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Preparation & Certification of Industrial Arts Teachers

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Thomas D.

1946

PREPARATION AND CERTIFICATION OF INDUSTRIAL ARTS TEACHERS

BY

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A THESIS
SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS

WESTERN KENTUCKY STATE TEACHERS COLLEGE

AUGUST, 1946

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PREFACE

Industrial arts education has been under constant surveillance by many of our educators. The attitude seems to prevail that the industrial arts program is an ideal field whereby the academically deficient student can be adjusted. There is no doubt that this field will adjust this type of individual better than the traditional academic subjects.

This study was prepared primarily to show the students of the industrial arts field and later teachers of industrial arts that the curriculum is providing them with both academic and technical opportunities. It will also give the layman an idea that time and effort has to be put forth in planning the curriculum.

Many of our leading educators and military experts fully realize the importance of technical training. Men who were instructors of technical courses in some of our leading technical schools and universities were called upon by all military branches to teach men in various phases of technical work. If the industrial arts and industrial education programs were not prominent in our schools, there undoubtedly would have been a shortage of trained men to teach military personnel. Since the termination of the war, these same men who have been taught in some phase of technical training will be returning to school to resume their studies in this expanding field. It will be the responsibility of the schools to provide them with this training.

Securing the information for this study was done by several methods; first, surveying the curricula of institutions that included industrial

arts teacher training programs; second, by sending out a questionnaire to men who are prominent in the field of industrial arts and industrial education; third, by corresponding with the State Departments of Education in gathering the certification data of industrial arts teachers. The usual method of research in bulletins, magazines, and reference books was applied.

This study will be useful in the immediate future in comparing the industrial arts program at Western with that of the other institutions included in this study. The programs of these institutions will undoubtedly change as new courses will be added such as: aeronautics, air conditioning, refrigeration, and radio.

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CHAPTER I

SOURCES AND QUALITIES OF INDUSTRIAL ARTS TEACHERS

The preparation of an industrial arts teacher is a problem that must be considered if we are to expect good teachers in our shops today. If the instructor is poorly prepared in the field, it casts a shadow of doubt upon the curriculum. It is expected that the industrial arts teacher must have an understanding of the entire field of education, and he is to be particularly well learned in his subject which he is to teach.

Great stress has been placed upon a teacher of industrial arts in carrying out his duties. He must possess qualities that will enable him to administer his duties effectively.

There are many among the leaders of education that partially appreciate the industrial arts program. We have those among us who only see in industrial education a fine prescription for those of low mentality, low power of concentration, low degree of interest and motivation.¹

Today this idea is gradually changing and the trend seems to favor the industrial arts program. Principals are wanting industrial arts instituted into the school programs, and teachers are beginning to recognize that industrial arts teachers can rate as high in professional standards as other teachers.

There has been three recognized sources of teacher training in the field of industrial arts, namely: (1) The normal schools and teachers colleges; (2) the engineering colleges and other technical institutions

¹ Leon Moses, "Industrial Arts and Liberal Education," The Education Digest, Vol. IX (April, 1944), p. 14.

that do not include teacher preparation; and (3) the trade school and tradesman who have served in industry.²

The above sources of teachers no doubt have their advantages and disadvantages; it would be interesting to know these.

The Teachers College trained teacher has been through a carefully organized program. He has received definite organization, supervision, curriculum construction, vocational guidance and many similar types of courses for his classroom use. Many superintendents and school officials recommend and favor this type of an individual. He conforms to their ideas of preparation and naturally is ideal for their school system.

The degree they received reveals that they have received definite professional and technical training. The degree alone is an indication that the holder has met a standard requirement for teachers which is universal.

Within the teachers college product, there are two kinds of teachers: (1) Those who have prepared themselves principally to teach some academic subjects, and who have later or simultaneously acquired a minimum of technical training sufficient for taking charge of a class or two in shopwork; and (2) those who have pursued the definite courses for preparing themselves to teach in the specialized field.³ The latter is the more desirable as he has concentrated entirely in the industrial arts field.

² Emanuel E. Ericson, Teaching Problems in Industrial Arts (Peoria, Illinois, The Manual Arts Press, 1930), p. 407.

³ Ibid., p. 408.

Dominant positive characteristics of a teachers college trained teachers are as follows:

1. A well balanced academic background. In this program he becomes acquainted with English, mathematics, social sciences and other liberal arts subjects.

2. A well balanced professional education. In his professional studies the prospective teacher comes in contact with principles which are the basis of pedagogy and psychology.

3. The ability to cooperate with teachers in the academic field.

4. Thorough knowledge and the ability to organize a school shop. This type of training is essential as he has organized his methods under normal school conditions.

5. Thorough knowledge in the organization and revision of the industrial arts curriculum.

6. Knowledge of methods of teaching.

7. Appreciation for objectives of education.

Negative characteristics of a college trained teacher:

1. Lack of mechanical skill.

2. Lack of appreciation for the standards of workmanship.

3. Lack of the knowledge and proper method in production work.

4. Lack of appreciation of value of material used.

5. Time value has no significance in his school shop.

6. Lack of interest in industry.

7. Lack of appreciation of machine made products.

8. Lack of skill.

9. Lack of appreciation in the understanding and needs of the pupils.

The tradesman as a teacher possesses more skill as a craftsman than any type of shop teacher. He has spent anywhere from two to six years in industry and devoted it entirely to the mechanical phase.

The strong characteristics of a tradesman as a teacher are as follows:

1. Possession of a high mechanical skill and aptitude which he has developed by manipulative work.
2. Appreciation of workmanship.
3. Appreciation of time and material.
4. Possession of a high degree of shop atmosphere
5. Understanding of the position of industry.
6. Knowing the value of production.
7. A broad knowledge of industry.

Weak points of a tradesman as a teacher:

1. Lack of fundamental principles of pedagogy and psychology.
2. Lack of the ability to understand the problems of a beginning student of shopwork.
3. Lack of fundamentals in handling disciplinary cases.
4. Lack of organization and supervision.
5. Lack of general academic education.
6. Lack of professional education.
7. Overemphasizes quantity and underestimates quality in the school shop.
8. Lack of the ability to cooperate with other teachers.

In comparing these teachers from each of these sources, it is necessary that the teacher have some of the qualities of all three types if possible. The ideal teacher should have unlimited patience, fine

balance, and good moral character inlaid with strong religious ideals. He should be able to inspire, to strive, and to attain the right control of conduct, high ideals, and a balanced perspective of life.⁴

The curriculum he employs should help to socialize the students. It should appeal in a way for the student to develop interest and the right attitude toward the study. If he accomplishes this, he then will attain his primary goal. Good habits will immediately follow as the result. He then can put himself more or less in the background until such time arrives when he must advise or help as a result of a suggestion by the students. He must be sincere with each individual; and when a child misbehaves, he must not punish the child merely for the present offense, but must search for the item which caused him to misbehave.

In Chapter II, we will consider his professional, academic, and technical training. This phase of the teachers preparation is essential, but this does not necessarily mean that he will be a successful teacher. Personal characteristics are just as important in order that he may be successful.

⁴ Burl L. Dougherty, "The Ideal Teacher," Industrial Arts and Vocational Education, Vol. XXVII (March, 1938), p. 100.

CHAPTER II

ACADEMIC AND TECHNICAL PREPARATION

Industrial arts for many years has been more or less put into the background in the school curriculum, but recently has been gaining the prominence that it rightfully deserves. It was the general opinion that a student who wrestled with English, mathematics, and the sciences was a misfit in academic studies; and therefore a prospective shop student.

Today the shop student who expects to become a teacher of industrial arts is equipped with a well balanced preparation that is parallel with his technical training. Academic courses heretofore were neglected, and the shop student followed a definite mechanical routine. He seldom left the shop. Today this type of program is no longer true. The often said phrase a student of shop must be "rough" and "tough" is extinct. His language of the sweat shop and street has vanished from the classroom, his social obsecurity is no longer present. The once educationally starved, ill-nourished academic shop student is now elevated to a position of prominence. He has the necessary polish, poise and appearance which are dominant factors of a successful shop teacher.

An investigation was made of the industrial arts and industrial education curricula of forty teacher's colleges, state colleges, and state universities. All these institutions were accredited by the agency that covered the geographical area in which the school was located.

In the survey, all non-technical and technical courses were tabulated. The curricula were well planned as it was noted that a general education was provided for the student in the program.

English appeared in every one of the programs. There is no doubt as

to the importance of this subject. Nearly every phase of English was represented in the program. Grammar, literature and speech seemed to be the most prominent.

In many instances, an industrial arts appeared as a special major; that is, no minor was required. This does not necessarily mean that he is not able to select a minor, but because of the requirements for a major are set up so high that his studies are concentrated in that field. In some cases, a student with this type of a major in industrial arts has nearly a minor in two other fields, especially English and social science.

Social studies are important in modern education. There is a growing need for them and still the more important need for the social point of view in all teaching. There are two principles that are closely related to organized education, namely; the culture of the individual personality producing rich abundant living and the adjustment of the individual to his environment.

With all this in view, we can assume that the shop teacher will have acquired certain information, general, technical, and professional, which is expected of any college graduate desiring to enter the field of teaching. However, this is not all the requirements, but they are basic.

Teacher education in industrial arts is by no means a new field; however, it is when compared with other studies. Industrial arts has appeared in some colleges as far back as 1878.

With the rapid industrial changes that have been going on since the war, industrial arts has a bright future in the Education program. The demand for teachers will be increasingly high. The responsibility will rest upon the teacher's college to produce a teacher that will meet all the requirements that are essential for a successful teacher. There is

no doubt that other institutions of higher learning will introduce industrial arts in their curriculum that heretofore was not present. This will alleviate some of the burden that the teacher's college has carried for so long. With more institutions carrying on the program, there will be keener competition and interest; therefore, producing a shop teacher better trained, more alert and progressive.

TABLE I represents the courses offered by the forty schools that train pupils for the industrial arts and industrial education phase of teaching. The figures represented are approximate and are expressed in quarter hours. Most of the programs interrogated were in semester hours and were transferred into quarter hours; and therefore, may vary slightly with the original figures.

TABLE I
A SURVEY OF FORTY COLLEGE INDUSTRIAL ARTS AND INDUSTRIAL EDUCATION CURRICULA

COLLEGE	English	Mathematics	Social Science	Exact Science	Electives	Controlled Electives	Physical Education	Education	Art	Foreign Language	Laboratory Sciences	Military Science	Ind. Arts
Western Ky. Teachers College	21	13	18	20	0	6	6	31	7	0	0	0	0
Eastern Ky. Teachers College	18	12	9	12	6	26	6	32	8	0	1	0	0
Iowa State Teachers College	21	10	15	7	18	5	9	42	0	0	0	0	0
University of Missouri	13	7	18	15	18	0	6	18	0	0	0	0	3
Ball State Teachers College	12	0	8	0	0	24	12	28	2	0	1	0	0
Kansas State Teachers College	13	7	0	0	10	30	x	18	0	0	1	0	0
Indiana State Teachers College	12	8	12	8	0	4	12	28	0	0	0	0	0
Western Mich. Teachers College	30	0	18	30	27	13	x	31	5	0	0	0	0
Middle Tenn. Teachers College	18	11	18	24	63	0	6	27	0	0	0	0	0
Miami (Ohio) University	15	9	9	21	36	24	12	21	3	0	0	0	0
Illinois State Normal Univ.	16	0	23	12	0	27	6	39	1	0	0	0	0
West Texas Teachers College	18	9	30	21	30	13	x	56	9	0	0	0	0
Wayne University	21	13	19	30	0	15	3	39	6	0	0	0	0
Stout Institute	21	10	19	16	16	0	x	27	0	0	0	0	0
Colorado A & M College	15	8	24	30	45	0	6	21	0	0	10	6	0
North Texas Teachers College	18	0	24	9	45	0	6	36	0	0	0	0	0
Eastern Illinois Teachers College	16	0	12	0	8	4	4	36	0	0	2	0	0
Southeastern Mo. Teachers College	15	7	15	10	67	0	10	30	0	0	0	0	0
Bowling Green (Ohio) University	18	3	18	9	27	0	6	30	7	0	0	0	0
Ohio University	15	12	18	12	0	0	6	39	3	0	0	0	0
Louisiana State University	18	10	13	33	3	0	6	36	18	0	0	18	0
Bradley Polytechnic Institute	18	0	0	0	31	0	6	46	0	0	0	0	0
Mississippi State College	9	4	21	16	18	0	3	18	0	0	0	6	0
California (Pa.) Teachers College	18	4	15	4	27	0	9	48	0	0	0	0	0
Arizona State (Tempe) College	9	9	18	30	4	0	6	27	3	0	0	0	0
Oklahoma A & M College	16	13	10	24	12	0	x	21	0	0	0	0	0
Iowa State College	15	10	18	22	0	9	x	18	0	0	0	6	0
Pennsylvania State College	18	27	13	9	1	4	6	27	3	0	0	9	0
Utah State Agricultural College	12	10	23	10	51	0	6	19	0	0	0	0	0
Ohio State University	9	0	10	12	12	64	3	44	0	0	0	12	0
Oregon State College	18	0	9	16	19	16	6	54	6	0	0	6	0
Arkansas State Teachers College	22	9	18	12	54	0	10	31	3	0	0	0	0
Millersville (Md.) Teachers College	18	4	13	4	25	12	9	45	6	0	x	0	0
Purdue University	18	12	18	21	4	0	1	46	3	0	0	6	10
Michigan State Normal	30	0	18	9	27	0	12	54	0	0	0	0	0
Kansas State College	18	12	21	24	0	14	x	27	0	0	0	6	0
West Virginia University	18	9	18	0	36	12	6	36	0	0	0	6	10
Nebraska State Teachers College	9	9	9	9	45	19	6	36	0	0	0	0	0
Colorado State Coll. of Education	6	0	12	12	26	0	2	36	6	24	0	0	0
East Tennessee Teachers College	16	3	10	9	50	54	6	31	13	0	0	0	0

Note: All figures are approximate and are represented in quarter hours. Controlled electives group include first and second minors, also prepresents industrial arts to be taken under guidance of the major professor. (x) represents the course is required but without credit. Bradley Tech requires 60 quarter hour of industrial arts. The 12 hours shown on chart must be taken during the first year and the additional be taken in specialized field of ind. arts.

