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Industrial Arts in the Public Secondary Schools Of Kansas in 1962-1963

by Charles L. Bell*

Since 1900 a phenomenal growth in education has been evident in the United States. A study of the history of American education reveals that, as a result of this rapid expansion and because of other socio-economic factors, American educators have been plagued continually with the need to improve the existing curriculum.

As a phase of public education, industrial arts, like other subjects, must be evaluated from time to time and improved if it is to maintain its rightful place in the school program. To this end, it is believed that a statewide study of status and needs of industrial arts in the schools of Kansas is now timely. A critical appraisal of these programs will help determine the role of industrial arts in the total program of education.

Teacher education must assume leadership if the industrial arts program is to progress. Little progress can be hoped for if those who prepare industrial arts teachers confine their efforts and thinking in terms of what we have instead of what we should be doing. Since teachers generally teach the way they were taught, it is obvious that the scope of the program employed in teacher education should be of outstanding character in example as well as precept. Teacher education must project itself well into the future just as industry must anticipate what is to come or education will always remain at the rear in the ranks of progress.

A wholesale revolution in the industrial arts programs in Kansas is neither practical nor realistic, but there must be continuous advancement toward a more effective program. It is at the teacher education level that the attitude for change and progress will be most effective. Requirements placed upon new teachers by their employing schools preclude teacher education programs from being radically different from general public school practice. However, to graduate teachers who are only adequate to support the status quo of existing industrial arts programs makes little contribution to progress.

The purposes of this study were to ascertain the status of industrial arts programs in Kansas relative to the number of schools offering industrial arts, courses taught, enrollments, teacher preparation and qualifications.

RELATED STUDIES

Numerous studies have been completed regarding various phases of industrial education in the United States. One of the first and probably

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* Dr. Bell is an associate professor of Industrial Arts at Kansas State Teachers College, Emporia. This study is a part of a dissertation entitled "Status of and Need for Industrial Arts in the Public Schools of Kansas with Implications for Teacher Education" submitted by the writer in partial fulfillment of the requirements for the degree of Doctor of Education, in the Graduate School of the University of Missouri, 1964.

most accurate statewide status studies was completed by Smith of Minnesota in 1924.[1] In an attempt to determine the responsibilities of the University of Minnesota, College of Education, in the training of teachers for industrial arts teaching positions in the state, Smith examined records of the State Department of Education, studied publications, and conducted interviews to secure data on the work of teachers.

In the last fifteen years, several studies have been made regarding the status of industrial arts in Kansas. Ensman investigated the junior and senior high schools of Kansas to ascertain the status and trends in the field of industrial education. In summary, his findings showed the following:

> Fifty-six of the urban senior high schools, 287 of the rural senior high schools, and 44 of the junior high schools of Kansas offered industrial arts. The three most common units in the industrial arts departments of all three divisions were general woodwork, mechanical drawing, and general composite shop.[2]

Trease made a study of the status of industrial arts in Kansas high schools, 1950-51. Among his findings, the following seem important to this study.

> During the school year of 1950-51, industrial arts courses were being offered in 441 of the 677 accredited public and private high schools in the state of Kansas. Woodworking courses dominate the curriculum in all but the larger schools, with woodworking included in the returns of 332 of the 341 instructors. Elementary mechanical drawing courses did not keep pace since they were mentioned by only 127 of the teachers.[3]

In 1958, Johnson surveyed the scope of industrial arts in Kansas high schools having an enrollment of sixty-five or fewer students during the 1957-58 school term. Some of his findings that relate to this study may be summarized as follows:

> There is a trend toward the general shop type of organization, which is considered most adaptable to the small high school.
> Teachers should teach more related information, make use of a good textbook, and establish and make use of shop library facilities.[4]

Cain in a study of industrial arts teaching positions and teacher preparation reported the following:

> The predominance of drafting, metalwork, and woodwork in the program of course offerings at each of the grade levels pointed to a strong emphasis upon the traditional areas of instruction.[5]

Penny in 1960 traced the origin and development of industrial edu-

1. H. K. Smith, "Industrial Education in the Public Schools of Minnesota" (College of Education Monograph Number 6, Volume 27, Number 47, University of Minnesota, Minneapolis, Minnesota, 1924).
2. Leo M. Ensman, "An Investigation on Trends in Industrial Education in Junior and Senior High Schools of Kansas Since 1944" (unpublished Master's thesis, Kansas State Teachers College, Pittsburg, 1950), p. 57.
3. John L. Trease, "The Status of Industrial Arts in Kansas High Schools 1950-51" (unpublished Master's thesis, Oklahoma Agricultural and Mechanical College, Stillwater, 1951), p. 62.
4. Delton Lee Johnson, "A Survey of the Scope of Industrial Arts in Small Kansas High Schools" (unpublished Master's thesis, Kansas State Teachers College, Emporia, 1958), pp. 139-140.
5. Cecil Richard Cain, "An Analysis of the Industrial Arts Teaching Position and Teacher Preparation" (unpublished Doctoral dissertation, Indiana University, Bloomington, 1958), p. 160.

