

T H E S I S
on
THE INTERRELATION
OF
TEACHER-TRAINING SALARY SCHEDULES
STATE CERTIFICATION AND ADVANCEMENT OF METHOD
FOR
INDUSTRIAL ARTS IN THE SECONDARY SCHOOLS

Submitted to the
OREGON STATE AGRICULTURAL COLLEGE

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the requirements for the
Degree of
MASTER OF SCIENCE

by
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May 5, 1931

APPROVED:

Redacted for privacy

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INTRODUCTION

Statement of Problem

In present day secondary education the industrial arts activities are coming to be recognized as an integral part of the school program. Modern schools generally, which aspire to comprehensive educational opportunities for their communities, are multiplying their offerings to include a wide variety of industrial arts and vocational subjects, continuous from elementary to adult education.

No progressive school system is now content with "manual training" when given in the form of a few exercises in woodwork and mechanical drawing. There is an increasing tendency to place special emphasis on industrial arts for general educational purposes, and for the guidance values that it may offer, in both the manipulative and non-manipulative or informational phases.

The purpose of this survey, therefore, is to determine the changes that have been brought about in the training of Industrial Arts teachers, and in the organization and content of the industrial arts program for the secondary schools, to meet this shift in emphasis in the general educational program; also to ascertain if possible, the influence these changes might have on the state certification and salary schedules.

Significance of Problem

The data and information set forth in this report are indicative of current practice in the field of Industrial Arts instruction and should be of value in curriculum revision and construction, both in the colleges and in the secondary schools.

Method of Procedure

This survey is developed under three main headings:

- Section I. A survey of teacher-training curricula.
- Section II. Teacher certification in the states found to be outstanding in their program for training industrial arts teachers.
- Section III. A survey of the industrial arts programs of the schools in the seventeen states rated highest from the survey reported under Section I.

Method of Treating Results

The data comparisons and conclusions of this report have been arranged in outline and tabular form. The form adopted lends itself most readily to the development of data of this nature, and renders the comparisons more comprehensive.

SECTION I.

A SURVEY
OF
INDUSTRIAL ARTS TEACHER-TRAINING
CURRICULA

The purpose of this survey is to determine the general nature of industrial arts teacher-training throughout the country, and to provide information related to the outstanding courses, both technical and theoretical, that would form the basis for a course of study for industrial arts teacher training.

The information and material used in compiling the data of this report was secured from the catalogues of six Normal Schools, five State Colleges, Thirty-three State Teachers Colleges, eight Universities, four State Normal Colleges, and two Institutes of Technology.

Some of these schools did not publish the curricula in their catalogues. In order to keep the survey on an equal basis for all schools it was, therefore, necessary to use the description of courses for checking. This method does not give an index to the scholastic year in which a subject most frequently occurs, nor the specific requirements of the schools. It does, however, give a broader view of the general expansion of the field, which in this case seems to be of as much value as a specific study of the few curricula available.

The schools included in the survey are scattered throughout twenty-six states. This would imply a survey of fair regional scope. Twenty-six of these schools grant the Bachelor of Science degree to industrial arts teachers, their departments being grouped under the following heads: Industrial Arts, 15 schools; Manual Arts, 9 schools; Vocational Education, 1 school; Practical Arts, 1 School; Manual Training, 1 school;

The following schools are listed in order of the term hours of work offered and the division of work between the technical and theory subjects. Since the "term hour" or "quarter hour" is the unit most commonly used by the schools surveyed, it was taken as the basis for comparison.

For the purpose of classification and comparison the subjects offered by the departments have been grouped under the headings of (1) industrial or technical, and (2) professional subjects. The professional group is made up of those subjects that deal with the academic theory and professional organization, while the industrial or technical group comprises those subjects that deal with the manipulative or technical side of the training

FORM LETTER NUMBER I.

OREGON STATE AGRICULTURAL COLLEGE
SCHOOL OF VOCATIONAL EDUCATION

Department of
Industrial Education

October 21, 1931

Office of Registrar

Dear Sir:

Please send me a copy of your latest college catalogue; also any information you might have related to the Industrial Arts Curriculum of your school.

Very truly yours,

Lionel W. Manning.

TABLE I.

TERM HOURS OF PROFESSIONAL*
AND
TECHNICAL WORK OFFERED

Institutions	Term Hours Offered		
	Professional	Industrial	Total
Bradley Polytechnical Institute--Peoria, Ill.	9	228	237**
Kalamazoo State Teachers College--Kalamazoo, Mich.	80	115	195
Kansas State Teachers College--Pittsburg, Kan.	27	140 $\frac{1}{2}$	167 $\frac{1}{2}$
Stout Institute of Technology--Menomonie, Wis.	12	148	160
Ball State Teachers College Muncie, Ind.	32	108	140
North Dakota Normal and Industrial School--Ellendale, N. D.	32	107	139
Indiana State Teachers College--Terre Haute, Ind.	44	94	138
Oregon State College Corvallis, Ore.	30	99	129

*Includes only those subjects that are normally considered as contributing directly to the training of industrial arts teachers, either through professional organization, special methods or related mathematics and science.

**A private institution offering a decidedly technical program largely in the trade field. While it is also a teacher-training institution the number of technical subjects is not as reliable an indication of the strength of the industrial arts teacher-training curriculum as is the number of professional subjects.

Institutions	Term Hours Offered		
	Professional	Technical	Total
Kansas State Teachers College Emporia, Kan.		110 $\frac{1}{2}$	110 $\frac{1}{2}$
Chicago Normal College Chicago, Ill.	25	79 $\frac{1}{2}$	104 $\frac{1}{2}$
Arizona State Teachers College Flagstaff, Ariz.	15	92	107
East Central State Teachers College--Ada, Okla	9	97	106
Northern State Teachers College--Tahlequah, Okla.	9	97	106
George Peabody State Teachers College--Nashville, Tenn.	46	60	106
Chico State College Chico, Cal.	22 $\frac{1}{2}$	79 $\frac{1}{2}$	102
Colorado State Teachers College--Greeley, Colo.	14	87	101
Iowa State Agricultural College--Ames, Iowa	17	79 $\frac{1}{2}$	96 $\frac{1}{2}$
University of Illinois Urbana, Ill.	43 $\frac{1}{2}$	46 $\frac{1}{2}$	90
Eastern Illinois State Teachers College--Charleston, Ill.	16	72	88
Fresno State Teachers College--Fresno, Cal.	21	66	87
Santa Barbara State Teachers College--Santa Barbara, Cal.		86	86
Northern Normal & Industrial School--Aberdeen, S. D.	22	66	88
Michigan State Normal School Ypsilanti, Mich.	4	80	84

Institutions	Term Hours Offered		
	Professional	Technical	Total
Arizona State Teachers College--Tempe, Ariz.	24	60	84
Central State Teachers College--Edmond, Okla.	9	70½	79½
East Texas State Teachers College--Commerce, Texas	9	69	78
Nebraska State Teachers College--Kearney, Nebr.	14	61	75
Purdue University Lafayette, Ind.		75	75
Western State College Gunnison, Colo.	3	71	74
University of Minnesota Minneapolis, Minn.	40	30	70
State Normal College Oswego, N. Y.		66½	66½
Peru State Teachers College Peru, Nebr.	6	60	66
State Teachers College Memphis, Tenn.	6	54	60
Ohio State University Columbus, Ohio	27	30	57

TABLE II-A.