Psychology	Music	Radio	Forge Foundry	Arts & Crafts	Drawing	Woodwork	Finishing	Auto-Mechanics	General Shop	Special Methods	Ceramics	Machine Shop	Concrete	Welding	Upholstery	Metal Work	Printing	Electricity	Forrestry	Household Mechanics	Book-Binding	Jewelry-Lapidary
0	0	0	0	4	21	18	0	0	0	13	0	0	0	0	0	12	0	0	0	0	0	0
0	0	0	0	0	18	13	0	0	6	6	0	16	0	0	0	11	0	0	0	0	0	0
0	0	0	0	0	21	12	3	0	0	16	0	0	0	0	0	16	0	0	0	0	0	0
3	0	0	0	7	13	9	0	0	4	13	0	0	0	0	0	7	0	3	0	0	0	0
0	0	0	0	0	12	2	0	0	0	8	0	0	0	0	0	4	0	3	0	0	0	0
0	0	0	0	8	10	9	0	9	9	0	0	0	0	0	0	0	9	8	0	0	0	0
0	0	0	0	0	12	21	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	7	5	5	5	0	0	0	0	0	0	0	5	5	0	0	0	0	0
0	0	0	0	0	30	15	0	0	3	3	0	0	0	0	3	0	0	3	0	0	0	0
0	0	0	0	0	4	3	3	0	0	7	0	0	0	0	0	3	6	0	0	0	0	0
0	0	0	0	0	20	4	0	0	0	3	0	0	0	0	0	4	9	4	0	0	0	0
0	0	0	0	0	9	9	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	12	3	0	0	0	0	0	0	0	0	0	7	6	6	0	0	0	0
0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	0	6	3	3	0	0	0	0
0	0	0	0	2	9	8	0	4	13	0	0	0	0	0	0	11	0	0	0	0	0	0
0	0	0	0	0	13	4	0	0	13	0	0	0	0	0	0	4	0	0	0	0	0	0
0	4	0	0	0	18	6	2	0	0	4	0	0	0	0	0	11	0	4	0	0	0	0
0	0	0	0	0	19	19	0	0	5	7	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	18	9	0	0	0	10	0	0	4	4	0	13	6	4	0	0	0	0
0	0	0	3	0	10	9	0	0	0	0	3	3	0	0	0	10	9	3	0	0	0	0
0	0	0	0	0	19	12	0	3	3	16	0	0	0	0	0	0	0	0	4	0	0	0
0	0	0	3	0	4	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0
0	0	0	0	0	16	9	0	0	0	21	0	3	0	0	0	7	0	0	0	0	0	0
0	0	0	0	0	21	12	0	0	0	0	6	6	0	0	0	18	6	6	0	0	0	0
0	0	0	0	0	9	18	0	0	0	0	0	9	0	0	0	9	9	0	0	0	0	0
0	0	0	0	0	15	15	4	0	3	27	0	2	0	2	0	2	0	0	0	0	0	0
0	0	0	2	0	12	6	2	0	0	13	2	2	2	2	0	6	2	2	0	0	0	0
0	0	0	5	0	15	13	3	0	0	33	0	6	0	3	0	9	0	6	0	0	0	0
0	0	10	0	2	6	8	2	15	0	22	2	8	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	8	3	0	0	0	12	0	0	0	0	0	3	0	0	0	0	0	0
0	0	0	6	0	18	12	2	9	2	17	0	3	0	0	0	0	0	3	3	0	0	0
0	0	0	0	0	9	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	21	6	0	0	6	5	0	0	0	0	0	12	6	6	0	0	0	0
0	0	0	2	0	10	3	0	0	0	24	0	4	0	0	0	0	0	0	3	0	0	0
0	0	0	0	5	17	8	0	6	0	3	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	5	15	11	3	10	0	15	0	6	0	5	0	5	3	0	7	3	0	0
0	0	0	0	0	6	9	0	0	5	5	5	5	0	0	0	9	0	6	0	0	0	0
0	0	0	0	0	6	18	3	0	3	3	3	0	0	0	2	0	0	0	0	0	0	0
0	10	0	0	0	12	12	0	0	2	11	0	0	0	0	0	12	8	0	0	0	2	0
0	10	0	0	0	9	9	0	0	0	3	0	0	0	0	0	9	0	0	0	0	0	0

ed Stout Institute requires the student to take 24 hours as shown on the table and an
 al additional 48 hours taken in a specialized phase of industrial arts. Arizona State
 curriculum is a comprehensive major. They also have specialized majors in Ind. Arts.
 cours By specialization means that emphasis is placed upon a phase of industrial arts such
 as wood work, metal work, electricity, or printing. Kansas State requires the follow-
 ing courses: Aero Mechanics, Steam Gaging, Applied Mechanics, and Machine Design.

For the convenience of the reader, Table II shows the courses that are included under general headings. This was done mainly to simplify tabulation as several institutions were not uniform in calling courses by the same name.

TABLE II
NON-TECHNICAL COURSES

ENGLISH	MATHEMATICS	SOCIAL SCIENCE	EDUCATION
Composition	Geometry	Economics	Psychology
Speech	Analytic	Sociology	Observation-Teaching
Journalism	Trigonometry	Government	Directed-Teaching
Literature	Descriptive Geometry	Civics	Tests and Measures
Public Speaking	Algebra	History	Methods of Teaching
Voice Preparation	Shop Mathematics		Guidance
			Curriculum Making

TABLE III
TECHNICAL COURSES

WOODWORK	DRAWING	METAL	SPECIAL METHODS AND HISTORY
Benchwork	Mechanical Drawing	Art Metal	Organization of Industrial Arts
Machine Woodwork	Architectural Drawing	Sheet Metal	History of Manual Arts
Woodturning	Mechanical Engineering	General Metal	Trade of Activity Analysis
Cabinet Construction	Furniture Design	Machine Shop	Methods of Teaching
Carpentry	Tracing and Blue Printing	Alloys	Administration of Teaching
Farm Construction	Pattern-making	Blacksmithing	Problems in Ind. Arts
Patternmaking			General Shop Theory

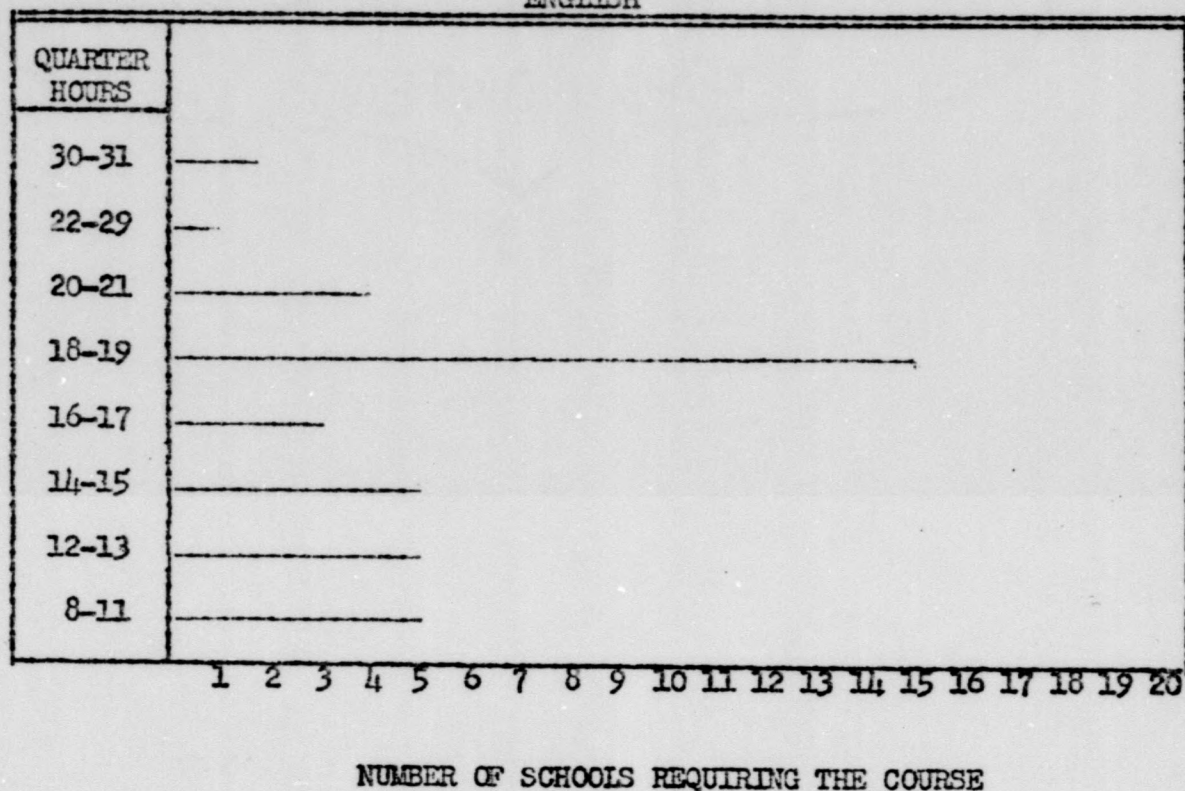
TABLE IV
NON-TECHNICAL COURSES REQUIRED BY FORTY COLLEGES AND UNIVERSITIES

COURSES	MAX. HOURS REQUIRED	MIN. HOURS REQUIRED	AVERAGE	PERCENTAGE OF COLLEGES REQUIRING THE COURSE	NUMBER OF COLLEGES REQUIRING THE COURSE
English	30	9	16.6	100	40
Mathematics	27	3	7	75	30
Social Science	30	8	15.4	95	38
Exact Science	30	7	13.6	87.5	35
Foreign Language	24	0	.51		1
Electives	67	3	21	82.5	33
Controlled Electives	64	4	10	52.5	21
Library Science	1	0	.10	12.5	5
Education	48	18	31	100	40
Music	4	0			2
Preventive Medicine	3	0			1
Physical Education	12	3	5	100	40
Military Science	18	6	2	30	12
Art	18	2	2.7	50	20

Note: Hours are interpreted in quarter hours. All figures are approximate. Electives listed by some colleges require the student to select a minor from this total. Controlled electives may be in industrial arts or may be in other academic subjects.

For convenience, all the non-technical courses are shown in the following tables in order to show the distribution of the courses throughout the colleges.

TABLE V
ENGLISH



English is offered and is required by all forty colleges, but the requirements are not uniform as can be easily observed when one looks at Table VI. The range is from 8-30 quarter hours. Five colleges required 8-11 quarter hours; five colleges from 12-13 quarter hours, three required 16-17 quarter hours; fifteen required 18-19 quarter hours and two colleges required as much as 30 quarter hours.

TABLE VI
SOCIAL STUDIES

QUARTER HOURS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
22-30																					
20-21																					
18-19																					
16-17																					
14-15																					
12-13																					
10-11																					
8-9																					

NUMBER OF SCHOOLS REQUIRING THE COURSE

In the social studies 95 per cent of the schools offered and required the student to take the subject. As in English the required hours by no means were uniform. In the above Table VI shows the distribution of the hours which ranged from 8-30 quarter hours.