cation in Kansas. The following findings are of interest to this study:

> Forty-four junior high schools and 336 senior high schools were offering industrial arts work under the direction of 593 teachers to 34,242 students in 40 different industrial areas.[6]

> The salaries of industrial arts teachers in the junior and senior high schools of Kansas for the school year 1957-58 ranged from $3,250 to $5,900 for nine months.[7]

Penny concluded that:

> While there has been a trend toward the consolidation of the small high schools in the state into larger units, the industrial arts programs offered in these schools appear to be limited in scope. It would appear that these programs should be improved so that they may better meet general education objectives.[8]

Cain in his analysis of instructional and related requirements of industrial arts teaching positions held by the graduates of Fort Hays State College, Hays; Kansas State Teachers College, Emporia; and Kansas State Teachers College, Pittsburg, found the following of importance to this study:

> Wide variation in the preparation of the teachers, both in scope and in number of hours of credit in the various areas of industrial arts, indicated a diversity of requirements among the three teacher training institutions as to the type and amount of training considered desirable in the preparation of industrial arts teachers.[9]

Johnson concluded that specialized industrial arts training for certification was inadequate; it should be raised to twenty-four hours. now common for other subjects in class "A" schools.[10]

Both Johnson[11] and Penny[12] indicated a need for a comprehensive course of study for industrial arts which should be prepared by leaders in the field to be used as a guide for industrial arts teachers and distributed by the State Department of Public Instruction.

ACKNOWLEDGEMENTS

A debt of utmost gratitude, by the writer, is due to Dr. H. H. London, Professor of Industrial Education, University of Missouri, under whose direction the original study was made. The writer wishes to acknowledge the assistance of the State Department of Public Instruction, the industrial arts teachers of Kansas, Dr. E. L. Barnhart, and Dr. John E. King who co-operated in the conduct of this study.

DEFINITION OF TERMS

The term, "secondary school," is to be interpreted as meaning either the junior high school, senior high school, junior-senior high school, or the traditional four-year high school.

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6. Forest Lee Penny, "Origin and Development of Industrial Education in Kansas" (unpublished Doctoral dissertation, University of Missouri, Columbia, 1960), p. 253.
7. *Ibid.*, p. 62.
8. *Ibid.*, p. 256.
9. Cain, *op. cit.*, p. 159.
10. Johnson, *op. cit.*, p. 140.
11. *Ibid.*
12. Penny, *op. cit.*, p. 256.

A "certified teacher" refers to a teacher who has qualified for a teaching certificate in the specific subjects which he is teaching or will teach in the state of Kansas.

A "beginning teacher" is one who has never taught in Kansas, in another state, or in another country except for student teaching.

"Teacher education institutions," as used in this study, refers to any four-year college in Kansas which will prepare a student to meet the teacher certification requirements of Kansas for an industrial arts teaching position.

"Industrial arts" refers to the study of industrial tools, materials, processes, products, and occupations pursued for general education purposes in shops, laboratories, and drafting rooms.[13]

"Course" pertains to organized subject matter in which instruction is offered within a given period of time, and for which credit toward graduation or certification is usually given.[14]

"Shop organization" refers to the basis on which an industrial arts program is organized. Three commonly found types of shop organization are composite general shops, limited general shops, and unit shops.

"Comprehensive general shop" or "composite general shop," "laboratory of industries," and "general shop" refer to the general industrial arts laboratory work carried on simultaneously in several areas and usually under the supervision of one teacher. This type of laboratory contains facilities for and provides experience in a combination of such areas as general drawing, general wood, general metal, general heat and power, home mechanics, crafts, and printing. The equipment is representative of the areas involved, and is more comprehensive in variety than the specific unit or general unit laboratories.