Industrial or Technical Subjects in Shopwork,
Drawing and Industrial Design.*

WOODWORKING GROUP

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Furniture and Cabinet Construction	36	65	239½	3.45
Bench and General Woodwork	35	59	213½	3.6
Carpentry	28	36	116½	3.23
Wood Turning	28	36	114½	3.14
Pattern Making	23	23	75½	3.28
Mill and Machine Woodwork	17	19	68	3.58
Wood Finishing	19	22	67½	3.06
Upholstering and Wood Finishing	13	16	48	3
Fibre Furniture Weaving	12	12	39	3.25
Toy Making	10	11	31½	2.86
Handwork	7	12	27	2.25
Furniture Design and Construction	4	3	17½	3.5
Industrial Arts for Elementary Grades	4	5	15½	3.1
Wood Technology	3	4	15	3.75

*As listed in the catalogues of the schools studied.

TABLE II- A (cont.)

Subject	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Methods in Woodworking	3	4	13 $\frac{1}{2}$	3.37
School and Shop Equipment Construction	3	3	13	4.75
Wood Shop	1	3	12	4
Industrial Work for Rural Schools	4	4	12	3
Advanced Shop	1	3	12	4
Intermediate Woodwork	2	2	10 $\frac{1}{2}$	5.25
Special Woodwork	1	3	9	3
Wood Carving	2	2	5	2.5
Electrical Woodwork	1	1	4 $\frac{1}{2}$	4.5
Wood Shop Problems	1	1	4	4
Woodworking Class Projects	1	1	4	4
Arts and Crafts	1	1	4	4
Playground Equipment	1	1	4	4
Wood Craft	1	1	3	3
Woodwork for Women	1	1	2	2
Cabinet Making, Upholstering, Cane and Reedwork	1	1	2	2

TABLE II-B.

MACHINE AND METALWORKING GROUP

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Machine Shop	21	49	183½	3.75
Auto Mechanics	18	41	138	3.38
Sheet Metal	21	30	104	3.46
Practical Electricity	15	21	78	3.71
General Metal	16	20	72½	3.62
Forging	13	20	63	3.10
Foundry	10	17	52	3.05
Art Metal	13	15	43½	2.9
Metalwork and Jewelry	3	5	19½	3.9
Tools, Jigs, and Fixtures	2	3	12	4
Oxy-acetylene Welding	3	4	11½	2.86
Bench Metal	3	3	10½	3.5
Heat Treatment of Metal	2	3	8	2.66
Forging & Foundry	1	1	3	3
Brazing and Soldering	1	1	3	3
Aeronautics	1	1	4½	4.5
Pumps and Irrigation Equipment	1	1	4½	4.5
Mechanisms	1	1	2	2
Tractors	1	1	2	2

TABLE II-C.

PRINTING GROUP

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Printing	25	80	399	4.98
Book Binding	2	7	26 $\frac{1}{2}$	3.78
Book Binding and Leather Craft	1	6	24	4
Linotype	2	4	16 $\frac{1}{2}$	4.13
Printing Wood and Linoleum Blocks	1	1	4 $\frac{1}{2}$	4.5
Design and Block Cutting	1	1	4	4

TABLE II-D.

DRAWING AND DESIGN GROUP

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Mechanical Drawing	48	97	343 $\frac{1}{2}$	3.54
Architectural Drawing	37	64	235 $\frac{1}{2}$	3.67
Machine Drawing and Design	22	36	133	3.69
Descriptive Geometry	10	12	44	3.66
Industrial Arts Design	13	15	38	2.53
Vocational Drawing	2	2	25	4.16
Furniture Design	5	6	22 $\frac{1}{2}$	2.75

TABLE II - D (cont.)

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Freehand Drawing	6	6	20	3.33
House Planning	6	6	18½	3.08
Period Furniture	3	3	13½	4.5
Lettering	3	3	13½	4.5
Engineering Drawing	3	3	12	4
Sheet Metal Drafting	5	5	14½	2.9
Shades Shadows and Perspective	3	3	11	3.66
Architectural Detail	2	2	10	5
Wood Turning Design	2	2	5	2.5
Electrical Drawing	1	1	4½	4.5
Machine Detail	1	1	4½	4.5
Printing Design	1	1	4½	4.5
Shop Sketching	1	1	4	4
Principles of Drafting	1	1	4	4
Projects Shades and Shadows	1	1	4	4
Graphic Presentation	2	2	4	2
Drafting	1	1	4	4
Industrial Drawing	1	1	3	3
History of Architecture	1	1	3	3
Automobile Drawing	1	1	3	3
Map Drawing and Lettering	1	1	2	2

TABLE II-E.

-3- SHOP ORGANIZATION GROUP

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
General Shop	10	11	41	3.72
Simple and Home Mechanics	10	12	41	3.41
Farm Mechanics	8	10	40	4
Mechanics of the Household	8	8	30½	3.92
Home Mechanics and General Shop	5	5	17½	3.5
Practical Mechanics	2	2	8½	4.25
Shop Units	2	2	8	4
Everyday Mechanics	1	1	6	6
General Industrial Mechanics	1	1	4	4

TABLE II-F.

-2- MISCELLANEOUS TECHNICAL SUBJECTS

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Concrete Construction	6	6	23½	3.91
Use and Care of Shop Equipment	7	7	20	2.85
Pottery	2	3	10	3.33
Radio Theory and Construction	2	2	8½	4.25

TABLE II.- F (cont.)

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Cement Handcraft	2	2	8	4
Machine and Tool Maintenance	1	2	6	3
Polychrome and Compo Work	1	1	4 $\frac{1}{2}$	4.5
Leather Work	1	1	4 $\frac{1}{2}$	4.5
Basketry	1	1	4	4
Elementary Radio	1	1	3	3
Shop Work for Junior High Schools	1	1	3	3
Installation and Maintenance of Shop Equipment	1	1	3	3
Tools and Materials	1	1	2	2
Saw Filing	1	1	2	2
Care of Machinery and Saw Filing	1	1	1	1

TABLE III.