Modern beliefs and concepts of industrial arts should include social studies as the social and economic conditions are continuously changing.

TABLE VII
MATHEMATICS

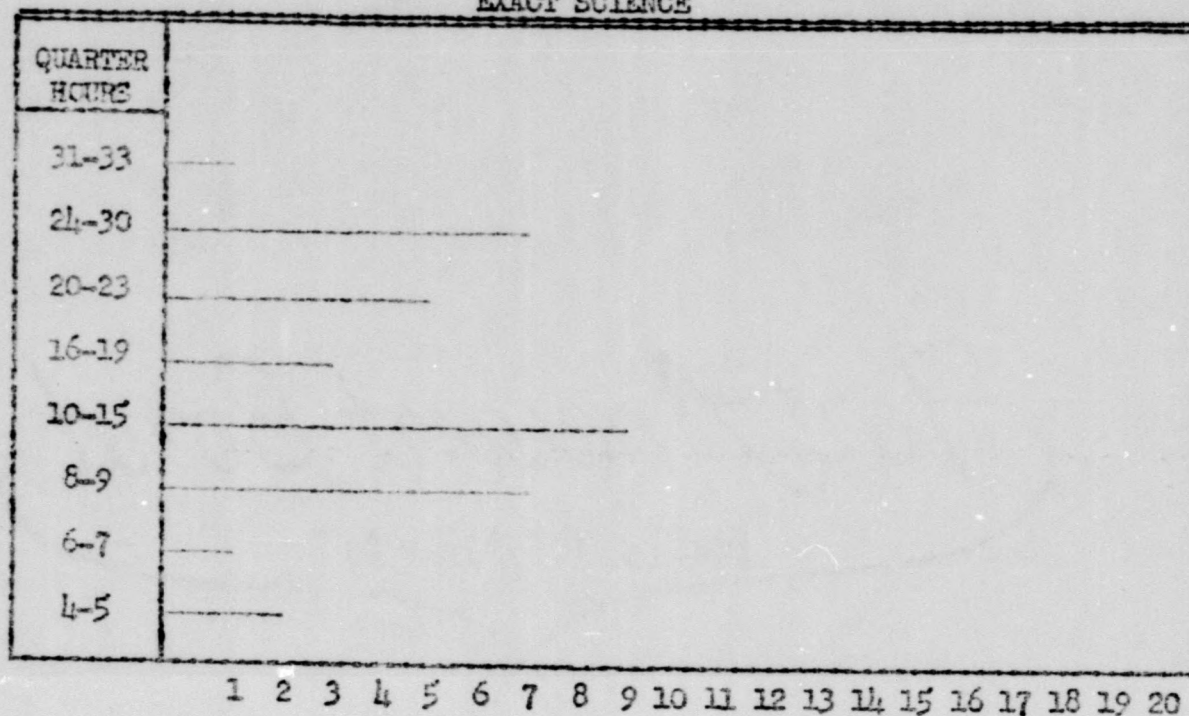
QUARTER HOURS	
16-17	—
14-15	
12-13	—————
10-11	—————
8-9	—————
6-7	—————
4-5	—————
2-3	—————

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

NUMBER OF SCHOOLS REQUIRING THE COURSE

Table VII above represents the distribution of the mathematics required which represents 75 per cent of the schools surveyed. The range ran from 3-27 quarter hours. Ten of the schools did not require their shop students to take mathematics.

TABLE VIII
EXACT SCIENCE



NUMBER OF SCHOOLS REQUIRING THE COURSE

Approximately 87 per cent of the schools required exact sciences consisting of chemistry and physics. The distribution as shown in Table VIII ranged from 4-38 quarter hours. Only English, education and social science were greater in demand. The table above represents thirty five schools.

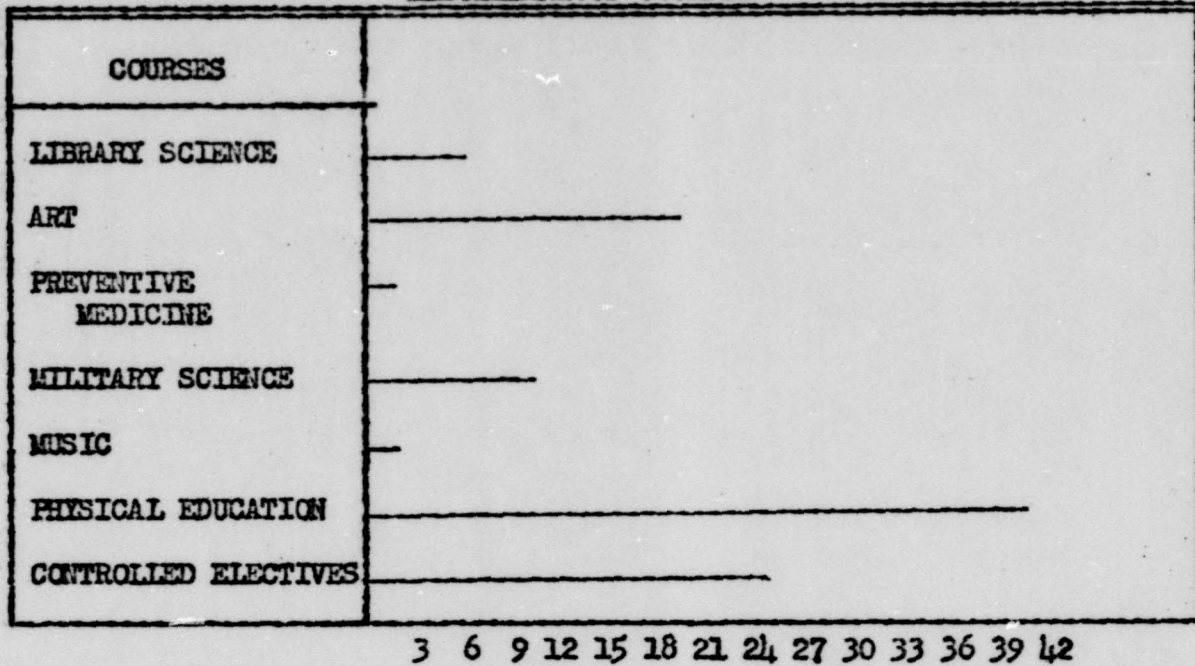
TABLE IX
EDUCATION

QUARTER HOURS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
46-49																				
42-45																				
38-41																				
34-37																				
30-33																				
26-29																				
22-25																				
18-21																				

NUMBER OF SCHOOLS REQUIRING THE COURSE

Education courses consisting of educational psychology, observation teaching and directed teaching and various problem courses appears in the industrial arts curriculum. Table IX represents the distribution and range of the required hours. All 40 schools demand various education courses.

TABLE X
MISCELLANEOUS COURSES



NUMBER OF SCHOOLS REQUIRING THE COURSE

Physical education was demanded by schools that did not give credit to the student. The hours ranged from 3-12 quarter hours.

Art represented approximately 50 per cent of the schools and the hours were from the minimum of 2-18 quarter hours.

Military science was demanded mainly by A & M colleges. The distribution of hours was from 6-18 quarter hours.

TECHNICAL REQUIREMENTS

If the teacher has mastered the academic phase of his education, he has mastered much; however, this not necessarily means that he will be a success in the classroom. It is assumed that with this professional background, he has built up a foundation that is a fundamental in the teaching field. This quality is but one of the many that is essential to be a success.

Technical experience of a teacher is as essential as or even more so than his professional education in teaching industrial arts. Without mechanical ability, there is no doubt that he will have a difficult time in the shop. He must have manipulative skill in order to impart technical information to his students.

In the survey of the technical course requirements in the industrial arts curriculum, this study reveals that twenty-one different courses were offered. There is no uniformity in the curriculum as every college differed in their requirement for teachers of industrial arts. Only in woodwork and mechanical drawing did they fully agree.

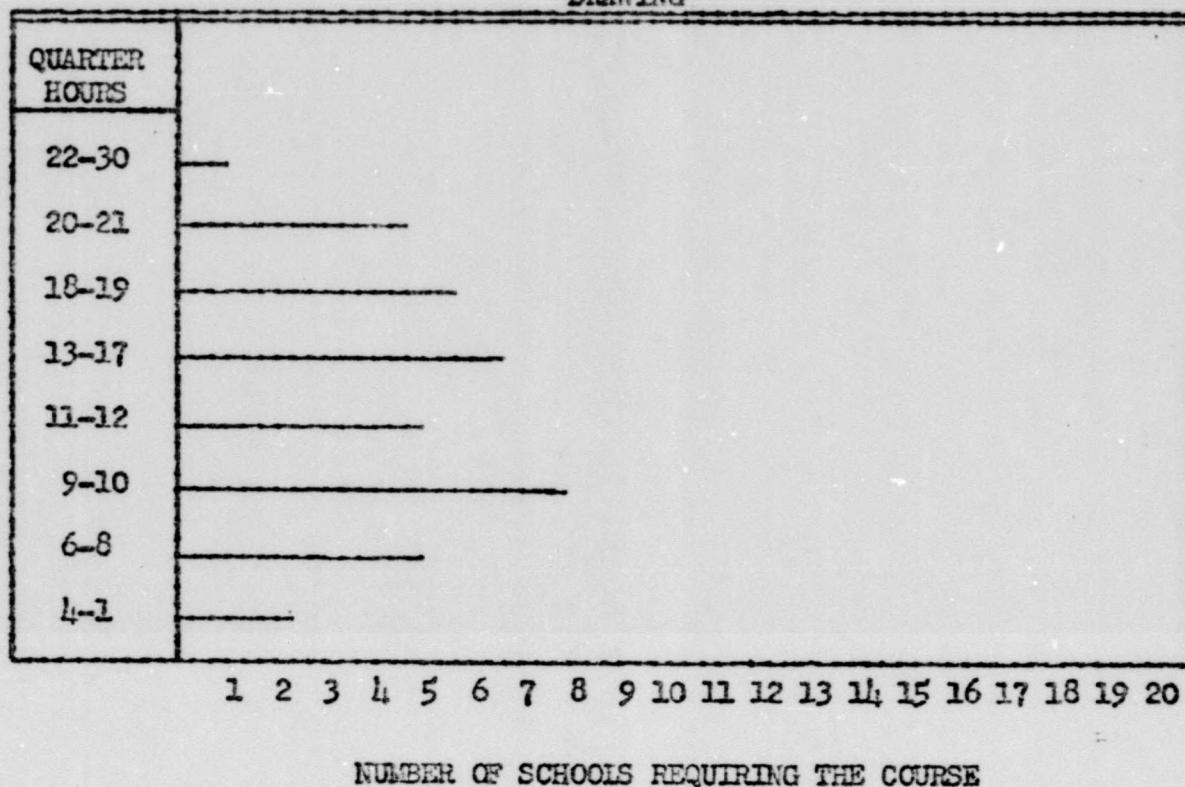
The distribution of the technical courses among the schools interrogated are shown in the tables following this page.

TABLE XI
TECHNICAL AND METHOD COURSES REQUIRED BY FORTY COLLEGES AND UNIVERSITIES

COURSES	MAXIMUM HOURS REQUIRED	MINIMUM HOURS REQUIRED	AVERAGE	PERCENTAGE OF SCHOOLS REQUIRING THE COURSE	NUMBER OF SCHOOLS REQUIRING THE COURSE
Arts & Craft	8	2	.8	20	8
Drawing	30	4	13	100	40
Woodwork	24	2	9.5	100	40
Finishing	5	2	.8	27.5	11
Printing	9	3	2	35	14
Auto-Mechanics	15	6	1	12.5	5
Metalwork	18	2	5.7	72.5	29
General Shop	13	2	1.9	37.5	15
Ceramics	6	2	.6	17.5	7
Electricity	8	2	1.8	42.5	17
Upholstery	3	0	-	-	1
Concrete	4	2	-	-	2
Forge-Foundry	6	2	.4	15	6
Welding	4	2	.2	10	4
Forrestry	7	3	.3	10	4
Machine Shop	10	3	1.6	32.5	13
House Mechanics	3	0	-	-	2
Bookbinding	2	0	-	-	1
Jewelry-Lapidary	2	0	-	-	1
Radio	10	0	-	-	1
Special Methods	27	3	8.9	75	30

NOTE: All figures are represented in quarter hours and are approximate.

TECHNICAL REQUIREMENTS AND DISTRIBUTION

TABLE XII
DRAWING

Drawing and woodwork are two subjects that were required in every program of the forty schools. In a survey conducted by Verne C. Fryklund and others, who are leaders in the field of industrial education, it was reported that 90 institutions, or 100 per cent, had drawing and woodwork represented in their curricula. They also found that metalwork ranked third. The computations acquired in this study compares with these figures in the survey made by these men. Metalwork ranked third in importance in this study also.