"Limited general shop" refers to the type of laboratory that was once called "the one-type-of material shop." Instead of one specific unit of work being taught, two or more units are combined; for example: A general wood laboratory could include woodturning, bench woodwork, cabinetmaking, machine woodwork, mill work, finishing, and upholstering. A general metal laboratory could include bench metal, sheet metal, machine shop, forging, and foundry. This type of laboratory is frequently established in small communities.[15]

The term, "unit shop," refers to an industrial arts laboratory which is housed in one room, supervised by one teacher, and equipped for one specific type of work or activity, such as woodturning, sheet metal, auto mechanics, welding, or any other specific area in a specific unit laboratory. This type of laboratory is usually found in the large cities where specialists can be hired and several units maintained. This type sometimes becomes a trade school.[16]

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13. American Vocational Association Committee on Policy and Planning, *Industrial Arts in Education* (Menomonie, Wisconsin: Printing Department, Stout State College, n.d.), p. 1.
14. Carter V. Good (ed.), *Dictionary of Education* (New York: McGraw-Hill Book Company, Inc., 1945), p. 106.
15. State Department of Education, *Kansas Tentative Guide to Teaching Industrial Arts Bulletin, 1949* (Topeka, Kansas: State Printer, 1949), p. 14.
16. *Ibid.*

"Teaching field" pertains to the different branches of a subject that may be taught in a secondary school; that is, all the different branches of English grouped under English, and all the history, geography, economics, political science, and sociology grouped under social sciences.[17]

A "full-time industrial arts teacher" refers to one who teaches four or more industrial arts classes daily.

A "part-time industrial arts teacher" refers to one who teaches three or fewer industrial arts classes daily.

SOURCE OF DATA AND METHOD OF INVESTIGATION

Basic data for each of the schools included in the study, such as school enrollment, teacher name, address, experience, and salary, were obtained from the 1962-63 High School Principal's Organization Report on file in the offices of the Kansas State Department of Public Instruction. Further data regarding ages of industrial arts teachers and semester hours earned in the field of industrial arts, language arts, social science, natural science, mathematics, and education were recorded from transcripts on file at the State Department of Public Instruction for 824 teachers. Transcripts for nine industrial arts teachers were not on file.

Another source of data was an information form which was perfected and mailed to each of the industrial arts teachers of the state. This information form was designed to secure information, not obtainable from other sources, about industrial arts teachers and industrial arts programs they taught. Information was obtained concerning descriptive titles of courses taught and enrollment in each by grade level, general shop activities, textbooks used, related reading materials available; as well as specific information about the teacher's non-teaching duties, degrees held, plans for future graduate study, non-college training, membership in professional organizations, etc. The information form was submitted to staff members and a seminar of graduate students of the College of Education, University of Missouri, for criticism. After several revisions, the form was approved and then printed.

A copy of the information form with a covering letter and a franked addressed envelope was then mailed to 857 teachers for whom mailing addresses had been obtained. Four hundred twenty-two completed forms were returned by the teachers within ten days after the initial mailing.

Ten days after the forms were mailed, a postal card reminder was sent to those failing to return completed information forms. Twelve days after this mailing, 135 additional forms had been received.

After a period of twenty-two days had expired from the date of the original mailing, another copy of the information form, this time accompanied by a follow-up letter and a franked addressed envelope, was sent to all those who had not responded to either of the former requests. This follow-up resulted in 149 returns.

At the end of the thirty-nine days, the total number of information forms returned amounted to 734. A survey of the returned information

17. State Department of Public Instruction, *Secondary School Handbook, 1961* (Topeka, Kansas: State Printer, 1961), p. 5.

forms excluded the names of nine persons who returned incomplete returns and twenty-four who were teachers of other school subjects. This represented an 84.2 per cent return from the industrial arts teachers based on the actual number of 833 industrial arts teachers.

The final phase of the study was that of tabulating, analyzing, and reporting the data. The general method of approach was that of the normative-survey.

NUMBER OF INDUSTRIAL ARTS PROGRAMS

For the school year 1962-63, 547 public senior high schools and ninety-five public junior high schools were accredited by the State Department of Public Instruction in Kansas. The number of high schools offering industrial arts in Kansas, at the time of the study, is revealed by size categories in Table I. Of the total of 547 public senior high schools, 480, or 87.7 per cent, provided industrial arts programs. All of the very small schools, whose enrollments ranged from eight to twenty-four, offered industrial arts. Of the larger public schools enrolling 300 or more, slightly over 96 per cent offered industrial arts.

TABLE I

PUBLIC SENIOR HIGH SCHOOLS OFFERING INDUSTRIAL ARTS IN KANSAS IN 1962-63

Size of School	Total Schools		Schools Offering Industrial Arts	
	Number	Per Cent	Number	Per Cent
– 24	14	2.5	14	100.0
25 – 49	109	19.9	96	88.1
50 – 74	104	19.0	87	83.7
75 – 99	71	13.0	53	74.6
100 – 149	71	13.0	58	81.7
150 – 199	48	8.8	44	91.7
200 – 299	42	7.7	41	97.6
300 – 499	30	5.5	30	100.0
500 – 999	27	4.9	27	100.0
1000 – 1999	26	4.8	25	96.2
2000 +	5	.9	5	100.0
Total	547	100.0	480	87.8

Source: Records on file in the office of the Kansas State Department of Public Instruction.