PROFESSIONAL SUBJECTS IN ORGANIZATION,
ADMINISTRATION AND APPLIED PEDAGOGY.

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Practice Teaching	14	18	144	6.33
Special Shop Methods	28	28	102	3.66
Organization of Industrial Arts	11	14	47	3.36
Vocational Guidance	14	14	44	3.14
Vocational Education	11	13	39½	3.03
Industrial Education	9	9	35	3.88
Seminar in Industrial Arts	7	7	32	4.51
Organization and Administration of Industrial Arts	8	8	26½	3.31
Trade Analysis	6	6	24½	4.08
History of Industrial Arts	8	8	24	3
Materials and Methods of Industrial Arts	7	7	23	3.28
Manual Training Methods and Organization	4	4	16	4
Occupational Information and Vocational Guidance	5	5	15	3

TABLE III. (cont.)

Subject	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Shop Thesis	4	4	11½	2.86
Study of Occupations	3	3	11½	3.63
Teaching of Related Subjects	3	3	9	3
History and Organization of Industrial Arts and Vocational Education	2	2	8½	4.25
Writing Instruction Sheets	2	2	8	4
Literature of Manual Arts	2	3	8	2.66
Supervision of Industrial Arts	2	2	8	4
Teaching Applied Mechanics	1	2	8	4
The General Shop	3	3	8	2.66
Content, Organization & Supervision of Industrial Arts	2	2	7	3.5
Special Problems in Teaching Technique	2	2	7	3.5
Administration of Industrial Education	2	2	6	3
Function and Method of Part-time Teaching	1	1	4½	4.5
Technique of Organization	1	1	4	4
Introduction to Practical Arts Education	1	1	4	4

TABLE III. (cont.)

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Modern Industries	1	1	4	4
Principles and Practices of Industrial Arts	1	1	4	4
Curriculum Construction In Vocational Education	1	1	4	4
History and Teaching of Industrial Arts	1	1	4	4
Class Management	1	1	4	4
Industrial Arts Coordination	1	1	4	4
Industrial Relations	1	1	4	4
Shop Management	1	1	3	3
Supervision & Criticism of Handwork	1	1	3	3
Job Analysis as Applied to Curriculum Making	1	1	3	3
Research in Industrial Arts	1	1	3	3
Plans and Instruction Material	1	1	3	3
Foreman Training	1	1	3	3
Occupational Studies in High School and Continuation School	1	1	3	3
Seminar in Vocational Education	1	1	3	3

TABLE III. (cont.)

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Co-operative Education	1	1	3	3
Teaching Exploratory Industrial Arts	1	1	3	3
Curriculum and Administration of Part-time Schools	1	1	3	3
Evening & Continuation Schools	1	1	2	2
Analysis of Vocational Guidance	1	1	2	2
Teaching in High School	1	1	2	2
Teaching Vocational Subjects	1	1	2	2
Industrial History	1	1	2	2
Philosophy of Vocational Education	1	1	2	2
Tests in Industrial Subjects	1	1	2	2

TABLE IV.

RELATED SCIENCE AND MATHEMATICS

Subjects	Number of Schools Offering	Number of Terms Offered	Total Term Hours Credit	Average Term Hours Credit
Materials of Construction	1	1	$4\frac{1}{2}$	4.5
Applied Mechanics	1	1	$4\frac{1}{2}$	4.5
Applied Mathematics	1	1	$4\frac{1}{2}$	4.5
Mathematics for Industrial Arts Teachers	1	1	3	3
Household Physics	1	1	3	3
Shop Mathematics	1	1	3	3

SUMMARY OF THE FINDINGS
OF
SECTION I.

A general summary of the data of Section I shows the following conditions:

The average number of term hours of work listed as departmental subjects, and offered directly by the department concerned, or by closely related departments, is 106 credits, 80 per cent of which is devoted to technical work, and 20 per cent to the professional group. (Table I).

In some of the schools listed the professional and technical courses are out of proportion in favor of the technical work. (Table I).

The technical courses of study in some of the schools are decidedly out of proportion in favor of special subjects, e.g. 96 term hours of printing in a technical program listing 158 term hours of technical work. (Table I).

Of the subjects included in the technical group, those dealing with woodworking occur with the greatest frequency. Woodworking subjects in some form occur in every case. (Table II-A).

In the metal working group machine shop, auto mechanics and sheet metal are outstanding. (Table II-B).

Mechanical and architectural drawing are by far the outstanding subjects in the drawing and design group. Freehand drawing which is an essential in shop instruction seemingly is given very little consideration. This subject might, in some few cases, be available to industrial arts majors through the offerings of other departments, though it is not listed in the description of courses. (Table II-C).

General shop, home mechanics, farm mechanics, and mechanics of the household are the outstanding types of shop organization being stressed at present, as indicated by the number of times these subjects are listed. (Table II-D).

In the professional group, practice teaching and special methods are decidedly most frequent. The great number of courses listed in the professional group is largely due to the various combination of subjects. It is quite evident, however, that subjects of an industrial and occupational information nature are receiving more emphasis than any subject other than special methods and practice teaching. (Table III).

The related science and mathematics group (Table IV) does not indicate evidence of outstanding contributions or much activity along these lines. Only a few scattered subjects occur in the departmental listings.

In general the trend is toward a greater variety of work with less emphasis on specialization, which is compensated for by the study of occupations and industrial surveys. Whether this indicates a wholesome development, or whether it betokens a loss of the psychological values of manipulative work in the secondary schools remains to be seen.

SECTION II

STATE CERTIFICATION

The purpose of this section of the report is to provide information relative to the certification of Industrial Arts teachers in the states rated highest from the survey reported under section I., to ascertain if possible the relation that might exist between teacher-training, state certification, and the industrial arts program of the secondary schools.

The information included in this section was obtained from bulletins or outlines of requirements for the certification of teachers of industrial arts, furnished by the Superintendents of Public Instruction of the states included in the survey.

FORM LETTER NUMBER II.

OREGON STATE AGRICULTURAL COLLEGE
SCHOOL OF VOCATIONAL EDUCATION

Department of
Industrial Education

October 21, 1931

Supt. of Public Instruction

Dear Sir:

Will you please send me an outline or
statement of the requirements for certification for
teachers of industrial arts or manual training in your
state.

Very truly yours,

Lionel W. Manning.

OUTLINES
OF
STATE CERTIFICATION
REQUIREMENTS

The eighteen states for which the certification requirements are listed below were found to be outstanding in the listing of subjects for industrial arts teacher-training. (See Table I.)