Table XII and Table XIII show the distribution of drawing and woodwork among the schools requiring the subject.

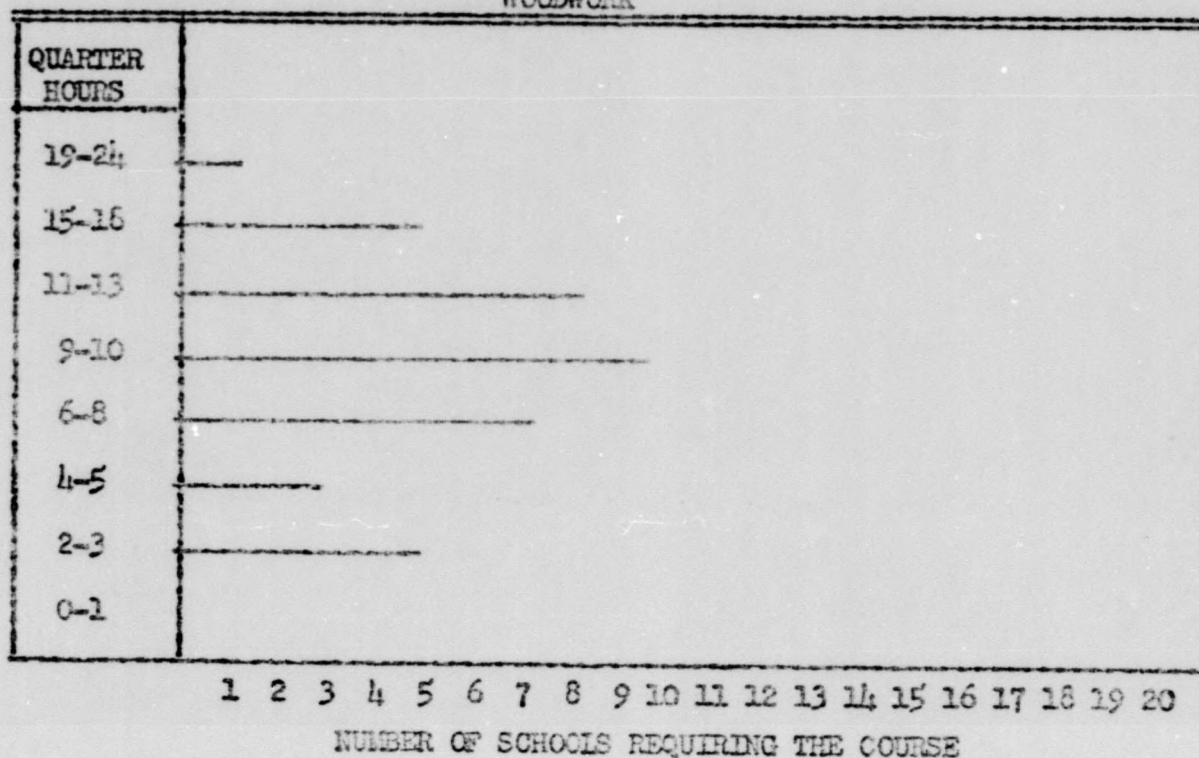
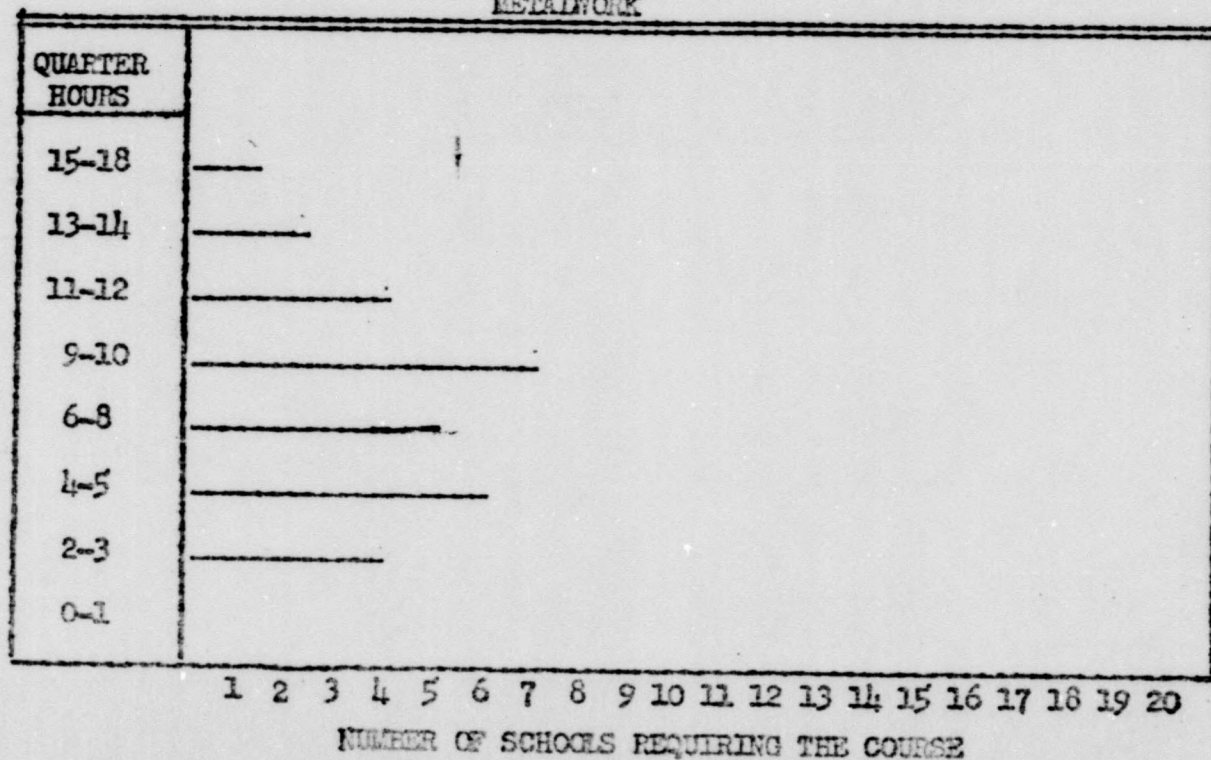
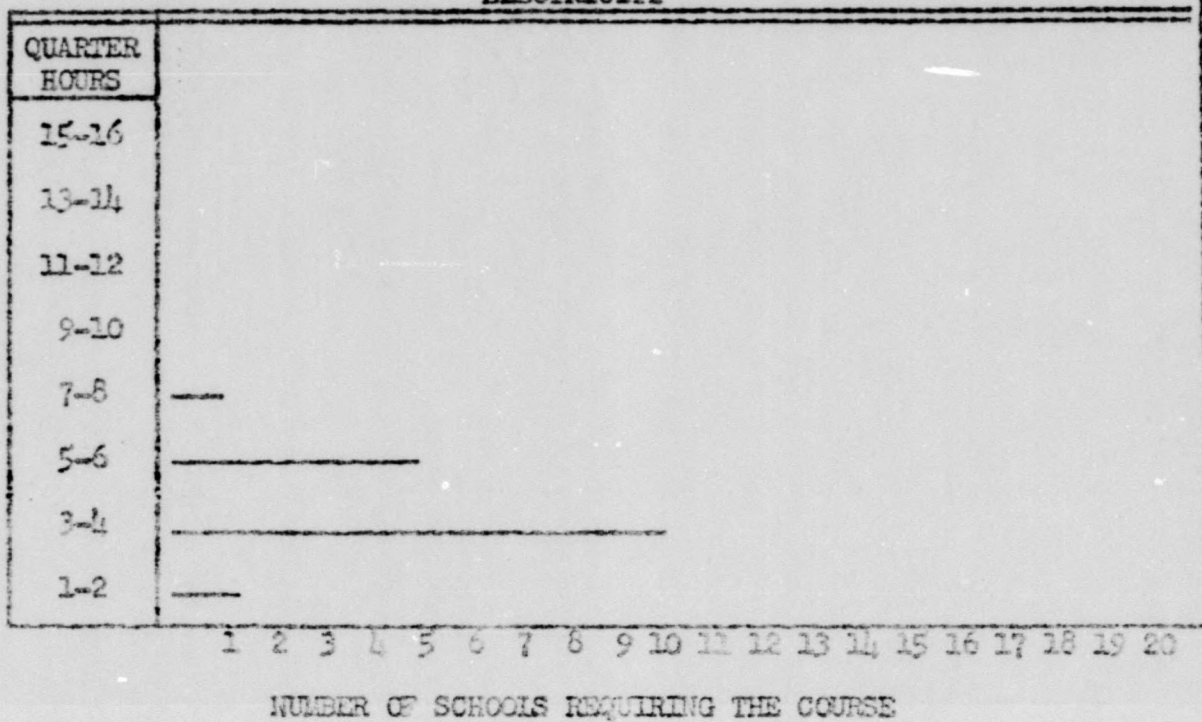
TABLE XIII
WOODWORKTABLE XIV
METALWORK

Table XIV shows the distribution of metalwork over 29 colleges or approximately 72 per cent of the 40 schools represented in this study.

TABLE XI
ELECTRICITY



Electricity as shown in Table XV was required by 17 colleges or approximately 42 per cent of the colleges surveyed. The course ranks fourth in importance in the industrial arts curriculum.

TABLE XVI
SPECIAL METHODS

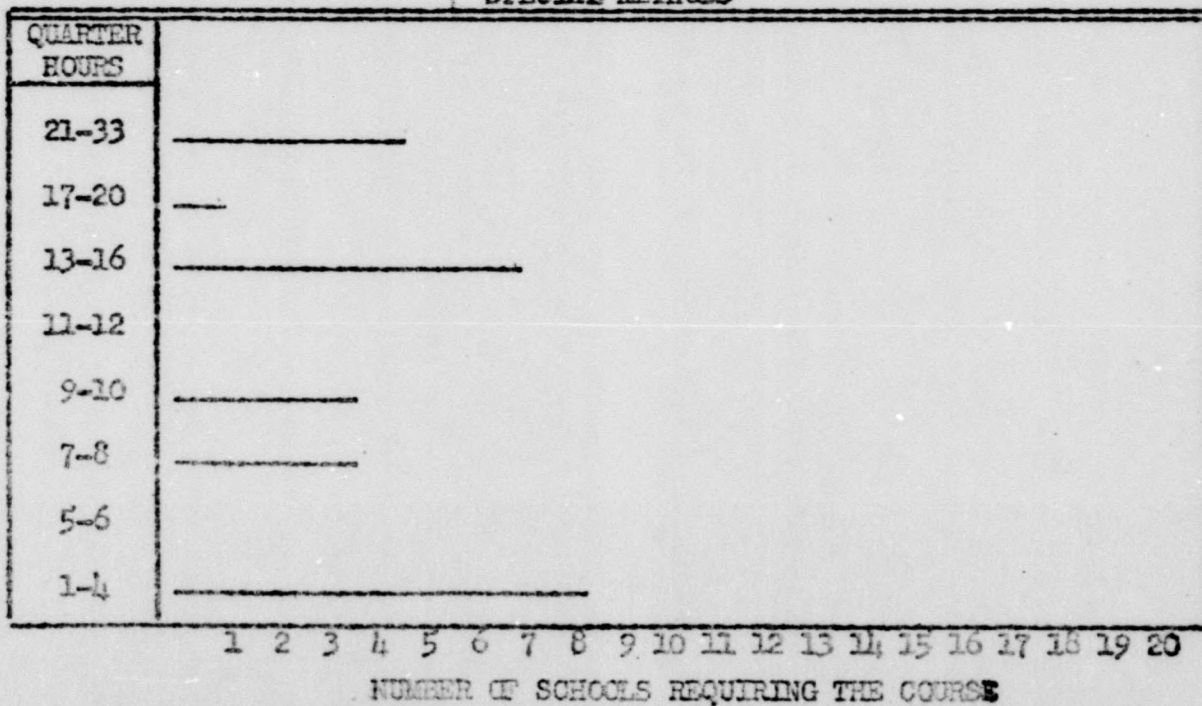
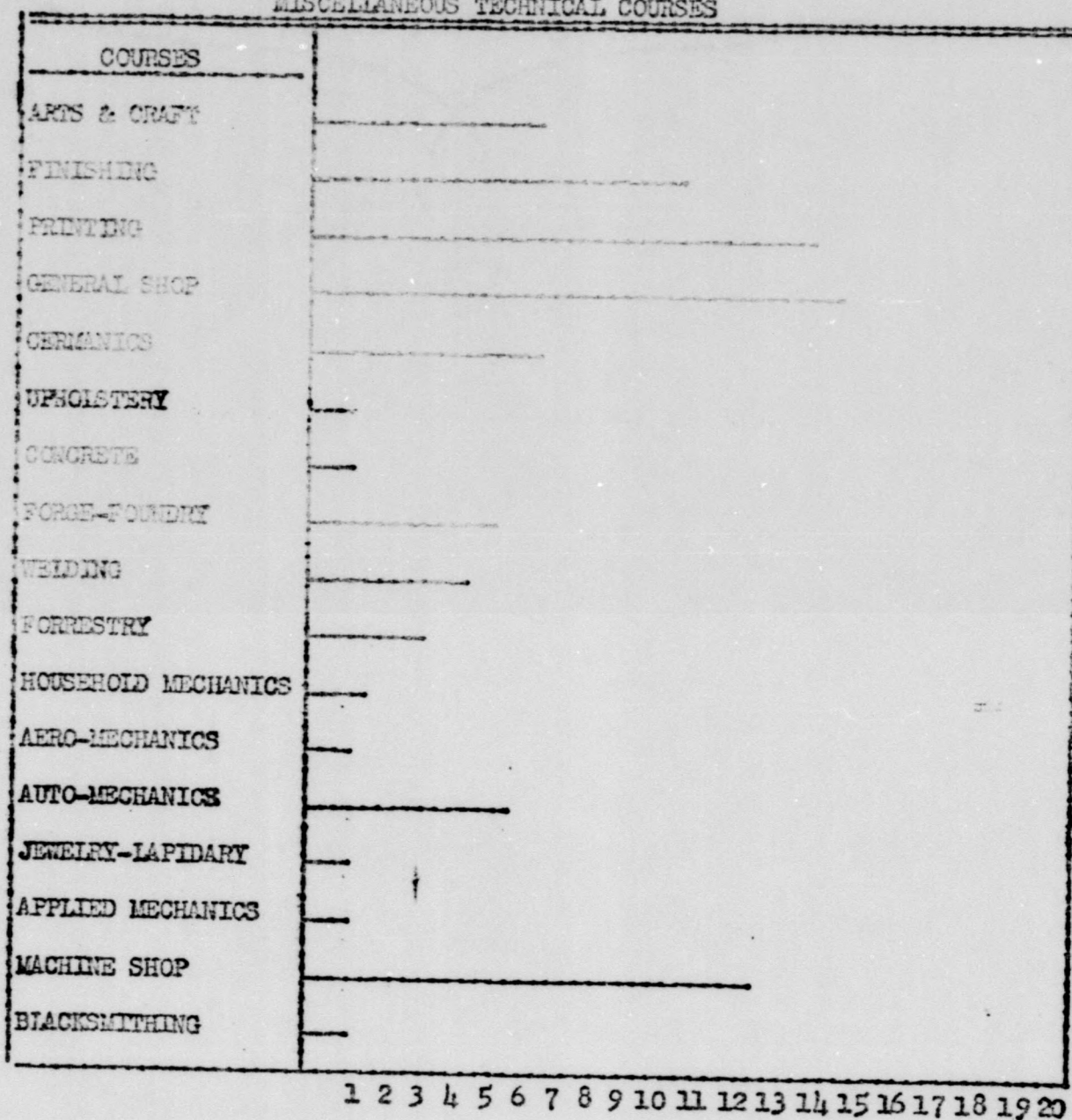