Junior high schools are reported apart from the three, four, and six year senior high schools. The decision to report them separately was based on the steadily increasing number of organized junior high schools; hence, their increasing importance as educational units. Table II indicates the number of public junior high schools categorized by number of students enrolled. Of the ninety-five public junior high schools, seventy-four had enrollments exceeding 300 pupils, with nineteen in the 100 to 299 category, and two in the category of less than ninety-nine. Ap-

parently, industrial arts was included as part of the curriculum of the junior high schools from their inception, as all such schools offered this work.

TABLE II

PUBLIC JUNIOR HIGH SCHOOLS OFFERING INDUSTRIAL ARTS IN KANSAS IN 1962-63

Size of School	Total Schools		Schools Offering Industrial Arts	
	Number	Per Cent	Number	Per Cent
– 99	2	2.1	2	100.0
100 – 299	19	20.0	19	100.0
300 – 499	22	23.1	22	100.0
500 – 999	41	43.2	41	100.0
1000 +	11	11.6	11	100.0
Total	95	100.0	95	100.0

Source: Records on file in the offices of the Kansas State Department of Public Instruction.

The number of industrial arts courses reported as taught in public senior high schools during the second semester of the school year, 1962-63, is shown in Table III. As would be expected, the number of industrial arts courses offered increased regularly with school size. Course

TABLE III

NUMBER OF DIFFERENT INDUSTRIAL ARTS COURSES OFFERED IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Number of Reporting Schools	Number of Industrial Arts Courses			
		1	2	3	4 or More
– 24	14	10	4	0	0
25 – 49	74	28	30	14	2
50 – 74	71	23	28	16	4
75 – 99	48	6	19	17	6
100 – 149	50	9	12	14	15
150 – 199	41	6	14	8	13
200 – 299	36	3	11	7	15
300 – 499	28	2	6	3	17
500 – 999	26	0	4	3	19
1000 – 1999	25	0	0	1	24
2000 +	5	0	0	0	5
Total	418	87	128	83	120

Source: Information furnished by 556 senior high school teachers.

offerings ranged from one to fifteen offered by one senior high school in a large city school system.

The number of industrial arts courses reported as taught in public junior high schools of Kansas at the time of the study is indicated in Table IV. Here again, the number of industrial arts courses increased regularly with the size of the junior high schools.

TABLE IV
NUMBER OF DIFFERENT INDUSTRIAL ARTS COURSES OFFERED IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Number of Reporting Schools	Number of Industrial Arts Courses			
		1	2	3	4 or More
— 99	2	2	0	0	0
100 — 299	13	12	1	0	0
300 — 499	18	7	9	0	2
500 — 999	41	7	13	14	8
1000 +	11	1	3	1	6
Total	86	29	26	15	16

Source: Information furnished by 116 junior high school teachers.

YEARS PROGRAMS HAD BEEN IN OPERATION

The growth of industrial arts in the secondary schools of Kansas is revealed in Tables V and VI. Slightly over 22 per cent of the public senior high schools reported having had industrial arts less than fifteen years. A number of the newer industrial arts programs in the senior high schools of Kansas may be attributed to consolidation of smaller schools into larger units as well as the opening of new high schools in large cities because of increasing enrollments. Approximately one-third of the senior high schools had offered industrial arts courses for forty or more years.

TABLE V
APPROXIMATE NUMBER OF YEARS INDUSTRIAL ARTS PROGRAMS HAD BEEN OFFERED IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Years	Schools Offering Industrial Arts	
	Number	Per Cent
1 — 4	21	6.0
5 — 9	22	6.3
10 — 14	35	10.0
15 — 19	15	4.3
20 — 24	49	14.0
25 — 29	31	8.8
30 — 39	69	19.6
40 — 49	49	13.9
50 +	60	17.1

Source: Information furnished by teachers for 351 senior high schools.

As indicated in Table VI, 37 per cent of the public junior high schools reported having had industrial arts programs for forty or more years. Larger urban populations have necessitated the opening of more junior high schools. The number of junior high schools offering industrial arts in the past ten years has increased rapidly as shown by the 37.1 per cent of the total industrial arts programs in junior high schools that were less than ten years old. Growth of junior high school industrial arts programs was slow from the years 1933 through World War II.