ARIZONA

SPECIAL CERTIFICATES:

- I. No certificates are issued on examinations.
- II. Certificates are based entirely on Normal School and College Graduation.
- III. Requirements:
 1. Graduation from a four-year high school.
 2. Graduation from a three-year Teachers College, Normal School, or University course, approved by the Arizona State Board of Education.
 3. Thirty per cent of the work taken must be in the subject or subjects for which the certificate is issued.
 4. Twelve semester hours of education.

CALIFORNIA

SPECIAL CREDENTIALS IN INDUSTRIAL ARTS EDUCATION

An applicant for a special credential in Industrial Arts Education must submit from a teacher-training institution approved by the California State Board of Education for the training of industrial arts teachers;

- I. A certificate that he is physically fit to teach.
- II. A recommendation by the school of education of the institution that he shows promise of success as a teacher, with verification of:
 1. The completion of a four-year college course preceded by graduation from a four-year high school.
 2. A minimum of sixteen semester hours work in the fields of English, science, social science, and physical education.
 3. Fifteen semester hours of professional work in education.
 4. A minimum of fifty semester hours of special technical training suited to the needs of teachers of junior and senior high school students.

COLORADO

SPECIFIC REQUIREMENTS FOR CERTIFICATION OF MANUAL TRAINING
IN COLORADO

GENERAL REQUIREMENTS:

- I. The applicant must be a graduate of a standard four-year high school.
- II. Two years of college training in an approved institution of higher learning.
- III. At least fifteen quarter hours of education.

SPECIAL REQUIREMENTS:

- I. Forty quarter hours of technical training, sixteen of which must be in the subject in which the applicant desires certification. Twelve of these may be allowed for trade experience which covers a period of three years.

ILLINOIS

SPECIAL CERTIFICATES VALID FOR FOUR ~~YEARS~~ FOR TEACHING
IN ALL GRADES.

A special certificate authorizes the holder to teach and supervise the subject or subjects named in the certificate in any grade of the public schools may be issued without examination to an applicant who presents the following:

- I. Graduation from a recognized four-year high school or an equivalent preparation.

- II. The completion, in a recognized higher institution, of at least two years of college work, including twenty semester hours of special training in the subject or subjects named in the certificate.
- III. Six semester hours of English.
- IV. Twelve semester hours of education.

INDIANA

SPECIAL HIGH SCHOOL TEACHERS LICENSE (First grade)

Applicants for special high school teachers' license first grade, should present credits and qualifications as follows:

- I. Graduation from a standard approved college or normal school (four-year course) or special school with a minimum of 120 semester hours credit.
- II. Fifteen semester hours of professional credit.
- III. Forty-eight semester hours of general and professional academic credit in the special branch, subject group, or option for which the license is issued, including specialization in the materials and methods of teaching the given branch in the public schools.

KANSAS

THREE-YEAR SPECIAL CERTIFICATE

Three-year special certificates valid for teaching the subjects designated in the certificate will be granted to the applicant who holds a highly specialized degree from an accredited four-year college or special school, or who has the equivalent of such a degree, provided an official transcript of record shows at least 120 semester credits distributed as follows:

- I. Fifteen semester hours credit in education.
- II. Forty semester hours credit from general cultural courses.
- III. Sixty-five semester hours credit, not fewer than 40 of which, must be in the subject or department designated in the certificate.

MINNESOTA

HIGH SCHOOL STANDARD SPECIAL CERTIFICATE

High school standard special certificates may be issued to a person who holds a degree of an accredited liberal arts college of this state, granted on the completion of its course for the training of high school teachers in a designated special field, with credits as follows:

- I. Fifteen semester hours of education, including special methods and practice teaching.
- II. Thirty semester hours in industrial arts.

MICHIGAN

SPECIAL LIFE CERTIFICATE

Special life certificates are granted by the Superintendent of Public Instruction.

REQUIREMENTS:

- I. Applicant must be at least 18 years of age.
- II. Applicant must have finished in an institution of approved rank, at least a three-year course of study in his special field acceptable to the Superintendent of Public Instruction of the state.
- III. Graduate from a four-year high school.
- IV. Ten semester hours of English.
- V. Eighteen semester hours of education.
- VI. Twenty-four semester hours of general culture subjects.
- VII. Forty-four semester hours of special subjects.
- VIII. A total of 96 semester hours.

NORTH DAKOTA

SPECIAL CERTIFICATE

Special certificates are issued in music, drawing

commercial subjects, manual and industrial arts, and home economics.

- I. Graduation from a four-year high school.
- II. Write a successful examination in the special subject after the completion of three years of a four-year course.

OHIO

SPECIAL PROVISIONAL CERTIFICATE

Special provisional certificates are granted without examination to those who graduate from an approved four-year college course. They are valid in the teaching majors and minors written thereon.

REQUIREMENTS:

- I. Twenty-four semester hours of professional educational credit.
- II. Eighteen semester hours in the major subject.
- III. Twelve semester hours in the minor subject.

OKLAHOMA

FIVE-YEAR CERTIFICATE

GENERAL REQUIREMENTS:

- I. Eighteen years of age.
- II. Must have earned fifteen college entrance credits in an accredited high school.

- III. Must hold a standard baccalaureate degree from a college of arts and science or a college of education.
- IV. Thirty-six semester hours of professional credit 16 of which must be in education.
- V. Sixty-two semester hours of technical subjects.

NEBRASKA

SPECIAL HIGH SCHOOL CERTIFICATE

The Nebraska special high school certificate is issued for manual training, physical education, art, home economics, music, and commercial subjects and is valid for any high school of the state only for the subject or subjects for which issued.

REQUIREMENTS:

- I. Sixty semester hours of college credit of which eight must be hours of education, with sixteen in physical education, manual training or art, or twenty semester hours in home economics.
- II. This certificate may be renewed by earning twelve semester hours of college credit over and above those hours used in the issuance of the original certificate.

IOWA

SPECIAL SUBJECT CERTIFICATE

REQUIREMENTS:

- I. Graduation from an accredited two-year course in manual arts taken after the completion of a four-year high school course is the minimum accepted as the basis of the special certificate for manual arts without examination.
- II. A person who has taken two or three years work on a four-year course may receive a special certificate by writing a successful examination in the subject.

WISCONSIN

SPECIAL SUBJECT LICENSE AND CERTIFICATE

GENERAL REQUIREMENTS:

- I. Graduation from an accredited four-year college course.
- II. Eight hours of professional training in education.
- III. Special certificates and licenses are granted to graduates of the University of Wisconsin, Stout Institute, and Wisconsin State Teachers College. Special Manual Training Certificates are granted to the graduates of the State University, Oskash State Teachers College and Stout Institute.

