16 years' experience than was shown in earlier years.

The numbers of students enrolled in the woodwork classes as compared to the number enrolled in all other industrial arts classes present some interesting figures. Table 4 represents an enrollment of the industrial arts students who attended those high schools belonging to the Southern Association of Colleges and Secondary Schools for the school years selected for the study.
### Table 4

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Students Enrolled in Woodwork</th>
<th>Increase</th>
<th>Per cent Enrolled in Woodwork</th>
<th>Number of Students enrolled in All Industrial Arts Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>2,533</td>
<td></td>
<td>5</td>
<td>5,381</td>
</tr>
<tr>
<td>1930-1931*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933-1934</td>
<td>2,817</td>
<td>284</td>
<td>4</td>
<td>6,362</td>
</tr>
<tr>
<td>1936-1937</td>
<td>3,329</td>
<td>612</td>
<td>4</td>
<td>8,443</td>
</tr>
<tr>
<td>1939-1940</td>
<td>4,457</td>
<td>1,128</td>
<td>4</td>
<td>12,726</td>
</tr>
<tr>
<td>1942-1943</td>
<td>5,070</td>
<td>612</td>
<td>3</td>
<td>16,667</td>
</tr>
<tr>
<td>1946-1946</td>
<td>7,683</td>
<td>1,513</td>
<td>4</td>
<td>18,156</td>
</tr>
<tr>
<td>1948-1949</td>
<td>9,445</td>
<td>1,862</td>
<td>4</td>
<td>23,741</td>
</tr>
</tbody>
</table>

*Complete data for this year were not available.

Woodwork and mechanical drawing classes have enrolled the largest number of students throughout the period from 1927 to 1948. In 1927-1928, from the Southern Association schools of Texas enrolling 5,381 students in the various industrial arts subjects, 2,533 of those were enrolled in woodwork shops with nearly the same number in mechanical drawing. Although woodworking classes have had the largest enrollment most of the time, various other types of industrial arts classes have gained in enrollment following

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6 Ibid.
recognition for affiliation by the State Department of Education. In 1948-1949, from 23,741 industrial arts students, 9,445 of these were enrolled in woodworking. The decrease from forty-six per cent enrolled in woodworking in 1927-1928 to thirty-nine per cent enrolled in 1948-1949 can be attributed to the fact that the students in more recent years have had a wider field from which to choose their subjects.
CHAPTER IV

THE GROWTH OF METAL WORK IN THE SECONDARY SCHOOLS
OF TEXAS FROM 1927 TO 1948

One of the established facts of history is that when the need for something becomes great enough that need will eventually be supplied. For many years the needs of Americans households, transportation, and industry were met to a great extent with wood construction. Houses were constructed from wood and nailed together with wooden pegs. Furniture was constructed from wood. Wagons, buggies, the framework of automobiles, and boats were basically wood. With the exception of a few parts, the first airplanes were wooden. Such everyday items as buckets, tubs, fences, refrigerators, telephone boxes, and knobs were principally wood.

As American life became more complicated, the pattern called for time-saving devices. Time-saving meant efficiency and speed; efficiency and speed meant endurance. Inventors and designers saw the role for metal in the new era. Metal came into its own not as a substitute for wood but to fill a place that metal alone could fill. Taking the automobile for an example, wheels with wooden spokes were better when made from metal; metal wheels could withstand more speed and called for a more sturdily constructed body; in turn the metal body
would be safer with a metal top; thus, the practical, endur-
able, fast, modern automobile evolved. Modern plumbing, 
heating, and air conditioning employ millions of people in 
the field of sheet metal alone.

In view of the fact that metal found its place in the 
needs of the American public later than wood, the date con-
cerning the growth of metal work in the secondary schools can 
be understood. Just as industrial arts was introduced into 
the high school curriculums to meet a specific need, also the 
different phases of industrial arts came into being and grew 
accordingly.

Table 5 shows the growth of affiliated units in metal 
work from 1927 to 1948 by three-year intervals.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Affiliated Units</th>
<th>Decrease</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>4</td>
<td></td>
<td>6½</td>
</tr>
<tr>
<td>1930-1931</td>
<td>10½</td>
<td></td>
<td>1½</td>
</tr>
<tr>
<td>1933-1934</td>
<td>12</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>1936-1937</td>
<td>11½</td>
<td></td>
<td>2½</td>
</tr>
<tr>
<td>1939-1940</td>
<td>26½</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>1942-1943</td>
<td>31</td>
<td></td>
<td>4½</td>
</tr>
<tr>
<td>1945-1946</td>
<td>40</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>1948-1949</td>
<td>74</td>
<td></td>
<td>34</td>
</tr>
</tbody>
</table>

1 Texas Public Schools Standards and Activities of the 
Division of Supervision, op. cit.
Table 5 shows that from 1927 to 1948 metal work increased from 4 to 74 affiliated units. This was an increase of 70 units in metal as compared to 403\(\frac{1}{2}\) units in woodwork during the same period of time, or an increase of 5 per cent in metal as compared to 15 per cent increase in woodwork. The smallest amount of growth was shown from 1927 until after 1936, when Table 5 shows an increase of only 7\(\frac{1}{2}\) affiliated units. It is possible that the depression years account for the fact that during this period only 1\(\frac{1}{2}\) affiliated units were added from 1930-1931 to 1933-1934 and that from 1933-1934 to 1936-1937 the number decreased one-half unit. Since metal work in the school curriculum was comparatively new, the schools during these years used limited funds to maintain subjects already established. It is likely that initiative was not lacking, and it was not until after the depression years that units in metal work again showed an increase.