TABLE VI

APPROXIMATE NUMBER OF YEARS INDUSTRIAL ARTS PROGRAMS HAD BEEN OFFERED IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Years	Schools Offering Industrial Arts	
	Number	Per Cent
1 – 4	14	17.3
5 – 9	16	19.8
10 – 14	6	7.4
15 – 19	0	0.0
20 – 24	2	2.5
25 – 29	3	3.7
30 – 39	10	12.3
40 – 49	15	18.5
50 +	15	18.5

Source: Information furnished by teachers for 81 junior high schools.

OFFERINGS AND ENROLLMENTS IN INDUSTRIAL ARTS

As revealed in Table VII, the three most frequently offered senior high industrial arts courses were general woodworking, general shop, and drafting. The variety of course titles suggests a need for clarification of terms. It also indicates the breadth of the program as a whole.

TABLE VII

INDUSTRIAL ARTS COURSES TAUGHT IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Courses	Rank of Course	Schools Offering Course	
		Number	Per Cent
General Woodworking	1	285	68.4
General Shop	2	234	56.0
Drafting	3	228	54.5
Woodworking II	4	83	19.8
General Metals	5	65	15.6
Auto Mechanics	6	54	12.9
Drafting II	7	39	9.3
Welding	8	33	7.9

TABLE VII (continued)

Courses	Rank of Course	Schools Offering Courses	
		Number	Per Cent
Crafts	9	32	7.7
Architectural Drawing	10	27	6.5
General Metals II	11	23	5.5
Machine Shop	12	19	4.6
Electricity	13	16	3.8
Woodworking III	14	13	3.1
Printing	15	11	2.6
Auto Mechanics II	16	10	2.4
Home Mechanics	17	9	2.2
Auto Information	18	7	1.7
General Shop II	19	6	1.4
Machine Drawing	19	6	1.4
Drafting III	21	5	1.2
Cabinetmaking	21	5	1.2
Electronics	23	4	1.0
Advanced Printing	23	4	1.0
Farm Shop	25	3	.7
Carpentry	25	3	.7
Body and Fender	27	2	.5
Welding II	27	2	.5
Engineering Drawing	27	2	.5
Shop Maintenance	27	2	.5
Electricity II	27	2	.5
Photography	32	1	.2
Leatherwork	32	1	.2
Advanced Machine Drawing	32	1	.2
Blueprint Reading	32	1	.2
Bench Metal	32	1	.2
Graphic Arts	32	1	.2
Advanced Cabinetmaking	32	1	.2
Radio	32	1	.2
Millwork	32	1	.2
Metal Fabrication	32	1	.2
Shop Math	32	1	.2
Industrial Processes	32	1	.2
Machine Shop II	32	1	.2
Sheet Metal	32	1	.2
Electricity III	32	1	.2
Auto Mechanics III	32	1	.2
General Shop III	32	1	.2

Source: Information furnished by teachers for 418 senior high schools.

The industrial arts program in junior high schools was composed predominantly of general woodworking, general shop, drafting, and general metals, as indicated in Table VIII. Only 3.8 per cent of all senior high schools offering industrial arts taught electricity while 18.8 per cent

of the junior high schools offered this course. The different industrial arts course offerings numbered thirteen in junior high schools as compared to forty-eight in senior high schools.

TABLE VIII

INDUSTRIAL ARTS COURSES TAUGHT IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Courses	Rank of Course	Schools Offering Course	
		Number	Per Cent
General Woodworking	1	47	55.3
General Shop	2	39	45.9
Drafting	3	27	31.8
General Metals	4	22	27.1
Electricity	5	16	18.8
Sheet Metal	6	10	11.8
Crafts	6	10	11.8
Printing	8	9	10.6
Special Education Shop	9	1	1.2
Advanced Metals	9	1	1.2
Advanced Woodworking	9	1	1.2
Graphic Drawing	9	1	1.2
Electronics	9	1	1.2

Source: Information furnished by teachers for 85 public junior high schools.

In addition to the four common industrial arts offerings–general woodworking, general shop, drafting, and general metals–a number of other kinds of industrial arts courses were provided by the secondary schools of the state. Some of these offerings were advanced courses, others represented specialized areas.

The number and per cent of senior high schools in each size group offering four of the common subject matter areas of industrial arts are reported in Table IX. General woodworking predominated in nearly all of the schools. General shop was found predominantly in the small high schools with enrollments of less than 200 students. This would indicate a greater usage of the general shop in the size of school for which it was intended.

The most popular industrial arts course offering in the junior high schools was woodworking as indicated in Table X. Next in order of popularity were general shop, drafting, and general metals.