TABLE XVII
MISCELLANEOUS TECHNICAL COURSES



NUMBER OF SCHOOLS REQUIRING THE COURSE

The courses above indicate that emphasis is placed upon drawing, woodwork, metal, and electricity. Even though these courses are not required by school does not necessarily mean that they are not important. In fact some of these courses such as finishing and upholstery are vital in woodwork. As a supposition; a student who makes a well designed and

constructed project is expected to be equally skilled in finishing and upholstering. Yet this is not true as many fine projects have been reduced in value because of this final stage of completion.

CHAPTER III

STATE CERTIFICATION OF INDUSTRIAL ARTS TEACHERS

The authority to authorize teaching certificates is the responsibility of the state. Each State Department of Education sets up in detail the requirements necessary for the teachers to meet in securing a certificate. They are projecting plans whereby they are improving the qualifications of teachers constantly.

In the majority of states, industrial arts is considered a special field and a special certificate is granted to the applicant. The applicant had to comply with the professional standards set up by the state department.

Trade and industry certificates are also issued. These are given to applicants who have come from the field of industry in which they have served their apprenticeship. Their actual trade experience serves in lieu of their bachelor degree; however, there are certain professional standards to be met.

Professional courses (Education) in most cases are to be met as well by the industrial arts teachers as the academic teachers. In all states directed and observation teaching was a requirement for every applicant. In some cases actual teaching experience was considered equivalent to this requirement.

Kentucky requires the applicant to have seventy two quarter hours in industrial arts. Others that ranked high in this requirement were Ohio, Kansas, and California. The range of required hours for the United States was from twenty two and five tenths to seventy two quarter hours. Iowa, South Dakota, Vermont and Colorado were among the group that re-

quired the minimum in industrial arts.

In the Education requirements, Oregon, New York, Pennsylvania, and Alabama were high in this requirement. The hours ranged from fifteen quarter hours to forty. Colorado, and New Hampshire were lowest in the requirements.

In no case was an applicant allowed to teach with an out of state certificate. They were to hold a valid certificate from the state in which they were teaching.

Some states are realizing the importance of adequate preparation of teachers and there is a trend toward the fifth year of teacher preparation. Washington requires the applicant to have 45 quarter hours beyond a bachelor's degree before a three year secondary certificate is granted. In Connecticut the fifth year program for secondary teachers is advocated, and those preparing for positions in the secondary schools would do well to complete the fifth year, if a position is not now readily available; otherwise, the fifth year in service is feasible.¹

1

"Rules and Regulations Concerning State Teachers Certificate,"
Connecticut School Document, No. 2, 1941-1942.

TABLE XVIII
STATE REQUIREMENTS FOR CERTIFICATION OF TEACHERS OF INDUSTRIAL ARTS

STATE	QUARTER HRS. OF IND. ARTS	QUARTER HRS. OF EDUCATION	QUARTER HRS. OF ACADEMIC SUBJECTS	TOTAL QR. HRS.
Alabama	45	36	x	Degree
Arizona	45	27	x	Degree
Arkansas	36	24-30.5	63	186-186
California	60	22	x	Degree
Colorado	30	15	x	Degree
Connecticut	x	x	x	Degree
Delaware	45	27	x	Degree
Florida	45	27	x	Degree
Georgia	27	27	x	Degree
Idaho	x	22.5	50%	135
Illinois	48	24	52	Degree
Indiana	36	27	x	180
Iowa	22.5	22	x	180
Kansas	60-97	27	x	Degree
Kentucky	72	27 - 71	60	Degree
Louisiana			81-93	180-192
Maine		Trade and Industry Diploma		
Maryland	x	x	x	Degree
Maryland	45	24	x	Degree
Massachusetts	x	30	x	Degree
Michigan	36	30	x	Degree
Minnesota	Major	22½	x	Degree
Mississippi	No Data		x	Degree
Missouri	36	27		
Montana	45	24	37	Degree
Nebraska	x	x	x	Degree
Nevada	36	27	x	Degree
New Hampshire	27	18	x	Degree
New Jersey	33-48	24-30.5	x	Degree
New Mexico	20-36	27	x	Degree
New York	53.5	36	x	180
North Carolina	45	27	77	192
North Dakota	32	24	x	Degree
Ohio	67	25	x	Degree
Oklahoma	36	31	x	Degree
Oregon	36	40	118	196
Pennsylvania	x	36	x	Degree
Rhode Island	x	20	x	x
South Carolina	27	27	x	Degree
South Dakota	22.5-32	22.5	72	Degree
Tennessee	27	27	x	Degree
Texas	36	27	x	x
Utah	45	27	92	180
Vermont	x	35	85	183
Virginia	24	22.5	x	Degree
Washington	36	27	x	Degree
West Virginia	36	24	x	Degree
Wisconsin	45	30	12	Degree
Wyoming	22.5	24	x	Degree

Note: x - Not Specified * - Minimum

ALABAMA

1. Applicant must have a bachelor's degree from a standard institution.
2. He must have earned 45 quarter hours in Industrial Arts and also is entitled to have any special subject in which he has as much as 18 quarter hours of credit named on the face of the certificate as one of the subjects which he is authorized to teach, provided the required distribution of courses is presented.
3. He must have earned the following:

	(Quarter Hours)
a. English	18
b. History	9
c. Political Science, Sociology, Economics	9
d. Science (Exact)	9
e. Education	4.5
1. general psychology	4.5
2. education psychology	4.5
3. principles of high school teaching	4.5
4. material and methods of teaching major or minor subjects	4.5
5. directed teaching	4.5
6. electives in the field of secondary education	13.5

ARIZONA

1. Special Certificates shall be granted upon evidence of graduation from a regular four-year high school course, or the equivalent, and in addition thereto evidence of graduation from a regular four-year course in a special school, special department of a teachers college or university whose accrediting is recognized by the State Board of Education.
2. Requirements are:
 - a. Not less than 45 quarter hours or the equivalent in the special field for which certificate is granted.
 - b. Not less than 27 quarter hours in Education and Psychology

appropriate to the field including not less than 7.5 quarter hours of practice teaching or approved teaching experience in the public schools, either of which must be in the special field for which certification is granted.

- c. The name of the special field shall be endorsed on the face of this certificate. Special certificates will be granted in the following fields until September 1, 1950, after which time these subjects will be covered by general certification requirements:

1. Commerce (Business subjects)
2. Home Economics
3. Industrial Arts

- d. This certificate shall be valid for four years and shall entitle the holder to teach in grades 1 to 12, inclusive, and junior college, but only the subjects endorsed on the face of this certificate.

ARKANSAS

1. Graduation from an approved four year college.
2. General requirements 63 Quarter Hours
 - a. English 18 Quarter Hours
 - b. Social Science 18 Quarter Hours
 - c. Physics 9 Quarter Hours
 - d. Mathematics 9 Quarter Hours
 - e. Physical Education, Health and Safety 9 Quarter Hours
3. Professional requirements 24-30.5 Quarter Hours
 - a. Educational Psychology 4.5 Quarter Hours
 - b. Directed Teaching 7.5 Quarter Hours
 - c. Special Methods and Problems in Industrial Arts 3 Quarter Hours
 - d. General Shop Organization 3 Quarter Hours

- | | |
|---|-----------------------|
| e. Principles of Secondary Education | 3 Quarter Hours |
| f. Tests and Measurements | 3 Quarter Hours |
| 4. Specialization Requirements | 36 Quarter Hours |
| a..Occupational Information | 3 Quarter Hours |
| b. Home Mechanics | 9 Quarter Hours |
| c. Shop Management | 3 Quarter Hours |
| d. Drawing | 9 Quarter Hours |
| e. Shop Courses | 12.5 Quarter Hours |
| 5. Electives to make | 180-186 Quarter Hours |
| 6. This certificate authorizes the holder to teach Industrial Arts in any junior or senior high school of the state, provided it is first registered in the office of the County Supervisor in the County in which the holder plans to teach. | |

CALIFORNIA

An applicant for a special secondary credential in industrial arts education must submit:

1. A certificate from a physician licensed to practice medicine and surgery that the applicant is physically and mentally fit to engage in teaching service.
2. A recommendation from the school or department of education of an institution approved by the California State Board of Education for training teachers of Industrial Arts education with verification of:
 - a. The completion of a four-year college course with a bachelor's degree.
 - b. A minimum of 24 quarter hours of work in fields of English, science, social studies, and physical education.
 - c. 22.5 quarter hours of professional work in education including:
 1. A course dealing with the aims, scope, and desirable outcomes of the elementary and secondary school.
 2. Directed teaching in industrial arts, 9 quarter hours.

3. Methods courses in industrial arts.
 4. Other courses in education organized for the training of public school teachers.
- d. 60 quarter hours of special technical training suited to the needs of teachers of junior and senior high school students, distributed approximately as follows:
- | | |
|----------------------------------|----------|
| 1. Automobile and transportation | 4.5 |
| 2. Woodwork | 4.5 |
| 3. Drawing | 4.5 |
| 4. Electricity and radio | 4.5 |
| 5. Metal work | 4.5 |
|
Total |
22.5 |
| Additional requirements | 37.5 |
- e. 37.5 quarter hours of shop electives made up of additional courses in the subjects listed in the required group above, or selected from the following or similar subjects:
1. Battery construction and repair
 2. Vulcanizing and tire repair
 3. Home mechanics and general shop
 4. Forging and welding
 5. Wood finishing and painting
 6. Leather work
 7. Upholstery and caning
 8. Construction work for elementary grades
 9. Pattern making and foundry work
 10. Art metal work
 11. Pumps and irrigation equipment
 12. General shop
 13. Printing
- f. Authorization for Service. This credential authorizes the holder to teach industrial arts subjects as indicated upon the credential in the public schools of the state.
- g. Term. This credential may be issued for a period of two years and may be renewed thereafter for periods of five years upon verification of at least five months of successful teaching experience in the public schools of California.