With the restoration of better economic conditions, Texas schools underwent a period of change. A statewide program of curriculum revision was launched. The plan endeavored to give the students more experiences and to meet and nourish wider fields of interests. As a natural course, each field of education was to broaden and become more diversified. New subjects were introduced and some neglected fields of study were revived. The period of time from 1939 to 1948 indicated the biggest growth in units in metal work in Texas secondary schools. Table 5 shows that there were 62\(\frac{1}{2}\) affiliated units
added, which was 88 per cent of the number added during the entire twenty-one years covered in this survey. Thirty-four of the 62½ units were affiliated after the close of World War II. The war years showed fair progress considering the fact that almost all metal with which students needed to work was channeled into war production.

Table 5, page 35, indicates that 34 affiliated units were added from 1945 to 1948. This was the largest growth for any single three-year period. It is possible that with the close of the war, schools were able to purchase some of their needed equipment from war surplus items. Also, new equipment and materials were once more available for civilian use. The fact that many teachers who had left the profession for the armed service or for civilian war production work were now returning could be to a certain degree responsible for this increase.

Growth in one phase of a subject will usually be influenced by the same factors that affect other phases. A survey of the annual reports filed by superintendents of schools belonging to the Southern Association of Colleges and Secondary Schools gave the data in Table 6 concerning the degree of professional training of those industrial arts teachers who teach metal work. The degree of professional training was indicated in two major divisions, those teachers having professional training in their field of work and those having no professional training in their field of work.
### TABLE 6

**Professional Training of 156 Teachers Teaching Metal Work from 1927 to 1948 by Three-Year Intervals**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number with Bachelor's Degree Teaching in Major</th>
<th>Per cent</th>
<th>Number with Master's Degree Teaching in Major</th>
<th>Per cent</th>
<th>Number with Degree of Major</th>
<th>Per cent</th>
<th>Number Holding no Degree and Teaching Out of Field of Training</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>14</td>
<td>2</td>
<td>29</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>1930-1931</td>
<td>2</td>
<td>28</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>14</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>1933-1934</td>
<td>7</td>
<td>46</td>
<td>2</td>
<td>13</td>
<td>2</td>
<td>13</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>1936-1937</td>
<td>11</td>
<td>58</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>21</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>1939-1940</td>
<td>12</td>
<td>57</td>
<td>4</td>
<td>19</td>
<td>4</td>
<td>21</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>1942-1943</td>
<td>10</td>
<td>40</td>
<td>7</td>
<td>28</td>
<td>3</td>
<td>12</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>1945-1946</td>
<td>10</td>
<td>43</td>
<td>5</td>
<td>22</td>
<td>2</td>
<td>18</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>1948-1949</td>
<td>17</td>
<td>43</td>
<td>3</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>18</td>
<td>46</td>
</tr>
</tbody>
</table>

By comparing Table 6 and Table 2, page 29, it was found that the per cent of metal work teachers having professional training was much lower than the per cent of woodwork teachers having professional training. In 1927 those high schools

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2 Superintendent's annual reports of the Southern Association of Colleges and Secondary Schools, *op. cit.*
belonging to the Southern Association of Colleges and Secondary Schools were shown in Table 6 as having 28 per cent of the teachers teaching metal work with either bachelor's or master's degrees and teaching in their field of training. Seventy-two per cent of the teachers held degrees with no professional training in industrial arts or held no degree and indicated no training in industrial arts. The per cent of professionally trained teachers grew steadily until 1939, when 75 per cent of the metal work teachers had professional training and 24 per cent had not received any professional training in industrial arts. It is probable that World War II had its effect upon the number of professionally trained teachers in the metal work departments of Texas high schools because the per cent of professionally trained teachers declined from 76 per cent in 1939 to a low of 32 per cent in 1948. It is a known fact that there was a great demand for workers trained in this field during the war. The high salaries paid to industrial workers as compared to the low salaries paid to those in the teaching profession were partially responsible for the decline in the number of professionally trained teachers in metal work. Table 6 shows very little increase in the per cent of professionally trained metal work teachers during the years immediately following the war. This situation can probably be attributed to the fact that the re-conversion program and the shortages incurred by the war helped industry to continue the employment of large numbers
of industrial workers.

Table 7 gives the teaching experience of metal work teachers as was found in the annual reports of the superintendents of those schools belonging to the Southern Association of Colleges and Secondary Schools. The teachers were divided into four groups: those having five or less than five years' experience, those having six to ten years' experience, those having eleven to fifteen years' experience, and those having sixteen or more years' experience.