TEXAS

SPECIAL THREE-YEAR CERTIFICATE

REQUIREMENTS:

- I. Must meet the Texas college entrance requirements.
- II. Complete at least ten college courses, at least one of which shall be in English, one in education and one in the special subject for which the certificate is issued.
- III. In addition to the above courses the applicant must have one thirty-six hour course in methods of teaching the special subject.

TENNESSEE

PERMANENT PROFESSIONAL CERTIFICATE

REQUIREMENTS:

- I. Graduation from an approved University, College, State Teachers College or Normal School.
- II. At least twenty-seven quarter hours in education.
- III. At least eighteen quarter hours in the special subject for which the certificate is issued.

NEW YORK

LICENSE TO TEACH INDUSTRIAL ARTS EDUCATION
REQUIREMENTS:

- I. Eighteen semester hours of education.
- II. Graduation from a three-year teachers college or normal school course.
- III. Forty-three and one-half semester hours of Industrial Arts shop work and drawing.

OREGON

ONE-YEAR STATE CERTIFICATE

REQUIREMENTS:

- I. Graduation from a standard college or university.
- II. Completion of fifteen semester hours in education including a minimum of two semester hours each in secondary education, educational psychology, principles of teaching, and special methods.

SURVEY OF THE FINDINGS
OF
SECTION II.

The states listed in the following table have been rated on their certification requirements in education, college attendance and industrial or technical work as follows:

Education----- Low --- 14 semester hours or less.

Average 15 to 17 semester hours.

High -- 18 semester hours or over.

College
Attendance----- Low ---- 2 years.

Average 3 years.

High --- 4 years.

Special or
Technical
Work----- Low ---- 30 semester hours or less.

Average 32 to 45 semester hours.

High --- 46 semester hours or over.

TABLE V.

RATING OF STATE CERTIFICATION REQUIREMENTS

State	Education	College Attendance	Industrial Arts or Technical Work
Arizona	Low	Average	Average
California	Average	High	High
Colorado	Low	Low	Average

TABLE V. (cont.)

State	Education	College Attendance	Industrial Arts or Technical Work
Indiana	Average	High	High
Iowa	Low	Low	Low
Kansas	Average	Average	High
Minnesota	Average	Average	Average
Michigan	High	Average	Average
North Dakota	Low	Low	Low
Nebraska	Low	Low	Low
New York	High	Average	Average
Ohio	High	High	Low
Oklahoma	Average	High	High
Oregon	Average	High	Low
Texas	Low	Low	Low
Tennessee	High	Low	Low
Wisconsin	Low	High	High

SECTION III.

A SURVEY OF THE INDUSTRIAL ARTS PROGRAM
IN THE SECONDARY SCHOOLS
OF
THE EIGHTEEN STATES RATED HIGHEST IN
TEACHER-TRAINING

The purpose of this portion of the survey is to determine the general status of industrial arts in the secondary schools of the states providing creditable industrial arts teacher-training, and to ascertain if there is any relation between teacher training and the industrial arts program as carried on in the secondary schools.

The following questionnaire was used in collecting the data for this section of the report. This questionnaire was sent to superintendents of schools in a selected group of cities of 2,500 population or over, in the seventeen states under comparison. The cities were chosen so as to give a fair geographical distribution of the questionnaire within each state. Three hundred eighty-six questionnaires were sent out, from which there was a return of two hundred forty-one or sixty-two per cent.

The returns from three of the states were too small to give any estimate of the general nature of the industrial arts program, but the returns from the remaining fifteen states were large enough to give a fair sampling of the work as it is being carried on.

FORM LETTER NUMBER III.

OREGON STATE AGRICULTURAL COLLEGE
SCHOOL OF VOCATIONAL EDUCATION

Department of
Industrial Education

March 5, 1931

Supt. of Schools

Dear Sir:

Through a survey of teacher training institutions throughout the country, your state has been rated as outstanding in the training of Industrial Arts teachers.

This fact, with other information obtained from the survey, has prompted a second phase of the investigation to determine the influence of teacher training on the Industrial Arts program of the secondary schools, and to determine its relation to state certification and salary schedules.

The few items requested are of considerable importance in curriculum revision and construction. Please check those items on the inclosed form that correspond to the organization and program of your Industrial Arts Department. An addressed envelope is inclosed for your convenience. Your cooperation in making the survey a success will be greatly appreciated.

Approved by:

Very truly yours,

Geo. B. Cox
Prof. of Industrial Education

L. W. Manning.

QUESTIONNAIRE I.

Interrelation of Teacher-training,
Salary Schedule, and Advancement of Methods
for
Industrial Arts in the Secondary Schools

Information on the following items will help to determine the degree of uniformity that exists in the subject matter, and in the time given to industrial arts subjects. Please be as specific as possible.

1. In what grades between 7th and 12th inclusive, is the industrial arts work made available?_____.
2. How many instructors are there in the department?_____.
3. If your system is a large one, what is the average number of industrial arts instructors in each school?_____.
4. Do these instructors teach subjects other than industrial arts? (yes or no)_____.
5. What is the minimum salary for the industrial arts instructor?_____ maximum?_____.
6. If the salary schedule does not list a minimum and maximum, what is the average salary paid?_____.
7. Does your school offer a course in occupations for vocational guidance?_____.
8. If so, is it taught by

Special teacher	_____
Academic	_____
Shop	_____

 (check one)

Place a check after the type of course that corresponds to the organization of your Industrial Arts Department. In the column to the right indicate the number of terms or semesters that the course is offered.

	Terms	Offered or	Semesters
1. General Shop	_____		_____
2. Home Mechanics	_____		_____
3. Farm Mechanics	_____		_____
4. Trades Exploratory	_____		_____
5. Related Activities	_____		_____
6. Arts and Crafts	_____		_____
7. Practical Mechanics	_____		_____
8. Unit Shops (<u>one</u> or <u>more</u> shops organized for teaching only <u>one</u> activity in each shop)	_____		_____

Place a check after the activities offered in your program.

If unit shop organization has been checked above, it is assumed that only those activities given as distinct courses and in separate shops will be checked below.

1. Bench and General Woodwork
2. Furniture & Cabinet Construction
3. Carpentry
4. Wood Turning
5. Pattern Making
6. Mill & Machine Woodwork
7. Fibre Furniture Weaving
8. Upholstering
9. Wood Finishing
10. Toy Making
11. Machine Shop
12. Auto Mechanics

13. Practical Electricity
14. General Metal Work
15. Forging
16. Foundry
17. Art Metal
18. Oxy-Acetylene Welding
19. Bench Metal Work
20. Printing
21. Mechanical Drawing
22. Architectural Drawing
23. Machine Drawing
24. Freehand Drawing
25. Concrete Construction
26. Elementary Radio
27. Leather Work
28. Sheet Metal

Please list any other activities included in your program, but not listed above.