COLORADO

General Requirements:

1. The applicant must be a graduate of a standard four-year high school or must have had educational training equivalent to such

a course.

2. In addition to the foregoing, two years, 90 quarter hours of collegiate training are required. This training must have been completed in accredited institutions of higher learning.
3. At least 15 quarter hours of credit in education must be included in the collegiate training as follows:

	Quarter Hours
a. Psychology	3
b. Practice teaching in the special subject. The requirement in practice teaching may be waived by the issuing authority on evidence of at least one year of successful experience in teaching the subject under supervision.	3
c. Methods in teaching the special subject and such general methods of teaching as are applicable to the subject.	9
	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/> 15

Special Requirements:

Forty quarter hours must be distributed as follows:

	Quarter Hours
1. Sixteen quarter hours in the special subject in which the applicant wishes certification. Twelve of these may be allowed for trade experience which covers a period of three years.	16
2. Mechanical Drawing	5
3. Shop Mathematics	4
4. Physics or Chemistry	4
5. Vocational Guidance. May be met with suitable current trade reading	3
6. English. Four quarter hours must be English Composition.	8

CONNECTICUT

1. A degree from an accredited college certifying to have completed a four-year teacher-training course in industrial arts.

DELAWARE

Certificate may be granted to an applicant who has satisfactorily completed the work for a bachelor's degree in a standard college or university, including at least 15 quarter hours in industrial arts, 18 quarter hours in related subjects (botany, social studies, literature), at least 9 quarter hours in methods of teaching in industrial arts in both high and elementary school, 9 quarter hours in practice teaching, and 9 quarter hours in professional subjects, which may include philosophy of education, principles of education, introduction to teaching, educational or adolescent psychology, etc.

FLORIDA

Qualifications for the graduate certificate:

1. Applicant must be a graduate of a standard institution that requires four years work for graduation and which was standard at the time he was graduated, and must be accredited by one of the following agencies:
 - a. The Southern Association of Colleges and Secondary Schools.
 - b. The Middle States Association of Colleges and Secondary Schools.
 - c. The New England Association of Colleges and Secondary Schools.
 - d. The North Central Association of Colleges and Secondary Schools.
 - e. The Northwest Association of Colleges and Secondary Schools.
 - f. The American Association of Teachers Colleges.
 - g. The National Association of Schools of Music (Music only).
 - h. The Florida State Board of Education.
 - i. The National University Extension Association.
2. Assert his allegiance to the Constitution of the United States and

take a written examination on the Constitution and pass with a grade of 85 per cent.

3. In lieu of the above requirement, he must have completed at least 9 quarter hours of college work in American History and government including the Constitution of the United States at a standard institution.
4. Be at least twenty years of age.
5. Must be a citizen.
6. Complete at least 13.5 quarter hours with at least 4.5 quarter hours in each subject or fields to be covered by the certificate.
7. A general average of C for certification in a special field.
8. At least 9 quarter hours are required in the following fields:
Science, Social Science and English.

At least 1.5 quarter hours in Health Education or Hygiene and at least 1.5 quarter hours in Physical Education. Also considered highly desirable to have general courses in Mathematics, Fine Arts, Languages, Arts, etc.

9. 27 quarter hours of education in addition to any courses in psychology and must fulfill one of the following classroom experiences:
 - a. 9 quarter hours in an internship program.
 - b. 9 quarter hours in observation and practice teaching.
 - c. At least 16 months teaching experience within three years period immediately preceding the completion of his application for a certificate.

Certification for Industrial Arts is given in individual subjects such as mechanical drawing, woodwork, automechanics, etc. He must have 4.5 quarter hours in Industrial Arts including credit in Method of Shop Teaching, observation and practice teaching and 18 quarter hours in the shop subject in which certification is desired.

Note 1. If one is eligible for certification in one subject, he may obtain certification in a second with 13.5 quarter hours in that subject. The third, and additional subjects, may be added with 9 quarter hours.

Note 2. One may teach general shop provided he is certified in at least three Industrial Arts subjects.

GEORGIA

Applicant must have the following qualifications to obtain a teacher's certificate in the state of Georgia:

1. Approximately half of the total college credits should be in general academic subjects other than the applicant's teaching field. This credit should be fairly distributed in the fields of English language and literature, social science, natural science, mathematics and the humanities.
2. Not more than 30 per cent of the total college credit should be in professional education courses. Twenty-seven quarter hours shall be distributed as follows:
 - a. 9 to 18 quarter hours in three of these areas
 1. Orientation in Education
 2. Education Psychology
 3. The school and society
 4. High school curriculum
 - b. 9 to 18 quarter hours including three hours in practice teaching and the following:
 1. Materials and methods in the high school.
 2. Directed observation and practice teaching in typical high school situations.
3. The applicant must have a total of 27 quarter hours in Industrial Arts.
4. Three years or at least 135 quarter hours of college work.

5. Four years of college work and a Bachelor degree or five years of college work with a Master's degree. Junior high and secondary requirements are the same.

ILLINOIS

Certificates in the State of Illinois will be granted to those who have graduated from a recognized college with a Bachelor's degree.

	Quarter Hours
1. General education	52.5
a. Oral and Written Expression	12
b. Natural Science	9
c. Social Science	9
d. Humanities	9
e. Health and Physical Education	3 to 6
f. Additional work in above fields	9
2. Education (Professional)	24
a. Adolescent Growth and Development	3 or 4.5
b. Principles, or Philosophy of Education	3 or 4.5
c. Student Teaching (High School level)	7.5
d. Materials and methods in secondary school, or method of teaching a particular secondary subject	3 or 4.5
e. American Public Education	3 or 4.5
3. Electives	31.5
4. Major of Specialization	48
5. Minor of Specialization	24
Total	<u>180</u>

INDIANA

To secure a certificate in Indiana the applicant must have the following qualifications:

- 36 quarter hours of required credit should be devoted principally to wood-work, mechanical drawing, and mechanics.
- Graduate with a baccalaureate degree from an accredited college with a minimum of 180 quarter hours.
- Professional credits in quarter hours approximately as follows:

	Quarter Hours
a. Psychology and its Applications	9
b. Secondary Education	4.5
c. Principles of Teaching	4.5
d. Supervised Teaching	4.5

- h. Professional academic credits consisting of a three quarter hour course in methods of teaching each of the two subject groups elected.

IOWA

Provisions for obtaining a certificate in the state of Iowa are as follows:

1. Statutory provisions.

- a. The standard secondary certificate shall be issued to the holder of a diploma granted by an Iowa college accredited by the Board of Educational Examiners certifying to the completion of a four-year course including such specific and professional training for teaching two or more secondary school subjects as the Board shall prescribe.
- b. Valid for five-year term for teaching in the seventh and eighth grades and in a high school.

2. Additional requirements prescribed by Board Quarter Hours

a. Professional training

1. Introduction to, history of, principles of education 4.5
2. Psychology and its application to education 9
3. Methods of secondary school teaching 4.5
4. Directed observation and supervised teaching in secondary school field 4.5

22.5

b. Academic preparation

1. 22.5 quarter hours in one subject matter field, with at least 15 quarter hours in each of two additional fields. For example:
 English, Language (each one to be taught)
 Science (7.5 quarter hours in each science taught)
 Mathematics
 Social studies (special preparation in subjects to be taught)

- c. At least 15 quarter hours or more in Industrial Arts.

3. Three quarter hour course in principles of American government.

KANSAS

A special certificate valid in any elementary school, junior high school, or senior high school for a two year period for teaching the subject or in the department designated in the certificate (Music, Art, Physical Education, Industrial Arts, Home Economics, Agriculture, Commerce, etc.) may be issued to the applicant who holds a baccalaureate degree, or who has secured 180 quarter hours credit from an accredited college, provided an official transcript of the college record shows the following credit:

1. 60 quarter hours from general cultural courses such as English, language, social science, biological science, physical science, general psychology, mathematics, and fine arts courses of an academic nature not to exceed 15 quarter hours.
2. 27 quarter hours credit in psychology and education which must include 4.5 quarter hours' educational psychology. 4.5 quarter hours' supervised practice teaching, or three years of full time teaching experience (24 months).
3. 18 quarter hours' elective in education distributed in three or more fields. Not to exceed 4.5 quarter hours credit in general psychology may be presented to meet this requirement.
4. 97.5 quarter hours' credit, not fewer than 60 or which must be in the subject or department designated in the certificate.

KENTUCKY

Applicant must have the following requirements to qualify for a certificate in the state of Kentucky:

1. Minimum general or core requirements—Each candidate must present 16 quarter hours of English. In addition to this a total of 40 quarter hours must be selected from the following fields:

Fine arts, Foreign Language, Health, Physical Education and safety, Mathematics, Philosophy and psychology; Science, Vocational fields with no candidate presenting fewer than three or more than four fields, and in no field may he offer fewer than 8 quarter hours; and in no instance may the selection of the general education courses include the fields which he chooses as his majors or minors, except that he may major or minor in English.

2. He must have a total of 72 quarter hours of Industrial Arts.
3. He must have 27 quarter hours of Education and must be in the following fields:

	Quarter Hours
a. Psychology or Education Psychology	4
b. Secondary Education	8
c. Supervised student teaching	8
d. Electives in Education	7

4. He must complete a bachelors degree with a total of not less than 180 or 192 quarter hours.
5. Any person presenting a teaching area may qualify to teach an additional subject by presenting 16 quarter hours in that subject. The addition of 16 quarter hours is the face of any certificate to take the place only in case where the applicant has fulfilled the requirements in general education.

LOUISIANA

Louisiana issues a trade and industrial certificate which applies to men who have served in Industry.

MAINE

1. Applicant must present evidence of graduation from a four-year course in an accredited professional school of industrial arts.

He will be awarded the First Provisional Professional Certificate and may teach in both elementary and secondary schools.

2. Holders of the First Provisional Professional Certificate are eligible for a Second Provisional Certificate on presentation of evidence of two years successful teaching experience.
3. Holders of the Second Provisional Professional Certificate in industrial education are eligible for a Standard Professional Certificate upon evidence of four or more years of successful teaching experience plus 9 quarter hours of summer school work or its equivalent in industrial education courses. This certificate is renewable every ten years.

MARYLAND

1. Graduate from a standard four-year college.
2. 24 quarter hours in the following education courses:
 - a. Educational Psychology
 - b. Principles in High School Teaching
 - c. Special Methods and Observation
 - d. Elective Courses in Education
3. Approximately 45 quarter hours in Industrial Arts including Mechanical drawing, general metal work, woodworking, electrical work, and sheet metal work.

MASSACHUSETTS

1. A Bachelor's degree from the Industrial Arts department of a four-year college.
2. A minimum of 30 quarter hours of professional study, including Industrial Arts education and practice teaching.

MICHIGAN

1. A provisional Certificate may be granted to any person who is at least 18 years old and has received a Bachelor's, Master's, or Doctor's degree from an institution approved by the State Board of Education.
2. At least 36 quarter hours in Industrial Arts.
3. A minimum of 30 quarter hours in education including the following subjects:
 - a. Directed Teaching in Secondary Grades
 - b. Methods in Major or Minor subjects
 - c. Principles of Teaching, or equivalent
 - d. Psychology of Education, or equivalent
 - e. History of Education, or Philosophy of Education
 - f. Electives to complete the necessary 30 quarter hours

MISSOURI

1. Baccalaureate degree from an accredited college or university.
2. Completion of sufficient college work in at least one subject-matter field to meet the standards for certification and approval for a teacher in a first class high school.
3. A total of 22.5 quarter hours of college work which may be selected from a minimum of three of the following subject fields. English composition, literature, social science, and foreign languages.
4. Two years college work in general physical education and one course in Health or Hygiene.
5. A minimum of 27 quarter hours of Education and it is strongly recommended not more than 45 quarter hours of undergraduate work be presented including a course in each of the following:
 - Group One - Orientation
 - a. Educational Psychology
 - b. History or Philosophy of Education

Group Two - Methods

- a. General Techniques or methods in high school teaching
- b. Special Techniques in one teaching field
- c. A general administration course for teachers

Group Three - Teaching

- a. Student or apprentice teaching, 7.5 quarter hours

6. Industrial arts 36 quarter hours.

MINNESOTA

1. Must hold a degree from an accredited college or university.
2. Twenty two and a half quarter hours in Education including:

a. Educational Psychology	4.5 Quarter Hours
b. General Methods (Technic of Teaching)	4.5 Quarter Hours
c. Special Methods	4.5 Quarter Hours
d. Observation Teaching	4.5 Quarter Hours

The last two courses must be taken in academic high school subjects, a major or minor. If taken in combination, should carry 9 quarter hours.