**TABLE 7**

**TEACHING EXPERIENCE OF 157 TEACHERS TEACHING METAL WORK IN TEXAS HIGH SCHOOLS FROM 1927 TO 1948**

<table>
<thead>
<tr>
<th>Year</th>
<th>0-5 Years' Experience</th>
<th>6-10 Years' Experience</th>
<th>11-15 Years' Experience</th>
<th>16 or More Years' Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>1930-1931</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>1933-1934</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1936-1937</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>1939-1940</td>
<td>8</td>
<td>8</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>1942-1943</td>
<td>9</td>
<td>9</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>1945-1946</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>1948-1949</td>
<td>15</td>
<td>7</td>
<td>3</td>
<td>14</td>
</tr>
</tbody>
</table>

*Data secured from superintendent's annual reports

Teaching experience of metal work teachers has followed somewhat the same pattern as that of those teaching woodwork.
During the earlier years the largest per cent of the teachers fell into the groups having from six to ten and eleven to fifteen years' experience. During the more recent years the inclination was toward employing more teachers having five or less and sixteen or more years' experience. The element of time has probably had its effect upon this trend. Teachers who were at one time younger in the profession had accumulated years of experience. At the same time, the expansion and broadening of the high school curriculums brought new teachers into the field.

Data in Table 8 represent the number of students enrolled in metal work classes in those high schools of Texas accredited by the Southern Association of Colleges and Secondary Schools. For comparison the number of students enrolled in metal work classes was given along with the number of students enrolled in all industrial arts classes. The enrollment was given at three-year intervals. By comparing Table 8 with Table 4 on page 32 and Table 12 on page 50 some interesting deductions were made concerning the number of students enrolled in metal work classes and the number enrolled in mechanical drawing and woodwork classes.

Metal work ranked third among other phases of industrial arts classes in the enrollment of students. There is a decided variance from the number of students enrolled in mechanical drawing and woodwork to the number enrolled in metal work. In 1927, metal work classes enrolled approximately 4
per cent of the industrial arts students, while woodwork and mechanical drawing enrolled 47 and 46 per cent respectively.

**TABLE 8**

GROWTH IN NUMBER OF STUDENTS ENROLLED IN METAL WORK CLASSES IN TEXAS HIGH SCHOOLS FROM 1927 TO 1948 BY THREE-YEAR INTERVALS

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Students Enrolled in Metal Work</th>
<th>Increase</th>
<th>Per cent Enrolled in Metal Work</th>
<th>Number of Students Enrolled in All Industrial Arts Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>210</td>
<td>4</td>
<td>5,381</td>
<td></td>
</tr>
<tr>
<td>1930-1931</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933-1934</td>
<td>564</td>
<td>344</td>
<td>9</td>
<td>6,362</td>
</tr>
<tr>
<td>1936-1937</td>
<td>573</td>
<td>19</td>
<td>7</td>
<td>8,443</td>
</tr>
<tr>
<td>1939-1940</td>
<td>1,033</td>
<td>460</td>
<td>8</td>
<td>12,726</td>
</tr>
<tr>
<td>1942-1943</td>
<td>1,334</td>
<td>301</td>
<td>9</td>
<td>15,657</td>
</tr>
<tr>
<td>1945-1946</td>
<td>1,579</td>
<td>245</td>
<td>9</td>
<td>18,156</td>
</tr>
<tr>
<td>1948-1949</td>
<td>2,381</td>
<td>802</td>
<td>10</td>
<td>23,741</td>
</tr>
</tbody>
</table>

*Complete data for this year were not available.*

Table 8 shows a slight increase in the enrollment every three years. This increase in number also shows a rise of 6 per cent in the number of industrial arts students taking metal work, bringing the number to 10 per cent in 1948-1949.
CHAPTER V

THE GROWTH OF DRAWING IN THE SECONDARY
SCHOOLS OF TEXAS FROM 1927 TO 1948

Every purposeful thing constructed by man's hands is first conceived in his mind. Before a mass of stone, metal, wood or any other raw material can become a finished product it has to be visualized. The vision is rather abstract and not very tangible until it takes a more concrete form. Drawings give that plan from which construction can proceed. In the drawings the builder can see the finished product. Changes in methods of construction or design can be made in the drawings to eliminate trial and error after the construction has begun. Because the very nature of industrial arts is design and construction, drawing naturally is of the important subjects.

During the school year 1927-1928 definite steps were taken to standardize drawing courses in Texas high schools. A committee of mechanical drawing teachers at Austin drew up a course outline in mechanical drawing. Bulletin 235, Mechanical Drawing in Accredited High Schools, was prepared for Texas teachers of mechanical drawing in order that there would be some standard pursued in regard to the teaching of this subject in the accredited high schools of the State. At that time the work varied with the teachers; consequently
when a pupil transferred from one school or city to another
he was handicapped by not finding similar conditions pre-
vailing in regard to the teaching of this subject. This was
not true of the other high school subjects; therefore the
committee attempted to set up standards which could and
should be met by all schools which asked for affiliation.
The course was planned to cover units of eighteen weeks each.
The first four units covered the two-year general course in
mechanical drawing. The second four units covered two years
of machine drawing, and the last four units covered two years
of architectural drawing. The following are some of the reg-
ulations governing accrediting:

Mechanical drawing periods shall be at least 60 min-
utes long.
The following rules have been passed by the commit-
tee on affiliation and go into effect September 1, 1928:
1. All mechanical drawing shall be taught under three
headings:
a. A general course in mechanical drawing to be the
foundation work and to cover from one-half to two years.
b. A maximum course of two years in machine drawing to
follow course under (a).
c. A maximum course of two years in architectural draw-
ing to follow course under (a).
2. No school giving drawing shall be affiliated for
less than one-half unit of either subject as listed
above. A full year's work being a period of not less
than sixty minutes per day for thirty-six weeks.
3. This new rule will go into effect September 1, 1928.1

To begin with the scholastic year of 1928-1929, Texas Depart-
ment of Education had for the first time laid plans for

1Texas State Department of Education, Mechanical Draw-
13.
uniformity in accrediting mechanical drawing.