General shop was offered in 234 of the public senior high schools of Kansas, as indicated in Table XI. Numerous activities were included in the various general shop courses. Woodworking ranked first as a general shop activity. Drafting and welding ranked two and three respectively. An apparent lack of uniformity of offerings within the general shop courses throughout the state is revealed by the thirty-three different activities reported as being taught.

Fifty-six per cent of the senior high schools offered general shop, almost the same percentage of junior high schools offered this course.

TABLE IX

PUBLIC SENIOR HIGH SCHOOLS OF KANSAS OFFERING FOUR MOST COMMON INDUSTRIAL ARTS COURSES, 1962-63

Size of School	Number of Reporting Schools	Number of Schools Offering								
		General Wood		General Shop		Drafting		General Metals		Other Courses
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number
— 24	14	8	57.1	6	42.8	2	14.2	1	7.1	1
25 — 49	74	52	70.3	35	47.3	25	33.8	7	9.5	19
50 — 74	71	45	63.4	42	59.2	30	42.3	4	5.6	23
75 — 99	48	24	50.0	37	77.1	22	45.8	2	4.2	17
100 — 149	50	32	64.0	32	64.0	32	64.0	8	16.0	42
150 — 199	41	29	70.7	24	58.5	26	63.4	9	22.0	34
200 — 299	36	28	77.8	17	47.2	28	77.8	4	11.1	45
300 — 499	28	21	75.0	18	64.3	20	71.4	4	14.3	42
500 — 999	26	22	84.5	16	61.5	19	73.1	10	38.5	84
1000 — 1999	25	19	76.0	7	28.0	20	80.0	12	48.0	104
2000 +	5	5	100.0	0	0.0	4	80.0	4	80.0	29
Total	418	285	68.4	234	56.0	228	54.5	65	15.6	440

Source: Information furnished by teachers for 418 senior high schools.

TABLE X

PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS OFFERING FOUR MOST COMMON INDUSTRIAL ARTS COURSES, 1962-63

Size of School	Number of Reporting Schools	Number of Schools Offering								
		General Wood		General Shop		Drafting		General Metals		Other Courses
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number
— 99	2			2	100.0					
100 — 299	13	7	53.8	5	38.5	1	7.6	1	7.6	
300 — 499	18	12	66.7	13	72.2	4	22.2	4	22.2	1
500 — 999	41	17	41.5	14	34.1	15*	36.6	13	31.7	34
1000 +	11	11**	100.0	5	45.4	7	63.6	4	36.4	15
Total	85	47	55.3	39	45.9	27	31.8	22	25.9	50

* Four of these were listed as pre-vocational courses.
** One of these was listed as pre-vocational.

Source: Information furnished by teachers for 85 junior high schools.

TABLE XI

ACTIVITIES INCLUDED IN GENERAL SHOP COURSES IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Activities	Rank	Reporting Schools	
		Number	Per Cent
Woodworking	1	213	91.0
Drafting	2	167	71.8
Welding	3	154	65.8
Planning	4	101	43.1
General Metals	5	97	41.5
Electricity	6	69	29.1
Bench Metal	7	67	28.6
Sheet Metal	8	64	27.4
Freehand Drawing	9	61	26.1
Auto Mechanics	10	58	24.8
Leatherwork	11	53	22.7
Machine Shop	12	37	15.8
Plastics	12	37	15.8
Architectural Drawing	14	35	15.0
Crafts	15	29	12.4
Home Mechanics	16	23	9.8
Foundry	17	18	7.7
Cement Work	18	11	4.7
Printing	19	10	4.3
Forging	20	7	3.0
Blueprint Reading	20	7	3.0
Radio (Electronics)	22	5	2.1
Small Gas Engines	22	5	2.1
Photography	24	4	1.7
Carpentry	25	3	1.3
Transportation	26	2	.9
Shop Maintenance	26	2	.9
Upholstering	26	2	.9
Ceramics	26	2	.9
Use of Carpenter's Square	30	1	.4
Tool Conditioning	30	1	.4
Shop Math	30	1	.4
Wood Lathe	30	1	.4

Source: Information furnished by teachers for 234 senior high schools offering general shop.