3. A major in industrial arts with special methods and practice teaching in the special field.

MISSISSIPPI

No data on Mississippi

MONTANA

To teach in high school, an applicant must be a graduate of a fully accredited four-year college, with a Bachelor's degree, must have a major of 45 quarter hours and a minor of 30 quarter hours in some subject or subjects usually taught in high school, and must have at least 24 quarter hours of work in secondary education.

NEBRASKA

The completion of a four-year college teacher training course of study with a baccalaureate degree and specialization in the field of Industrial

Arts.

NEVADA

1. A graduate from an accredited college or university.
2. Must have at least 27 quarter hours in Education including 6 quarter hours in practice teaching. General psychology is not accepted to meet, in part, the professional requirement.
3. Applicants for industrial arts, special certificate, must present at least 36 quarter hours credit in that field.

NEW HAMPSHIRE

1. A shop teacher must have completed a four-year high school curriculum in industrial arts and a four-year teacher training curriculum in trades and industry in a standard post-secondary institution.
2. 18 quarter hours of college work in education.
3. Pass secondary examinations in New Hampshire School Law and State Programs of Studies. They may offer, however, certified college credits for quarter semesters courses with 4.5 quarter hours of credit in Educational Psychology, Methods of Teaching (General or Special) and Principles of Secondary Education in place of the corresponding subjects required for the examination.
4. The following subjects may be considered as work in Education: Educational Psychology, Educational Sociology, Cadet Teaching, History of Education, New Hampshire School Law and State Program of Studies, Principles of Secondary Education, General Methods, Test and Measurements, Introduction to Teaching, Guidance. Other subjects may be accepted as education if the content clearly lies in that field.

5. Candidates desiring credentials to teach in approved New Hampshire secondary schools shall qualify in major and minor fields for the teaching of English, foreign languages, mathematics, natural sciences and social sciences. (A minimum standard for preparation in any subject within a field is 9 quarter hours. 27 quarter hours of preparation in any field is required for a major; 18 quarter hours for a first minor; and 9 quarter hours for a second minor.)
6. Teachers of mechanical drawing shall have 18 quarter hours of post-secondary training in mechanical drawing. Teachers of other related subjects shall have at least 9 quarter hours of post-secondary training in each related subject taught. They shall meet the requirements, other than the provisions for majors and minors as in above specification 5.

NEW MEXICO

1. Graduate from an approved normal, college, or university with a minimum of 180 quarter hours of credit.
2. Professional credits or their equivalent as follows:

a. Educational Psychology	3 Quarter Hours
b. Secondary Education	3 Quarter Hours
c. Methods of Teaching in High School	3 Quarter Hours
d. Supervised Teaching	6 Quarter Hours
e. Problems of Education in New Mexico	3 Quarter Hours
f. Electives in Education	9 Quarter Hours
3. A major of 36 quarter hours in an academic subject with a first minor of 23.5 hours.
4. Special Certificates are granted to teachers of manual training. The requirements are a high school graduation or equivalent; 90 quarter hours of college training; or the equivalent, 30 quarter hours of which must be in a special field of subjects for which

the applicant desires certification.

NEW YORK

1. Professional courses	36 Quarter Hours
a. Educational Psychology	4.5 Quarter Hours
b. Principles and Practices of Industrial Arts in New York	9 Quarter Hours
c. Practice Teaching and Conference	22.5 Quarter Hours
2. Technical courses - Shop	53.5 Quarter Hours
a. General Woodwork	7.5 Quarter Hours
b. General Metalwork	7.5 Quarter Hours
c. General Electricity	7.5 Quarter Hours
d. General Printing	4.5 Quarter Hours
e. Transportation	7.5 Quarter Hours
f. Comprehensive General Shop	7.5 Quarter Hours
g. Electives	10.5 Quarter Hours
3. Academic Requirements	77 Quarter Hours
4. Total Quarter Hour Requirements	192 Quarter Hours

NEW JERSEY

1. Four-year approved industrial, trade, or technical experience.
2. A minimum of 96 quarter hours of approved college credit to include the following:
 - a. General courses to include as a minimum: American History, English Composition, Sociology, and Sciences for Industrial Arts teachers. 18-27 Quarter Hours
 - b. Professional courses to be selected from the following: Applied Psychology, Psychology of Adolescence, Educational Psychology, two courses in Teaching Procedures in Industrial Arts, Principles of Education, Guidance, the Public School Industrial Arts Curriculum 21-30.5 Quarter Hours
 - c. Technical and shop courses to be selected from the following related closely to the industrial experience of the candidate: Advanced Woodwork, General Shop, Advanced Metal Work, Mechanical Drawing, Advanced

Mechanical Drawing, Applied Electricity,
Aeronautics in the Industrial Arts
program, and Shop Mathematics. 24-36 Quarter Hours
Special subjects:
Printing, Advanced Printing, Home
Appliances, Auto-Mechanics, Arts
and Crafts 9-12 Quarter Hours

NORTH CAROLINA

1. The minimum scholastic training represented graduation from a standard four-year college.
2. The professional requirements common to all certificates are:
 - a. Educational Psychology 3 Quarter Hours
 - b. Principles of High School Teaching or Problems in Secondary Education 3 Quarter Hours
 - c. Material and Methods in one subject field 3 Quarter Hours
 - d. Observation and Directed Teaching 4.5 Quarter Hours
 - e. Electives 13.5 Quarter Hours
3. Industrial Arts 45 Quarter Hours

NORTH DAKOTA

1. Applicants who hold a bachelor's degree from an accredited college or university, approved as a teacher training institution, are eligible for a first grade professional certificate, providing evidence of the required 24 quarter hours in education.
2. Special certificates are issued in manual training; but only on diplomas from recognized institutions doing accredited work in the special field. The applicant must have completed 32 quarter hours credit in the special field.

OHIO

Qualifications for an Industrial Arts Teacher in the state of Ohio are as follows:

1. The applicant must have 67.5 quarter hours in Industrial Arts and

must be well distributed over the following fields:

- a. Graphic Arts
 - 1. Drawing
 - 2. Etching
 - 3. Printing
 - 4. Photography
 - 5. Duplicating
- b. Woods
 - 1. Furniture construction
 - 2. Finishing
 - 3. Carpentry
- c. Metals
 - 1. Sheet Metal
 - 2. Art
 - 3. Machine Shop
 - 4. Foundry

OKLAHOMA

Applicant must have the following qualifications for a certificate in the state of Oklahoma:

- 1. Must be at least 20 years old.
- 2. Must have Oklahoma history, Oklahoma school law, and agriculture.

If the applicant does not have this requirement, the subjects are waived for one year, and then he must take a test in the subject and make a passing grade of 70 per cent before the certificate is renewed

- 3. Must have 31.5 quarter hours in Education as follows:
 - a. Electives in Education 18 Quarter Hours
 - b. Student teaching 9 Quarter Hours
 - c. General Methods and Management including Oklahoma School Law 4.5 Quarter Hours
- 4. Must have a total of 36 quarter hours in Industrial Arts and distributed as follows:
 - a. Bench Wood work 6 Quarter Hours
 - b. Cabinet Making 6 Quarter Hours
 - c. Wood and Metal Finishing 3 Quarter Hours
 - d. Industrial Arts Design 3 Quarter Hours

e. Care of Shop Equipment	3 Quarter Hours
f. Working Drawings	3 Quarter Hours
g. Machine Drawings	3 Quarter Hours
h. Architectural Drawing	3 Quarter Hours
i. Elective in Shop Work	6 Quarter Hours

OREGON

1. A graduate from a standard college, university, or teachers college.
2. The completion in a standard college, university, or teachers college of a five-year secondary teacher training course or its equivalent of at least 45 quarter hours beyond the requirements for the baccalaureate degree, which course must include the following:
 - a. Forty quarter hours in Education, of which 15 quarter hours shall be on the upper-division or graduate level and shall be taken in the last three quarters of preparation.
 - b. Six quarter hours of Supervised Teaching. Five years of successful teaching experience in lieu of Supervised Teaching.
 - c. Four quarter hours of Oregon history and Oregon School Law
3. A Special Certificate will be awarded to the applicant in the field of industrial arts.
4. Thirty-six quarter hours in industrial arts, or a major in this field.

PENNSYLVANIA

General Requirements:

1. Education in an approved vocational industrial school of secondary level and approved technical school or college level may be accepted in lieu of practical apprenticeship experience year for year up to a maximum of three years.
2. Complete 36 quarter hours of professional education at least 27 quarter hours of which will be in vocational education. Not less than 9 quarter hours shall be in observation and practice teaching in an approved vocational industrial school or classes. 9 quarter

hours shall be in general education or general professional education. 18 quarter hours of the required pre-employment vocational teacher's training shall be selected from the following which are the first 7 of the courses common to all vocational teacher training institution.

- a. Observation and Practice Teaching
- b. Vocational Education
- c. Methods in Vocational Education
- d. Curriculum Construction
- e. Shop Layout and Management
- f. Introduction to Education for Vocational Teachers
- g. Principles of Education for Vocational Teachers

RHODE ISLAND

1. A graduate from an approved college, college of education, normal, or technical school.
2. Approximately 20 quarter hours (200 clock hours) in Art and Science of Education. History of Education and Educational Psychology to be included in the required 20 quarter hours. The course in Rhode Island Education is required of all applicants.

SOUTH CAROLINA

1. A graduate of an accredited college.
The following courses have been selected as some of the media which will help to develop the prospective teacher as a person.

2. Academic Requirements:

- | | |
|---|-------------------|
| a. English | 18 Quarter Hours |
| b. Biological and Physical Science
(A minimum of 9 hours each) | 18 Quarter Hours |
| c. Social Studies
(Must cover at least three fields) | 18 Quarter Hours |
| d. Fine Arts | 9 Quarter Hours |
| e. Health Education | 4.5 Quarter Hours |
| f. General Mathematics | 4.5 Quarter Hours |

Note: (A standard examination may be used to demonstrate proficiency in any area.)

3. Professional Education

- | | | |
|---|---|------------------|
| a. Human Growth and Development |) | 18 Quarter Hours |
| b. Principles, Philosophy, and General Techniques | | |
| c. Directed Teaching |) | 9 Quarter Hours |

4. Industrial Arts

- | | |
|--|-------------------|
| a. Applied Mathematics | 9 Quarter Hours |
| b. Technical Requirements | 27 Quarter Hours |
| 1. Woodwork | 4.5 Quarter Hours |
| 2. Electricity | 4.5 Quarter Hours |
| 3. Trowel Trades | 4.5 Quarter Hours |
| 4. General Metal Shop - Including Welding, Plumbing, Heat Treating | 4.5 Quarter Hours |
| 5. Internal Combustion Machine | 4.5 Quarter Hours |
| 6. Mechanical Drawing | 4.5 Quarter Hours |

SOUTH DAKOTA

1. Applicant must have a Bachelor's degree from a college or university, approved teacher training institution.
2. Evidence of 22.5 quarter hours of education, not including general psychology, but including 4.5 quarter hours of practice teaching in major and minor subjects is required.
3. A minimum of 22.5 quarter hours in industrial arts.
4. A major is 32 quarter hours and a minor 22.5 quarter hours.

TENNESSEE

General Requirements:

1. Certified by the State.
2. At least 18 years of age.
3. Moral Character
4. No intoxicants

Specific Qualifications for Senior High School Teachers

Professional certificate

1. Graduate of four years of college or university approved by the state commissioner and state board of education.
2. Completed at least 27 quarter hours in education, as prescribed by the state commissioner and state board of education.
3. Completed not less than 18 quarter hours in each subject to be taught.

An applicant who has specialized in Industrial Arts shall offer a minimum of 27 quarter hours credit and be certified in the following fields with 9 quarter hours in each:

graphic arts: Mechanical drawing, planning, printing, photography, and duplicating.

woods: Furniture construction, carpentry, cabinet construction, and wood finish.

metals: Sheet metal, art metal, foundry, and machine metal work.

applied electricity: Communication, transportation, power, light, refrigeration, air-conditioning, neon.

mechanics: Auto-mechanics, home mechanics, machine shop, welding, general shop, and air-craft mechanics.

4. An applicant may be certified to teach in any one of these fields by offering 18 quarter hours in that field.

TEXAS

General Requirements:

1. Complete 20 college courses at least one course shall be in English, at least one in Education, at least four of which shall be in the special subject, and at least three quarter hours in the methods of teaching the special subject. A course is 9 quarter hours.