Table 9 shows the growth of affiliated units in drawing from 1927 to 1948 by three-year intervals.

**TABLE 9**

**GROWTH IN NUMBER OF AFFILIATED UNITS IN DRAWING FROM 1927 TO 1948 BY THREE-YEAR INTERVALS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Affiliated Units</th>
<th>Decrease</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>84 1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1930-1931</td>
<td>152</td>
<td></td>
<td>67 1/2</td>
</tr>
<tr>
<td>1933-1934</td>
<td>176</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>1936-1937</td>
<td>214</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>1939-1940</td>
<td>262 1/2</td>
<td>48 1/2</td>
<td></td>
</tr>
<tr>
<td>1942-1943</td>
<td>340</td>
<td></td>
<td>77 1/2</td>
</tr>
<tr>
<td>1945-1946</td>
<td>293</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>1948-1949</td>
<td>349</td>
<td></td>
<td>56</td>
</tr>
</tbody>
</table>

In 1927, there were 84 1/2 affiliated units, the largest number of units in any one of the industrial arts subjects. This number increased to 152 during the next three-year period. The gain of 67 1/2 units during this period was second only to the 1942-1943 period, when 77 1/2 affiliated units were added. It is interesting to note that mechanical drawing was the only industrial arts course that made its biggest increase.

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2. *Texas Public Schools Standards and Activities of the Division of Supervision*, op. cit.
gain during the years of World War II. From the reports of the Southern Association of Colleges and Secondary Schools it was noted in this survey that for the first time the names indicated many women teachers for mechanical drawing. This probably accounts for the increase. Women teachers could supply the need for mechanical drawing teachers whereas they could not easily serve in other industrial arts courses. For this reason high schools concentrated on maintaining affiliation in their industrial arts courses by shifting some of the courses to drawing when they were unable to meet shop work requirements because of the shortage of men teachers.

Table 10, page 48, shows further evidence of this conclusion in the fact that after 1930 the largest percentage of drawing teachers having no professional training is found in 1942-1943. The first decrease in the number of affiliated units, as shown in Table 9, came in 1945-1946 immediately following the war. Again this trend was found only in mechanical drawing. It is likely that those schools which had added mechanical drawing now dropped the surplus created during the war to resume the normal load of shop work. The 56 affiliated units added from 1946 to 1948 showed a leveling off once more to average growth.

By comparing Table 1 on page 25 and Table 9, it was found that during the twenty-one years included in this survey affiliated units in mechanical drawing increased 264½ while woodwork increased 403½ affiliated units. Until
1933-1934 mechanical drawing carried the largest number of affiliated units. After that time woodwork took the lead except for the brief time during World War II.

Table 10 indicates the degrees of professional training of those industrial arts teachers who teach drawing. The teachers were divided into four groups including those having bachelor's degrees and teaching in their field of training, those holding master's degrees and teaching in their field of training, those holding degrees but having no professional training in their field of work, and those holding no degree and having no professional training in their field of work.

The per cent of drawing teachers who have professional training has varied least with mechanical drawing teachers. Table 10 gives the lowest percentage as 65 while the highest was 84, a variation of only 20 per cent. Table 10 also shows that not once did the number of teachers having no professional training exceed the number having professional training.

With the exception of the period of 1948-1949 the depression years from 1931 to 1934 showed the highest percentage of teachers having professional training. The high rate of unemployment at that time could have had its effect in that keen competition for jobs placed the better trained teachers in the available positions.
Table 10 shows that the period of 1948-1949 had the highest per cent of professionally trained teachers in the mechanical drawing positions when 84 per cent who were in the group had professional training. Federal aid to veterans who attended college has encouraged many teachers to train further.

3 Superintendent's annual reports of the Southern Association of Colleges and Secondary Schools, op. cit.
for their profession, and the results were probably beginning to be realized by 1948-1949, when many teacher veterans were completing their college work and going back into teaching positions.

TABLE 11

NUMBER OF YEARS TAUGHT BY 695 TEACHERS TEACHING DRAWING FROM 1927 TO 1948 BY THREE-YEAR INTERVALS*

<table>
<thead>
<tr>
<th>Year</th>
<th>0-5 Years' Experience</th>
<th>6-10 Years' Experience</th>
<th>11-15 Years' Experience</th>
<th>16 or More Years' Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>24</td>
<td>16</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>1930-1931</td>
<td>13</td>
<td>10</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>1933-1934</td>
<td>17</td>
<td>22</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>1936-1937</td>
<td>28</td>
<td>18</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>1939-1940</td>
<td>18</td>
<td>22</td>
<td>11</td>
<td>41</td>
</tr>
<tr>
<td>1942-1943</td>
<td>20</td>
<td>26</td>
<td>16</td>
<td>46</td>
</tr>
<tr>
<td>1945-1946</td>
<td>13</td>
<td>17</td>
<td>20</td>
<td>56</td>
</tr>
<tr>
<td>1948-1949</td>
<td>37</td>
<td>21</td>
<td>14</td>
<td>60</td>
</tr>
</tbody>
</table>

*Data secured from superintendent's annual reports

Table 11 shows that in 1927, 43 per cent of the drawing teachers had had five or less years' experience, 28 per cent had six to ten years' experience, and 17 per cent had eleven to fifteen years' experience. During the twenty-one years included in this survey, Table 11 indicates that the per cent of teachers having more than fifteen years' experience increased to 60 per cent by 1948. The second largest
group, having five or less years' experience, claimed 28 per cent.