TABLE VI.

NUMBER OF QUESTIONNAIRES SENT AND RETURNED, BY STATES.

State	Number of Questionnaires Sent Out	Number of Questionnaires Returned	Per Cent of Questionnaires Returned
Arizona	7	5	71.5
Colorado	11	7	81.8
California	27	15	55.5
Illinois	31	23	74.2
Iowa	26	16	61.5
Indiana	26	19	73
Kansas	25	17	68
Michigan	26	19	73
Minnesota	26	15	57.7
Nebraska	14	6	42.8
New York	27	17	65
North Dakota	5	3	60
Oklahoma	26	15	57.7
Ohio	29	18	62
Texas	28	18	64.2
Tennessee	24	12	50
Wisconsin	26	14	53.9
	—	—	—
Total	386	241	62.4

TABLE VII.

GRADES IN WHICH INDUSTRIAL ARTS WORK IS AVAILABLE

State	7th grade	8th grade	9th grade	10th grade	11th grade	12th grade
Arizona	4	4	5	5	5	5
Colorado	9	9	9	9	6	6
California	10	11	13	12	12	12
Illinois	19	19	21	21	18	18
Iowa	11	15	16	15	12	12
Indiana	17	18	19	16	15	15
Kansas	14	14	17	15	12	10
Michigan	18	18	19	17	17	17
Minnesota	15	15	15	15	10	9
Nebraska	5	5	5	5	5	5
New York	14	14	14	12	11	11
North Dakota	2	3	3	3	1	1
Oklahoma	8	11	13	11	11	11
Ohio	18	16	17	17	14	14
Texas	9	17	18	18	18	1
Tennessee	5	7	10	12	11	11
Wisconsin	14	14	14	14	10	10
	—	—	—	—	—	—
Total	192	210	228	217	188	173
Per Cent	80	87.2	93.8	90.1	78	73

TABLE VIII.

NUMBER OF INSTRUCTORS TEACHING OTHER SUBJECTS IN COMBINATION WITH INDUSTRIAL ARTS

State	Teach Other Subjects	Do Not Teach Other Subjects	Per Cent Not Teaching Other Subjects
Arizona	2	3	60
Colorado	2	7	77.8
California	1	12	92.3
Illinois	2	21	91.3
Iowa	4	11	73.3
Indiana	3	16	84.2
Kansas	4	11	73.3
Michigan	5	14	73.6
Minnesota	2	13	86.6
Nebraska	0	5	100
New York	1	13	92.9
North Dakota	0	3	100
Oklahoma	5	8	61.1
Ohio	4	14	77.7
Texas	2	14	88.2
Tennessee	2	9	81.7
Wisconsin	1	12	92.3
Total	40	187	
Per Cent	18	82	

TABLE IX.

THE AVERAGE MINIMUM AND MAXIMUM SALARIES PAID INDUSTRIAL ARTS INSTRUCTORS, AND THE AVERAGE SALARIES PAID WHERE NO DEFINITE SALARY SCHEDULE EXISTED

State	Average Minimum Salary	Average Maximum Salary	Average Actual Salary
Arizona	\$1666	\$2375	\$2250
Colorado	1571	2257	2225
California	1790	2587	2285
Illinois	1644	2532	2025
Iowa	1687.25	2306.25	1690
Indiana	1616	2188	1535*
Kansas	1595	2064	1987
Michigan	1611	2453	1925
Minnesota	1452	2300	1850
Nebraska	1487	2300	2000
New York	1625	2564	2163
North Dakota	1600	2250	2175
Oklahoma	1400	1959	1490
Ohio	1569	2396	1433*
Texas	1446	2304	2133
Tennessee	1216	1815	1725
Wisconsin	<u>1490</u>	<u>2423</u>	<u>1650</u>
Average	1556.84	2298.42	1914.17

*Due to the small number of answers on the average actual salaries, in the questionnaire, in two cases the actual salary is below the average minimum.

TABLE X.

SCHOOLS PROVIDING FOR THE STUDY OF OCCUPATIONS FOR
VOCATIONAL GUIDANCE.

State	Number of Schools Offering Subject	Taught by Special Teacher	Taught by Academic Teacher	Taught by Shop Teacher
Arizona	1	1		
Colorado	4	1	2	1
California	8	6	1	1
Illinois	10	2	6	2
Iowa	6	2	4	1
Indiana	17	8	11	1
Kansas	7	1	6	
Michigan	10	3	6	3
Minnesota	6	1	3	2
Nebraska	4	1	3	
New York	10	4	6	
North Dakota	1		1	
Oklahoma	6	2	4	1
Ohio	14	3	11	3
Texas	7	2	6	
Tennessee	1	1		
Wisconsin	10	4	6	1
Total	122	42	76	16
Per Cent	50.6	34.4	62.4	13.1

TABLE XI.

TYPES OF SHOP ORGANIZATION IN USE

States	General Shop	Home Mechanics	Farm Mechanics	Trades Exploratory	Related Activities	Arts and Crafts	Practical Mechanics	Unit Shops
Arizona	2	1		1				1
Colorado	7	3	4	4	1	3	4	3
California	12	4	4	4	3	3	4	5
Illinois	10	8	6	3	4	6		14
Iowa	12	7	4	3	2	2	2	2
Indiana	17	6	6	7	4	4	4	11
Kansas	9	3	6	4	3		1	3
Michigan	15	6		4	3	3	5	11
Minnesota	11	6	2	3		2	4	4
Nebraska	5	3	2	1				4
New York	12	6		3		4	2	9
North Dakota	2	2		1				1
Oklahoma	11	3	2	2	1	5	2	2
Ohio	16	6	5	3	1	4	3	4
Texas	13	7	1	3	3	3	3	3
Tennessee	9	3	1	2		1	2	5
Wisconsin	8	7	4	6		4	2	8
Total	171	81	48	49	26	44	38	98
Per Cent	71	33.6	20	20.3	10.8	18.3	15.8	40.6

TABLE XII-A.