TABLE XII

ACTIVITIES INCLUDED IN GENERAL SHOP COURSES IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Activities	Rank	Reporting Schools	
		Number	Per Cent
Woodworking	1	44	93.6
Drafting	2	40	85.1
Planning	3	30	63.8
Sheet Metal	4	27	57.6
Electricity	5	25	53.2
Freehand Drawing	6	24	51.1
Bench Metal	6	24	51.1
Plastics	8	23	48.9
General Metals	9	21	44.7
Leatherwork	10	12	25.5
Welding	11	8	17.1
Home Mechanics	11	8	17.1
Small Gas Engines	13	5	10.6
Machine Shop	14	4	8.5
Crafts	14	4	8.5
Art Metal	14	4	8.5
Foundry	17	3	6.4
Architectural Drawing	18	2	4.3
Radio (Electronics)	18	2	4.3
Printing	18	2	4.3
Ceramics	18	2	4.3
Cement Work	18	2	4.3
Transportation	23	1	2.1
Machine Operation	23	1	2.1
Upholstering	23	1	2.1

Source: Information furnished by teachers for 47 junior high schools offering general shop.

The common activities of the general shop programs in junior high schools were woodworking, drafting, planning, sheet metal, electricity, freehand drawing, and bench metal, as reported in Table XII. Twenty-five different activities were found in the different general shop courses in junior high schools.

Forty-three senior high schools of Kansas indicated that a rotating unit shop program rather than a general shop, was used for introductory purposes. The unit shops through which students were rotated are indicated in Table XIII. The diversity of unit shops named leads the

TABLE XIII

UNIT SHOPS USED FOR INTRODUCTORY PURPOSES IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Unit Shop	Rank of Unit Shop	Reporting Schools	
		Number	Per Cent
Woodworking	1	38	88.4
Drafting	2	35	81.4
General Metals	3	28	65.1
Welding	4	18	41.9
Electricity	5	17	39.5
Auto Mechanics	6	9	20.9
Graphic Arts	6	9	20.9
Leatherwork	8	8	18.6
Sheet Metal	9	4	9.4
Plastics	10	3	7.0
Machine Shop	10	3	7.0
Bench Metal	10	3	7.0
Metal Lathe	13	2	4.7
Blueprint Reading	13	2	4.7
Crafts	13	2	4.7
Foundry	16	1	2.3
Forging	16	1	2.3
Power Mechanics	16	1	2.3
Photography	16	1	2.3
Freehand Drawing	16	1	2.3
Home Mechanics	16	1	2.3
Wrought Metal	16	1	2.3
Hot Metal	16	1	2.3
Cold Metal	16	1	2.3

Source: Information furnished by teachers for 43 senior high schools.

writer to question whether these were true unit shops or were, in fact general shops.

The approximate number of weeks spent in each introductory unit shop is reported in Table XIV. The most frequent interval of rotation was nine weeks which permitted instruction in four different unit shops during the school year.

Twelve junior high schools rotated students through unit shops for introductory purposes, as indicated in Table XV. Woodworking, drafting, metalworking, and electricity were common offerings for such introductory unit shops. Fourteen different unit shops were reported as being offered at this level.

TABLE XIV

WEEKS SPENT IN EACH INTRODUCTORY UNIT SHOP IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Unit Shops	Approximate Number of Weeks						
	6	7	8	9	10	11	12
Woodworking	11	2	2	13			10
General Metals	8	1		12		1	6
Electricity	6	4		4			3
Drafting	5		1	15			14
Auto Mechanics	4		1	3			1
Welding	9		1	1			7
Graphic Arts	1		2	6			
Leatherwork	2			4			2
Plastics	2			1			1
Sheet Metal	3			1			
Bench Metal	2			1			
Machine Shop	2						1
Metal Lathe	2						
Blueprint Reading				1			1
Crafts	1			1			
Foundry	1						
Forging	1						
Power Mechanics	1			1			
Photography				1			
Freehand Drawing				1			
Home Mechanics	1						
Wrought Metal	1						
Hot Metal	1						
Cold Metal	1						
Total	65	7	7	66	0	1	46

Source: Information furnished by teachers for 43 senior high schools.

The approximate number of weeks spent in each introductory unit shop in junior high schools is shown in Table XVI. The most frequent interval of rotation was nine week periods which would permit instruction in four different unit shops during the school year. Other rotation cycles commonly used in the junior high school were six week periods and twelve week periods during which students were rotated through three to six unit shops yearly.