**TABLE 12**

GROWTH IN NUMBER OF STUDENTS ENROLLED IN DRAWING CLASSES FROM 1927 TO 1948 BY THREE-YEAR INTERVALS

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Students Enrolled in Drawing</th>
<th>Increase</th>
<th>Per cent Enrolled in Drawing</th>
<th>Number of Students Enrolled in All Industrial Arts Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>2,349</td>
<td></td>
<td>43</td>
<td>5,381</td>
</tr>
<tr>
<td>1930-1931*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933-1934</td>
<td>2,754</td>
<td>305</td>
<td>43</td>
<td>6,362</td>
</tr>
<tr>
<td>1936-1937</td>
<td>3,685</td>
<td>931</td>
<td>44</td>
<td>8,443</td>
</tr>
<tr>
<td>1939-1940</td>
<td>5,953</td>
<td>2,268</td>
<td>47</td>
<td>12,726</td>
</tr>
<tr>
<td>1942-1943</td>
<td>7,283</td>
<td>1,330</td>
<td>45</td>
<td>16,657</td>
</tr>
<tr>
<td>1945-1946</td>
<td>6,977</td>
<td></td>
<td>38</td>
<td>18,156</td>
</tr>
<tr>
<td>1948-1949</td>
<td>8,923</td>
<td>1,946</td>
<td>37</td>
<td>23,741</td>
</tr>
</tbody>
</table>

*Data for this year were not available

Student enrollment in mechanical drawing classes, like the percentage of professionally trained teachers and the number of affiliated units, has shown only slight variations throughout the twenty-one year period. However, Table 12 shows that unlike other industrial arts courses, the per cent of students enrolled in drawing has decreased from 43 per

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4Superintendent's annual reports of the Southern Association of Colleges and Secondary Schools, *op. cit.*
cent in 1927-1928 to 37 per cent in 1948-1949. It is possible that the decrease was influenced by the curriculum revision whereby students had a wider choice of industrial arts courses from which to select; therefore, this decrease was not a retarding in the student enrollment, but a situation in which students could choose their subjects in their field of interest.

Table 12 indicates that the largest per cent of mechanical drawing students were enrolled during the period ending in 1942-1943. This trend coincides with one previously discussed in which high schools during the war were able to carry on industrial arts in the mechanical drawing field when they were unable to do so in shop work. Data show that mechanical drawing has maintained a steady growth throughout industrial arts history more than any other phase of the subject.
CHAPTER VI

THE GROWTH OF CRAFTS, ELECTRICITY, AUTOMOBILE MECHANICS, PRINTING, AND LABORATORY OF INDUSTRIES IN THE SECONDARY SCHOOLS OF TEXAS FROM 1927 TO 1948

The industrial arts subjects discussed in this chapter fall into the minority group of the phases of industrial arts offered in Texas high schools. A generalization concerning crafts, electricity, automobile mechanics, and printing is that in most cases these courses were offered in the larger high schools. In the "Directory of Classified and Accredited High Schools" for 1929 the high schools listed as offering printing and auto mechanics enrolled the following number of students: two schools with more than 5,000, two schools with more than 2,000, two schools with more than 1,000 and only one school with less than 1,000. It was also found that in most cases crafts and electricity were offered in the larger high schools. Laboratory of industries did not follow this trend. One purpose of the laboratory of industries was to enable small schools to offer a more diversified course in industrial arts. After the introduction of the laboratory of industries into the school curriculums in 1935, it was evident that many of the smaller high schools took the opportunity to equip a general shop containing three or four
different phases at nearly the same cost of a shop offering one phase.

Crafts, although one of the oldest vocations and avocations of man, was one of the latest industrial arts phases to be introduced into the high school curriculums. Leatherwork was one of the principal phases of crafts taught. The students were taught preserving, cutting, dyeing, tooling, and lacing leather. Other work in crafts dealt with carving, weaving, plastic work, and ceramics.

Courses in electricity taught house wiring and bell work. This, of course, was intended to give the students an understanding of the basic principles of electricity. Quite often the students were given instruction in what might be called household electricity, where they learned to repair electrical appliance cords, light switches, and broken wires.

The students enrolled in auto mechanics studied the general construction of an automobile engine along with the function and operation of its various parts. In most instances an engine was placed in the shop where students could study it.

Students of printing were taught type-setting and linotype operation. Whenever possible they learned printing by actually setting type and operating the linotype. In some of the larger schools students gained experience by printing the school paper, bulletins, and programs.