FREQUENCY OF OFFERING FOR THE VARIOUS SUBJECTS IN THE
INDUSTRIAL ARTS PROGRAM

WOODWORKING GROUP

States	Bench and General Woodwork	Furniture and Cabinet Construction	Carpentry	Wood Turning	Pattern Making	Mill and Machine Woodwork	Wood Finishing*	Upholstering	Toy Making	Fibre Furniture Weaving
Arizona	5	3	3	4	0	0	1	1	1	0
Colorado	9	8	8	6	2	0	6	4	5	2
California	11	7	6	6	3	3	6	0	4	2
Illinois	20	16	11	16	7	4	11	5	9	4
Iowa	15	15	7	13	4	6	14	10	10	6
Indiana	19	17	7	11	5	7	9	3	4	6
Kansas	17	13	8	13	0	2	14	8	9	4
Michigan	16	14	10	14	5	9	10	8	8	3
Minnesota	14	9	6	11	3	4	11	5	5	2
Nebraska	6	4	2	4	0	2	5	3	3	1
New York	15	12	8	10	7	2	11	2	6	2
North Dakota	3	3	1	3	0	0	3	0	1	1
Oklahoma	12	9	5	9	0	0	9	2	7	1
Ohio	15	15	9	12	4	5	12	5	6	4

TABLE XII-A (cont.)

State	Bench and General Woodwork	Furniture and Cabinet Construction	Carpentry	Wood Turning	Pattern Making	Mill and Machine Woodwork	Wood Finishing*	Upholstering	Toy Making	Fibre Furniture Weaving
Texas	13	8	5	14	5	5	11	8	7	3
Tennessee	10	6	3	10	3	2	6	6	4	2
Wisconsin	11	3	4	7	4	6	7	1	3	0
Total	217	179	108	163	52	62	146	71	92	43

*In most cases given in connection with other subjects,
and not as an individual subject.

TABLE XII-B.

MACHINE AND METAL WORKING GROUP

States	Machine Shop	Auto Mechanics	Practical Electricity	General Metal Work	Forging	Foundry	Art Metal	Bench Metal	Gas Welding	Sheet Metal
Arizona	1	1	1	1	2	0	0	2	0	3
Colorado	3	4	2	2	2	0	2	1	3	2
California	10	11	9	8	5	3	1	4	8	9
Illinois	7	9	5	6	4	1	4	1	2	7
Iowa	2	2	7	4	3	1	4	5	1	6
Indiana	11	11	11	8	4	6	3	8	2	12
Kansas	1	2	2	1	3	0	0	1	1	5
Michigan	12	11	19	8	4	3	2	7	2	10
Minnesota	6	5	10	5	4	2	1	1	1	7
New York	7	8	11	7	3	0	4	6	3	9
North Dakota	0	1	1	0	0	0	0	0	0	2
Nebraska	1	5	1	2	2	0	0	2	2	3
Oklahoma	2	3	3	0	1	1	0	0	1	3
Ohio	5	7	7	8	3	3	4	5	3	5
Texas	3	4	3	1	2	1	2	3	0	3
Tennessee	2	4	5	1	1	1	1	1	1	1
Wisconsin	7	7	10	3	2	0	1	5	3	6
Total	80	95	107	65	49	20	29	52	33	93
Per Cent	33.2	38	44	27	20	9	12	22	14	39

TABLE XII-C.

PRINTING, DRAWING, AND MISCELLANEOUS SUBJECTS

States	Printing	Mechanical Drawing	Architectural Drawing	Machine Drawing	Freehand Drawing	Concrete Construction	Elementary Radio	Leather Work
Arizona	1	5	4	2	3	0	0	0
Colorado	2	7	3	5	6	2	1	6
California	6	11	8	4	6	1	1	1
Illinois	6	17	12	9	9	1	5	5
Iowa	3	14	9	9	3	4	4	4
Indiana	10	18	14	10	7	8	4	1
Kansas	4	14	5	4	7	2	1	2
Michigan	9	8	15	10	8	5	3	0
Minnesota	3	14	7	6	6	4	2	1
Nebraska	1	4	3	2	1	0	1	0
New York	8	15	6	7	8	2	1	2
North Dakota	0	3	1	2	0	1	0	1
Oklahoma	4	12	5	3	3	1	1	2
Ohio	5	11	6	5	4	2	0	0
Texas	2	4	12	11	7	1	2	1
Tennessee	2	9	3	2	2	2	1	0
Wisconsin	7	13	8	7	5	2	0	1
Total	73	179	121	98	82	38	27	27
Per Cent	30.3	74	50	41	34	16	11	11

TABLE XIII.

ADDITIONAL SUBJECTS TAUGHT; NOT INCLUDED IN THE QUESTIONNAIRE, BUT ADDED BY THE SCHOOLS REPORTING

States	Aeronautics Aeroplane Ground Repair	Plumbing	Painting and Decoration	Bricklaying	Lithography	Masonry	Shoe Repair	Auto Ignition	Commercial Art
California	1								
Iowa	1								
Illinois		2							
Indiana		1	1	1					
New York					1	1	1	1	1
	-	-	-	-	-	-	-	-	-
Total	2	3	1	1	1	1	1	1	1

SURVEY OF THE FINDINGS
OF
SECTION III.

The data listed in the tables of this section of the report is considered reliable and indicative of current practice in the field of industrial arts instruction with one exception; the responses to the section of the questionnaire related to "types of shop organization" showed a definite lack of understanding of the types of shop organization in use.

The information obtained from items two and three of the questionnaire, with reference to the number of instructors in the departments, was discarded because it was found to be out of proportion on account of the fact that several large city systems had reported the entire number of teachers on the industrial arts staff rather than the average number of instructors for each school.

Table VII. shows definitely that the industrial arts work is being made available most often in the last two years of junior high school and in the first year of senior high school. This seems to indicate that the exploratory concept of the industrial arts activities is being stressed.

Industrial arts instructors do not, in general, teach other subjects in connection with their industrial arts work. (Table VIII).

There is not a great variation in the salaries. The minimum salaries range from \$1216 in Tennessee to \$1790 in California, and the maximum ranging from \$1815 in Tennessee to \$2587 in California. (Table IX).

Approximately fifty per cent of the schools offer a study in occupations for vocational guidance, these courses being taught by the academic teachers in 62.4 per cent of the cases, by special teachers in 34.4 per cent, and by shop teachers in 13.1 per cent. (Table X).

The data of Table XI although not considered valid, shows that the general shop is the outstanding type of shop organization at present, while unit shops and home mechanics are the next in order. This seems to be further proof of the tendency toward a wider range of industrial arts activity for exploration and guidance purposes.

In the woodworking group bench and general woodwork, furniture and cabinet construction, and wood turning are by far the outstanding subjects. Wood finishing also ranks high, which is probably due to its being offered in connection with the other woodworking subjects, rather than as a separate activity as indicated on the questionnaire. (Table XII-A).

Practical electricity, auto mechanics and machine shop are the three outstanding subjects in the metal working group, but are only about one-half as popular as the

woodworking subjects. (Table XII-B).