UTAH

1. All teachers of industrial arts who teach that subject more than fifty per cent of the time in junior or senior high school must have

a Class A five year certificate in industrial arts or a special two-year certificate. If the applicant is to teach subjects other than industrial arts fifty per cent of the time or more, he may do so by meeting the requirements for the General Secondary Certificate, provided he presents at least a minor in industrial arts.

2. He must complete the industrial arts curriculum in an approved college or university as follows:

a. A major in industrial arts	45 Quarter Hours
b. A minor (to be selected)	18 Quarter Hours
c. Education courses	35 Quarter Hours
d. Arts and Sciences	85 Quarter Hours

VERMONT

A graduate from an approved four-year college course with at least 22½ quarter hours of professional training in the field of Industrial Arts.

VIRGINIA

General Requirements:

1. At least 18 session hours (54 quarter hours) of special and general professional training.
 - a. A minimum of 8 session hours (24 quarter hours) of college credit in special training for the subject to be taught.
 - b. One session hour (3.5 quarter hours) of school and community hygiene, of which the physical inspection of school children required under the provisions of the Virginia West law is a part.
 - c. Three session hours (9 quarter hours) of suitable supervised practice teaching in the field concerned. In lieu of this, two or more years of successful teaching experience in the field concerned may be accepted.
 - d. Six session hours (18 quarter hours) of course work in subjects as the following four of which must be chosen from the list of ten. Apprentice Education, Coordination of Vocational Education, Employer-Employee Relationship, Guidance-Educational Vocational Industrial and Economic Development of the South, Job and Trade Analysis, Method of teaching Vocational Education,

Philosophy of Vocational Education, Psychology of Vocational Education, Vocational Education Survey.

WASHINGTON

1. Applicant must have completed, in a fully accredited college or university, a five-year course designed for the training of secondary teachers and including at least forty-five quarter hours in addition to the number of hours regularly required for a bachelor's degree.
2. At least fifteen quarter hours in contemporary social problems.
3. Must have completed at least 36 quarter hours in one teaching major and two teaching minors of eighteen quarter hours.
4. Applicant must include in his college training at least twenty-four quarter hours in education. Not less than three (except in special methods, in which case two quarter hours will be acceptable) not more than six quarter hours are accepted in each of the following courses toward satisfying the required twenty four hours:
 - a. Educational Psychology (General Psychology may not be substituted for Educational Psychology).
 - b. General Methods, or Principles of Teaching.
 - c. Secondary Education.
 - d. Special Methods.
 - e. Elective to complete the required total of 24 quarter hours.
5. All applicants will be required to file evidence of completing four quarter hours in directed teaching, or eight months of successful teaching experience, provided that not more than 9 quarter hours in directed teaching be included in the total 24 quarter hours.
6. All applicants must complete the courses in Washington State Manual and Washington State History and Government.

WEST VIRGINIA

1. Graduation and recommended from a standard college.

2. General requirements:	Minimum requirements 42 Quarter Hours
a. English (12), Speech (3)	15 Quarter Hours
b. Social Studies History, Government, Sociology, Economics and Geography. (At least one course in each of three subjects or fields must be completed)	18 Quarter Hours
c. Science or Mathematics (Combination of Science and Mathematics not acceptable)	9 Quarter Hours
3. Professional Requirements:	Minimum 30 Quarter Hours 7.5 Quarter Hours
a. Education Psychology	
b. Teaching in Secondary Schools including: Principles, Methods, and Management	6 Quarter Hours
c. Directed Teaching (90 clock hours)	7.5 Quarter Hours
d. Suggestive Electives: Organization and Program of Study of the West Virginia School System Test and Measurements Philosophy of Education Educational Psychology History of Education High School Program of Studies Current Practices in Secondary Education Co-Curricular Activities Pupil Personnel and Pupil Accounting The Junior High School Introduction to Vocational Teaching	9 Quarter Hours
4. Industrial Arts:	36 Quarter Hours
a. Required Courses	Minimum Required
Drawing	6 Quarter Hours
General Shop	4.5 Quarter Hours
Organization of Industrial Arts	3 Quarter Hours
Shops	15 Quarter Hours
(To be taken in three or more of the following areas with a minimum of 9 quarter hours in one and not less than 4.5 in each additional area)	
Art Metal	General Shop
Ceramics	Leather Craft
Design	Machine Shop
Drawing	Printing
Electricity	Radio
Foundry, Sheet Metal, General Metal, and Woodwork	

WISCONSIN

Qualifications of an Industrial Arts Teacher

1. Must have 45 quarter hours in Industrial Arts or may be qualified with 30 quarter hours but must complete the required 45 quarter hours before a life certificate is issued.
2. Professional requirement with a total of 27 quarter hours as follows:

a. Educational psychology or psychology learning	4.5 Quarter Hours
b. Teaching course in major subject	3.5 Quarter Hours
c. Practice teaching	7.5 Quarter Hours
d. Electives	12 Quarter Hours

WYOMING

1. Graduate from a standard college or university.
2. Applicants must be at least 18 years old.
3. Applicants for all certificates must pass an examination on the Constitution of the United States and of the State of Wyoming, or present evidence of having earned such credit at the University of Wyoming.
4. Professional Training

	24 Quarter Hours
a. Educational Psychology	3 Quarter Hours
b. Educational Sociology	
c. Methods of Teaching High School Subjects in Two Fields of Teaching	6 Quarter Hours
d. Supervised Teaching	3 Quarter Hours
e. Electives in Education	12 Quarter Hours
5. Academic Training - a minimum of 22.5 quarter hours of college work chosen from the training fields in which the candidate wishes to become certified. A teacher may be certified in any one field and not more than three of the following teaching fields:
English, Mathematics, Science, Social Science, specific Foreign Languages, Commerce, Home Economics, Industrial Arts, Library and Physical Education.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Since the war has ended the future of industrial arts is bright. Many school systems are including industrial arts in their educational programs and there will be a great demand for teachers. The program is integrated with the academic subjects in the school, and the idea which once prevailed that industrial arts was a separate unit is no longer true.

The curriculum is so devised that a shop student, who will later teach, will get a general education. Today if he wishes to go into industry he may do so, or continue in the teaching of industrial arts.

The summary and conclusions of this study are as follows:

- 1. Statements of prominent men in the field of industrial arts and industrial education in regard to value, place, and future of industrial arts in schools:

Omar H. Day, City Supervisor of Industrial Apts, Kansas City, Mo:

"Needs to be more closely correlated with Trade and Industrial Education. Must be expanded to include more fields of craftsmanship."

Glenn U. Cleeton, Director, Division of Humanistic and Social Studies, Carnegie Institute of Technology, Pittsburgh, Pa:

"Industrial arts education needs dynamic leadership. Educators have not been fully convinced of it's value and most teachers of industrial arts are still 'shop teachers' blissfully ignorant of the fundamental educational philosophy of industrial arts."

Thomas Diamond, Professor of Vocation Education, University of Michigan since 1919, Ann Arbor, Michigan:

"I am of the opinion that the future of Industrial Arts is bright. However, if it is to achieve its greatest value there is need for teachers to realize the important contribution their subject can make to the education of our young people. Unfortunately many of our teachers lack a philosophy of education and are unaware of the place of their subject in the educational picture. If these teachers can be made to realize the extent of their opportunity there will be fewer of them struggling to find a place on the industrial education bandwagon."

Earl L. Bedell, Director, Division Technical and Vocational School of the City of Detroit, Detroit, Michigan:

"Industrial arts education will hold an increasingly more important position in the curriculum. Children will be educated thru its media."

Verne C. Fryklund, President of Stout Institute, Menomonie, Wisconsin:

"There are great years ahead. Industrial arts teaching now compares very favorably with Engineering as a career for young men. The demand for teachers is great which is an indication of expanding programs."

George B. Frazee, Jr., associated with the Grand Rapids, Michigan public school for 26 years:

"All boys and girls should be given Industrial Arts and Home Economics in the seventh, eighth, and ninth grades. These courses should be of as great a variety as possible and be used as a tryout period to find out if the boy or girl is fitted for industrial work and what kind of industrial work. Vocational Education should be available for boys in the tenth, eleventh, and twelfth grades on an elective basis. I would include in the vocational subjects, all commercial subjects including distributive occupations. The thirteenth and fourteenth grades should provide an opportunity for boys who cannot go to college to further pursue technical subjects in the high school."

Robert E. Smith, Professor of Industrial Education at Ohio State University, Columbus, Ohio:

"In the 70 year period since shop work was first introduced into American schools this form of education has experienced a somewhat continuous but erratic expansion. Now shop work in the form of industrial arts has achieved recognition as a curriculum subject. During this period there has been great developments in industry and America has developed from an agrarian society to a complex industrial one. Work formerly done with hand tools and simple machines is now performed with complex machines. In the field of transportation there has been similar developments and one can now travel across the country in a streamlined train, by airplane or automobile, depending upon one's interests and choice. New York is now as close to Los Angeles in point of time as was New York to Boston but a few years ago. The home is now rapidly becoming mechanized with many new devices, facilities for the storage of perishable goods in the home are in the offing. To live in a mechanized world with the prospects of new forms of power and other inventions of a mechanical nature will require aptitudes, knowledges and understandings which can be had only through experiences in operating, controlling and directing machines and other mechanical appliances.

Experiences such as indicated above can best be had in the subject matter areas of industrial arts and its companion, industrial education. It is my belief that industrial arts will, in the future, play an increasingly larger part in the general education of children. I look for a marked expansion in school offerings in industrial arts and industrial education with a greatly expanded demand for teachers in this field. My thinking in this respect is influenced by what is happening in a number of schools where two teachers are now being employed where one formerly sufficed. More schools are requiring work in industrial arts, professional studies and surveys show a number of schools extending the time spent in the school shops from one double period a week to one period daily, and in some cases, two periods a day. Another indication is the emphasis being given to industrial arts and industrial education by such groups as the National Society of Secondary School Principals, see Bulletin # 85, 1939, THAT ALL MAY LEARN."

William T. Bawden, Head of the Industrial Arts Department,
Kansas State Teachers College, Pittsburgh, Kansas:

"The immediate problem is to restore to proper working condition the facilities for preparing teachers of industrial arts. As soon as qualified teachers become available, and as soon as the country emerges from current unsettled conditions, we shall see an unprecedented expansion of industrial arts in public education."

Clyde A. Bowman, Dean, Division of Industrial Education, The Stout Institute, Menomonie, Wisconsin:

"Industrial arts faces new possibilities. As a major area in the public school curriculum, we need teachers who have their feet on the ground and to also have board perspective. With the responsibility of preparing developing American citizens to make use of what we have fought for, Industrial Arts teachers must be keenly alert. The range of content must be broad, the technical procedures must be sound, the applications must be closely linked with current and developing life situations. Industrial Arts as a major contributing area in American education has an ever-increasing range of responsibility."

Albert F. Siefert, Dean of Education, Bradley Polytechnic Institute, Peoria, Illinois:

"I believe we will continue to add new materials, processes and procedures. I think we will swing back to more emphasis upon good workmanship, and somewhat less talking about things. Our teachers should be a definite part of the faculty—not 'specials' who come once a week to a shop in the basement."

E. E. Ericson, Professor of Industrial Education and Chairman, Department of Industrial Education, University of California, Santa Barbara State College, since 1944:

- 1. More emphasis being placed on Industrial Arts.
- 2. Technical emphasis following war program.
- 3. Fifth year work probably normal for teacher preparation.
- 4. Aviation affecting Industrial Arts.
- 5. More opportunities for administration thru Industrial Arts training."

2. Summary and conclusions based upon the findings of the writer:

(1) On the whole industrial arts teachers receive a well balanced education. His academic preparation is stressed as well as his technical preparation.

(2) The industrial arts department is integrated with the academic courses and is not a separate unit. It is no longer put into the basement of the school and forgotten about.

(3) In meeting the state requirements for teachers certificates, the industrial arts teacher meets the same professional requirements as the academic teacher.

(4) The major for industrial arts is much higher than a major for an academic subject. This is true primarily because the teacher of industrial arts often does not have the necessary technical background to teach it.

(5) Only in one case was foreign language found to be a requirement in the industrial arts curriculum.

(6) The technical requirements were not uniform. There was a total of twenty-one courses offered in all the curricula studied.

(7) Mechanical drawing, woodwork, metalwork, and electricity ranked in importance as listed.

(8) In admitting students to the industrial arts department, the standards should be as high as they are for students in the academic departments.

(9) The industrial arts teacher training program is constantly expanding. The trend is spreading to institutions that heretofore did not include this phase of technical education.

will be expected to furnish leadership in this field. Plans will have to be made, materials secured and the building program launched.

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