Table 13 shows the growth of affiliated units in crafts,
electricity, auto mechanics, printing, and laboratory of industries from 1927 to 1948 by three-year intervals.

### TABLE 13

**GROWTH IN NUMBER OF AFFILIATED UNITS IN CRAFTS, ELECTRICITY, AUTOMOBILE MECHANICS, PRINTING, AND LABORATORY OF INDUSTRIES FROM 1927 TO 1948 BY THREE-YEAR INTERVALS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Affiliated Units</th>
<th>Decrease</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crafts</td>
<td>Electricity</td>
<td>Auto Mechanics</td>
</tr>
<tr>
<td>1927-1928</td>
<td></td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>1930-1931</td>
<td></td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>1933-1934</td>
<td></td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>1936-1937</td>
<td></td>
<td>2(\frac{1}{2})</td>
<td>14</td>
</tr>
<tr>
<td>1939-1940</td>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>1942-1943</td>
<td></td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1945-1946</td>
<td></td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>1948-1949</td>
<td></td>
<td>16</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 13 indicates that in 1927-1928 there were 5 affiliated units in auto mechanics and 3 affiliated units in printing. By 1930-1931 these numbers rose to 10 and 15.

---

1. Texas Public Schools Standards and Activities of the Division of Supervision, op. cit.
respectively with the addition of 2 affiliated units in electricity. Auto mechanics increased to 14 units in 1936-1937 with the first decrease of \( \frac{1}{2} \) unit occurring during the next three-year interval. By 1942-1943 this loss was regained and 4 units were added, bringing the total to 18 affiliated units. The following six years made very little change in the number and in 1948-1949 there were 18 affiliated units. This was a total gain of 13 units.

Printing made a sizeable gain of 26 affiliated units; however, the increase was not consistent. The number rose from 3 to 15 during the period from 1927-1928 to 1930-1931 and then decreased each year until 1939-1940, when the number dropped to a low of 11 affiliated units. After 1942-1943 the number of units increased each year to 29 affiliated units in 1948-1949.

Table 13 shows crafts to be the latest of the industrial arts subjects to be included in the affiliated units. In 1939-1940 there was 1 affiliated unit; the number rose to 3 in 1942-1943, to 7 in 1945-1946 and to 16 in 1948-1949. Even though crafts was the last subject listed as being affiliated, it was the only one of the five in Table 13 to show an increase each year.

The laboratory of industries was approved for affiliation in 1935. Table 13 shows that in 1936-1937 there were 31 affiliated units, which indicated that the laboratory of industries was readily accepted by the high schools. The growth
of 41 units during the next three-year interval indicates further evidence of its acceptance; however, from 1939-1940 to 1942-1943 there was a gain of only 16 affiliated units. The next three-year period gives the lowest gain of 6 units, and from 1945-1946 to 1948-1949 there was a decrease of 11 affiliated units. Some interesting deductions could be made from these figures. The possible reason for the rapid gain followed by the rapid loss was that schools added the laboratory of industries in the hope of broadening their field of industrial arts with little added expense. The plan of student-directed units with the teacher as a guide fitted well into the program of curriculum revision which was being launched at that time. After a few years of trial, teachers realized that the laboratory of industries did not enable them to give high school students the individual help they needed in the more specialized courses. Although the laboratory of industries did not prove so successful in the secondary schools, it has filled the need of junior high schools where the industrial arts courses were more of an exploratory nature.

From the annual reports filed by the superintendents of schools belonging to the Southern Association of Colleges and Secondary Schools data in Table 14 were compiled concerning the degree of professional training of these industrial arts teachers who teach crafts, electricity, auto mechanics, printing, and the laboratory of industries. The teachers of each
of the five subjects were combined in the four groups included in Table 14.

**TABLE 14**

PROFESSIONAL TRAINING OF TEACHERS TEACHING CRAFTS, ELECTRICITY, AUTO MECHANICS, PRINTING, AND LABORATORY OF INDUSTRIES

<table>
<thead>
<tr>
<th>Year</th>
<th>Number with Bachelor's Degree Teaching in Major</th>
<th>Per cent</th>
<th>Number with Master's Degree Teaching in Major</th>
<th>Per cent</th>
<th>Number with Degree Teaching Out of Major</th>
<th>Per cent</th>
<th>Number Holding No Degree and Teaching Out of Field of Training</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>5</td>
<td>36</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>1930-1931*</td>
<td>6</td>
<td>43</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>1933-1934</td>
<td>15</td>
<td>54</td>
<td>3</td>
<td>10</td>
<td>5</td>
<td>18</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>1939-1940</td>
<td>18</td>
<td>51</td>
<td>2</td>
<td>5</td>
<td>8</td>
<td>22</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>1941-1942</td>
<td>23</td>
<td>55</td>
<td>5</td>
<td>12</td>
<td>6</td>
<td>14</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>1945-1946</td>
<td>25</td>
<td>74</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>9</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>1948-1949</td>
<td>24</td>
<td>48</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>18</td>
<td>14</td>
<td>28</td>
</tr>
</tbody>
</table>

*Data for this year were not available.