Printing is being offered by 30.2 per cent of the schools, while mechanical drawing which would seem to be an essential subject in the industrial arts program, is offered by only 74 per cent of the schools; architectural drawing by 50 per cent of the schools, machine drawing by 41 per cent and freehand drawing by 34 per cent.

(Table XII-C).

A study of the foregoing data immediately suggests the question, why are the woodworking subjects so much more popular than the machine and metal working subjects? It is probably because the woodworking activities adapt themselves more readily to instruction methods than do the metal working activities, or is it because of the cost of equipment and the lack of instructors who are qualified to teach the metal and machine work? Information on these questions is paramount in the field of industrial arts today, and it is worthy of investigation.

At the time the questionnaire went out for collecting the information and data of section III, it was considered unwise to burden the school superintendents and industrial arts instructors of Oregon with a third questionnaire, so soon after two others had been sent out from the industrial arts department. For that reason Oregon has not been included in the survey of secondary school programs. The following information taken from the Oregon School Directory, will form a basis for comparing the salaries of Oregon industrial arts teachers with those of other states.

There are at present, exclusive of Benson Poly-technic High School , eighty-three full-time industrial arts instructors in this state. Forty-four percent of these instructors are teaching other subjects in combination with their regular industrial arts work, and the average salary is 1800 dollars. It has not been possible to get full information on the frequency of offering for the various shop subjects. From a general knowledge of Oregon conditions woodwork is by far the most frequent in occurrence, with drawing next, and with automechanics, sheet metal and electrical work trailing with only a very few cases of each.

CONCLUSION

TABLE XIV.

A COMPOSITE LIST OF THE STATE RATINGS IN CERTIFICATION REQUIREMENTS, STRENGTH OF TEACHER-TRAINING PROGRAM, SALARY SCHEDULES, AND STRENGTH OF SECONDARY SCHOOL PROGRAM.

State	Certification Requirements	Strength of Technical Teacher-training Program	Salary Range		Strength of Secondary School Program		
			Average Minimum	Average Maximum	Woodwork	Metalwork	Printing Drawing and Miscellaneous Subjects
	1*	2*	3			4*	
Arizona	5	92	\$1616	\$2375	3.6	1.4	3
California	8	86	1790	2587	3.2	4.5	2.5
Colorado	4	87	1571	2257	7.1	2.9	4.6
Illinois	3	79½	1644	2533	4.5	2	2.8

1-* A composite rating based upon data compiled in section II, Table V. The numerical rating is derived by assigning one point for low, two points for average, and three points for high in each of the certification requirements, (as indicated by table V.), and adding these to obtain the final rating. On this basis nine would be the highest possible score and three would be the lowest.

2-* As indicated by the number of term hours or credits of technical work offered by state supported institutions having the strongest industrial arts teacher-training program.

4-* As indicated by the average number of subjects per school taught in the three main groups of industrial arts activities, section III, Table XII-A, B, and C.

TABLE XIV. (cont.)

State	Certification Requirements 1	Strength of Technical Teacher-training Program 2	Salary Range		Strength of Secondary School Program		
			Average Minimum	Average Maximum	Woodwork	Metalwork	Printing and Drawing and Miscellaneous Subjects
				3		4	
Indiana	8	108	\$1616	\$2188	4.6	4.2	4
Iowa	3	79 $\frac{1}{2}$	1687	2306	6.3	2.7	3.1
Kansas	7	140 $\frac{1}{2}$	1595	2064	5.2	.7	2.3
Minnesota	6	30	1452	2300	4.7	2.8	2.9
Michigan	7	115	1611	2453	5.1	4.1	3.1
North Dakota	3	107	1600	2250	5	1.3	2.6
Nebraska	3	61	1487	2300	5	2.6	2
New York	7	66 $\frac{1}{2}$	1625	2564	4.4	3.4	2.9
Ohio	7	30	1569	2496	4.8	2.8	1.8
Oklahoma	8	97	1400	1959	3.6	.9	2.1
Texas	3	69	1446	2304	4.4	1.5	2.2
Tennessee	5	60	1216	1815	4.3	1.5	2.4
Wisconsin	7	148	1490	2432	3.4	3.1	3.5
AVERAGE	5.8	84.8	1556	2298	5	2.6	2.7

CONCLUSIONS


The composite data of table XIV, seems to point toward the following significant general conclusions:

1. The salaries of industrial arts teachers are fairly uniform throughout the country, being lowest in the south central states. This is probably due to the low salaries paid to some instructors in the Negro Schools.
2. There does not seem to be great evidence of definite relations between teacher certification standards and salary schedules. There is some evidence, however, that high certification standards tend to make salaries more uniform within the state: eg. In New York and California where the highest maximum and minimum salaries are paid, the minimum salaries do not go below 1400 dollars and the highest salary range is 3000 dollars. New York and California are also the only states included in the survey that have established a state curriculum for industrial arts teacher-training.
3. For a well balanced program of industrial arts activities the emphasis should be about equally divided between woodworking activities, metalworking subjects, and those classed under printing, drawing, and miscellaneous. This latter group would also include the plastic arts, and graphic arts or design work where such is included.

4. To claim outstanding strength of program the score for any group of activities should be not less than 4, whereas a rating of 3 seems to be about average. A proportional increase in the number of subjects within all three groups is probably indicative of a progressive program. A marked increase or decrease in any one group would seem to indicate an unhealthy condition, due to an inclination to stress only a limited phase of industrial activities at the expense of other equally worthy activity groups. With very few exceptions the equi-proportional distribution between these activity groups occur in secondary school programs of those states that are classified in the upper division for teacher-training, and certification requirements.

5. It is probably safe to say that high teacher-training standards and certification requirements are, in general, indicative of a well balanced secondary school program of industrial arts activities, except in those states where regional-industrial influences and traditional ideals are given too much weight in formulating and developing industrial arts courses. In some quarters there is still a well fixed, though thoroughly unwarranted, idea that the industrial arts program should include only those activities that are represented in the local community. As soon as this idea is displaced with the ideal that the industrial arts instruction in the public schools is to

industry and industrial relations as science instruction is to the field of science, or history to the developments and experiences of the past, the program can go forward in a broader, more satisfactory manner. The big over-all objective will then be to give a type of training that will:

1. Develop industrial intelligence and an appreciation of the importance of industry, and capital and labor.
 2. Provide exploratory and findings values which relate to the detection, discovery, or tryout of interests and aptitudes.
 3. Provide guidance, both educational and vocational, gained through broad contacts and studies of industrial vocations.
 4. Provide for the formation of desirable personal and social habits and insights that will influence conduct.
 5. Provide for the development of a degree of skill with tools or machine processes commensurate with the ability of the pupil and incidental to the completion of a project or activity which seems to have "educational" value.
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