Table 14 shows that of the teachers teaching crafts, electricity, auto, mechanics, printing, and the laboratory of

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2Superintendent's annual reports of the Southern Association of Colleges and Secondary Schools, op. cit.
industries there were 43 per cent holding bachelor's or master's degrees and teaching in their field of training and 57 per cent were teaching out of their field of training in 1927-1928. By 1933-1934 the per cent of teachers having professional training in industrial arts equaled the per cent having no professional training in their field of work. Since 1933-1934 the per cent of professionally trained teachers has exceeded the per cent having no professional training in industrial arts. The per cent of teachers in the first group gained steadily with the exception of two intervals. In 1939-1940 there were 56 per cent of the teachers having professional training, which was 8 per cent below the previous three-year period. The next decline was from 1945-1946 to 1948-1949, when the percentage dropped from 76 to 54. The first period of decline was during the years following the depression and the second during the years following World War II. Both of these periods were periods of reconversion, which meant more growth and expansion. It is possible that during these intervals there was an increased demand for industrial arts teachers. Since the percentage of professionally trained teachers increased in woodwork, drawing, and metal work during these two periods, it is likely that the better trained teachers worked more in those subjects.

Table 15 gives the number of years' teaching experience of industrial arts teachers teaching crafts, electricity, auto mechanics, printing, and the laboratory of industries.
TABLE 15
NUMBER OF YEARS TAUGHT BY 198 TEACHERS TEACHING CRAFTS, ELECTRICITY, AUTO MECHANICS, PRINTING, AND LABORATORY OF INDUSTRIES

<table>
<thead>
<tr>
<th>Year</th>
<th>0-5 Years' Experience</th>
<th>6-10 Years' Experience</th>
<th>11-15 Years' Experience</th>
<th>16 or More Years' Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927-1928</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1930-1931</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>1933-1934</td>
<td>7</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1936-1937</td>
<td>5</td>
<td>10</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>1939-1940</td>
<td>15</td>
<td>9</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>1942-1943</td>
<td>14</td>
<td>10</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>1945-1946</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>1948-1949</td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>17</td>
</tr>
</tbody>
</table>

aData secured from superintendent's annual reports

bData for this year were not available

Table 15 shows that in 1927-1928 the largest number of teachers teaching crafts, electricity, auto mechanics, printing, and laboratory of industries had 5 or less years' teaching experience, and in 1948-1949 the largest number had 16 or more years' teaching experience.

Table 16 presents trends in the growth of student enrollment in crafts, electricity, auto mechanics, printing, and the laboratory of industries.
TABLE 16
GROWTH IN NUMBER OF STUDENTS ENROLLED IN CRAFTS, ELECTRICITY, AUTO MECHANICS, PRINTING, AND LABORATORY OF INDUSTRIES CLASSES FROM 1927 TO 1948 BY THREE-YEAR INTERVALS

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Students Enrolled</th>
<th>Increase</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crafts  Electricity  Auto Mechanics  Printing  Lab. of Ind.  Crafts  Electricity  Auto Mechanics  Printing  Lab. of Ind.  Crafts  Electricity  Auto Mechanics  Printing  Lab. of Ind.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1927-1928</td>
<td>192  97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1930-1931*</td>
<td>211  93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933-1934</td>
<td>2112 94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1936-1937</td>
<td>46179284358</td>
<td>14  57  190</td>
<td></td>
</tr>
<tr>
<td>1939-1940</td>
<td>611866306183647</td>
<td>151 127 181</td>
<td></td>
</tr>
<tr>
<td>1942-1943</td>
<td>179214523107347118</td>
<td>22  217 400</td>
<td></td>
</tr>
<tr>
<td>1945-1946</td>
<td>147541772181376</td>
<td>327 249 74</td>
<td></td>
</tr>
<tr>
<td>1948-1949</td>
<td>525389974672232378148</td>
<td>202 491</td>
<td></td>
</tr>
</tbody>
</table>

Table 16 indicates that crafts, electricity, automobile mechanics, printing, and laboratory of industries had the smallest percentage of students enrolled of all the industrial arts courses offered. The laboratory of industries enrolled the largest per cent for any single three-year interval when

3Ibid.
there were 6 per cent enrolled in 1942-1943. Each of the two periods ending in 1936-1937 and 1939-1940 enrolled 4 per cent of the industrial arts students in the laboratory of industries. In 1945-1946 the enrollment dropped to 2 per cent and in 1948-1949 to 1 per cent. This trend goes back to the previous discussion that the laboratory of industries proved less successful in the secondary schools than was anticipated, and after a few years' trial, it was discontinued in some schools in favor of the one-unit shop.

Auto mechanics ranked second to the laboratory of industries in the percentage of enrollment; however, it differed in that there was only once a decrease in the percentage of enrollment even though the gain was only slight. There were 4 per cent of the industrial arts students enrolled in auto mechanics in 1927-1928, and a gain of only 1 per cent was made by 1948-1949.

Printing made only a slight gain of from 2 to 3 per cent enrollment and electricity gained from 1 to 3 per cent. During its first year crafts enrolled only 1 per cent of the total number of industrial arts students, and no gain was indicated until 1948-1949, when the enrollment gained 2 per cent.
CHAPTER VII

SUMMARY AND CONCLUSIONS

This study has been a survey of the growth of industrial arts in the secondary schools of Texas from 1927 to 1948. The annual reports of school superintendents of the high schools belonging to the Southern Association of Colleges and Secondary Schools served as a source from which data were compiled for the purpose of determining, first, the growth in the number of professionally trained teachers in the industrial arts departments, and second, the growth in the number of students enrolled in the industrial arts classes. The growth in the number of affiliated units of the various industrial arts subjects served as a basis from which some comparisons were made in determining the growth.

Woodwork and drawing made up the largest number of affiliated units in industrial arts, and metal work was third. During the twenty-one years included in this survey it was found that the largest increase in the number of affiliated units was in woodwork, where there was a gain of 403\(\frac{1}{2}\) units. There were 264\(\frac{1}{2}\) units added in drawing and 70\(\frac{1}{2}\) added in metal work. The laboratory of industries program indicated a gain of 62 affiliated units, printing increased 30 units, crafts increased 15 units, auto mechanics increased 14\(\frac{1}{2}\) units, and
electricity increased 14 units. In 1937 drawing led in the number of affiliated units; however, after the scholastic year 1936-1937, the largest number of units was found in woodwork.

The growth in each of the industrial arts subjects was rather consistent throughout the twenty-one years; however, there were factors which caused some variance. One period which failed to show average growth was the period of years from 1931 to 1934. These years, referred to as the depression years of 1931 to 1934, saw the United States in one of its worst economic depressions. It is believed that limited financial aid made it difficult for schools to carry the added expense of new industrial arts subjects, and in some cases, they were unable to maintain shops already established. Another decline in the growth of affiliated units came in the years from 1942 to 1946; it was evident that World War II had its influence upon the high school curriculums. Because so many materials and so much equipment needed by shops were channeled into war production and because so many teachers went into the armed service or into war work, schools again were unable to maintain the growth of previous years. All of the industrial arts subjects with the exception of drawing were affected in somewhat the same way by these outside forces. The years of the depression made little change in the growth of affiliated units in drawing, and a fact peculiar to drawing alone was that the growth in the number of affiliated
units was accelerated during the war years. It is believed that some of the loss in shop courses during the war was shifted to drawing since materials for that course were available, and it was possible for women teachers to fill the vacancies created because of the war.

A study of the growth in the number of industrial arts teachers having professional training in their field of work has presented evidence that a larger per cent of the teachers in the latter years of the survey had professional training in industrial arts whereas a larger per cent in the earlier years of the survey had no professional training in industrial arts. Drawing had the largest per cent of professionally trained teachers in 1927. The 33 per cent in drawing rose to 85 in 1948, which made a total gain of 52 per cent. The largest increase in the number of teachers having professional training was in woodwork. In 1927, 37 per cent of the teachers teaching woodwork had either a bachelor’s or a master’s degree and were teaching in their field of training and in 1948, 89 per cent had professional training in industrial arts. Metal work showed the least gain in its per cent of teachers having professional training. The number rose from 28 per cent in 1927 to 76 per cent in 1939-1940 and then declined to 32 per cent in 1948.

The numbers of teachers who taught crafts, electricity, auto mechanics, printing, and the laboratory of industries were combined to determine the degree of professional
training. From the five groups the per cent of teachers having professional training in industrial arts rose from 43 in 1927 to 54 in 1948. With the exception of metal work this was the least gain of any of the industrial arts subjects.

It is evident that factors affecting the growth in one phase of industrial arts also affected other phases; however, it was sometimes in different ways. The years of the depression showed some gain in the number of teachers having professional training in industrial arts, but the number declined somewhat during the years of World War II. It is believed that the high rate of unemployment during the depression years made for keener competition and this in turn placed better trained teachers in the available positions. During World War II the shortage of manpower was responsible for the drain on industrial arts teachers trained in their profession.

From 1927 to 1948 woodwork and drawing classes have enrolled approximately 85 per cent of all the industrial arts students. Metal work classes have enrolled about 10 per cent while 5 per cent were enrolled in the other industrial arts classes. The growth in the number of students enrolled in industrial arts has followed somewhat the same pattern as the growth in affiliated units, in that the increase has been rather consistent throughout the twenty-one years.

The following conclusions were made concerning the growth of industrial arts in the secondary schools of Texas from 1927 to 1948.
1. The growth of industrial arts has been rather consistent throughout the twenty-one year period covered in this study.

2. Woodwork and mechanical drawing have had the largest number of affiliated units, enrolled the largest per cent of industrial arts students, and had the largest per cent of teachers with professional training in their field of work.

3. Outside factors apparently affecting the growth of industrial arts were the depression from 1931 to 1934 and World War II. During these two periods there was some retarding of the growth in the numbers of affiliated units and in the numbers of teachers having professional training in industrial arts.

4. During the latter years of the survey there was a wider variety of industrial arts subjects offered in the Texas high schools; however, the wider variety of subjects was found mostly in the large schools.

5. Standards and regulations set up by the State Department of Education have aided in the uniformity of the industrial arts subjects offered in Texas high schools.
BIBLIOGRAPHY

Books


Public Documents

Austin City Schools, Bulletin, 1904.

Laws of Texas, 1903, Vol. 12, Chapter XLVIII, H. B. No. 88, p. 66.

Laws of Texas, general laws of thirty-first legislature, Section 7.

Laws of Texas, general laws of thirty-ninth legislature, S. B. No. 408, Chapter 113.


Reports


Unpublished Material