As indicated in Table XVII, 23,226 students were found to be taking courses in industrial arts. Five thousand nine hundred and two (5,902) were enrolled in woodworking, 4,209 in general shop, and 4,183 in

drafting. In schools with enrollments of less than twenty-four, more students were taking general shop than all the other courses combined. General shop appeared to be a frequent offering in schools with limited

TABLE XV

UNIT SHOPS USED FOR INTRODUCTORY PURPOSES IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Unit Shop	Rank of Unit Shop	Reporting Schools	
		Number	Per Cent
Woodworking	1	12	92.3
Drafting	1	12	92.3
General Metals	3	10	76.9
Electricity	4	9	69.2
Plastics	5	4	30.8
Graphic Arts	6	3	23.1
Sheet Metal	6	3	23.1
Leatherwork	8	2	15.4
Auto Mechanics	9	1	7.6
Crafts	9	1	7.6
Electronics	9	1	7.6
Machine Operations	9	1	7.6
Machine Shop	9	1	7.6
Freehand Drawing	9	1	7.6

Source: Information furnished by teachers for 13 junior high schools.

TABLE XVI

WEEKS SPENT IN EACH INTRODUCTORY UNIT SHOP IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Unit Shops	Approximate Number of Weeks						
	6	7	8	9	10	11	12
Woodworking	3	1		5			3
Drafting	3			3		1	5
General Metals	4			3			3
Electricity	4			3			2
Plastics	3			1			
Graphic Arts	1			1			1
Sheet Metal	1			1			1
Leatherwork	1			1			
Auto Mechanics				1			
Crafts				1			
Electronics	1						
Freehand Drawing				1			
Machine Operations				1			
Machine Shop				1			
Total	21	1	0	23	0	1	15

Source: Information furnished by teachers for 13 junior high schools.

TABLE XVII

ENROLLMENTS IN THE FOUR MOST COMMON INDUSTRIAL ARTS COURSES IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Number of Students Enrolled					
	General Wood	General Shop	Drafting	General Metals	Others	Total
— 24	44	57	2	7	3	113
25 — 49	435	364	162	35	160	1156
50 — 74	503	664	241	30	105	1543
75 — 99	484	489	271	32	158	1434
100 — 149	508	411	313	58	353	1634
150 — 199	570	690	305	81	286	1932
200 — 299	662	326	400	61	555	2004
300 — 499	794	376	576	88	779	2613
500 — 999	661	555	523	277	1411	3427
1000 — 1999	1062	277	1212	640	2824	6015
2000 +	179		178	155	834	1346
Total	5902	4209	4183	1464	7468	23,226

Source: Information furnished by teachers for 376 senior high schools.

facilities and students. General metals, as a major subject matter area of industrial arts, had not kept pace with enrollments in the other areas.

In junior high schools, 13,740 students were reported as enrolled in some type of industrial arts course during the second semester 1962-63, as shown in Table XVIII. General woodworking again headed the list as the most popular of all industrial arts offerings.

The grade placements of the various industrial arts courses in the schools of Kansas are indicated in Table XIX. Woodworking predominated at every grade level. All courses in woodworking enrolled

TABLE XVIII

ENROLLMENTS IN THE FOUR MOST COMMON INDUSTRIAL ARTS COURSES IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Number of Students Enrolled					
	General Wood	General Shop	Drafting	General Metals	Others	Total
— 99		85				85
100 — 299	413	243	47		67	770
300 — 499	715	1073	86	154	25	2053
500 — 999	2625	1809	745	1127	1711	8017
1000 +	834	614	437	161	769	2815
Total	4587	3824	1315	1442	2572	13,740

Source: Information furnished by teachers for 83 junior high schools.

7,573 students; all allied drafting courses had a total enrollment of 5,353. Metal areas enrolled 2,517. This further reveals the imbalance toward woodworking. Basic courses such as general woodworking, general shop, drafting, and general metals generally enrolled more students in freshman and sophomore years of high school, whereas the advanced courses and specialized courses enrolled mainly upper classmen.

As revealed by Table XX, almost five times as many students were enrolled in general woodworking as were enrolled in electricity in junior high schools. General shop, electricity, and sheet metal were given more frequently on the eighth grade level than the seventh or ninth grade

TABLE XIX

GRADE PLACEMENTS OF INDUSTRIAL ARTS OFFERINGS IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Course	Number of Students Enrolled				
	Freshman	Sophomore	Junior	Senior	Total
General Woodworking	1754	2155	842	648	5902*
General Shop	1737	874	602	575	4209**
Drafting	981	1646	796	645	4183***
General Metals	54	651	474	285	1464
Woodworking II	78	464	515	357	1414
Auto Mechanics		209	404	558	1171
Crafts	59	161	113	144	561‡
Drafting II		132	189	214	535
Printing	21	183	132	149	507‡‡
General Metals II	5	92	164	167	428
Electricity	6	80	55	58	345‡‡‡
Auto Information		83	145	69	297
Welding		37	119	106	262
Machine Shop	1	48	113	97	259
Architectural Drawing		26	81	126	233
Auto Mechanics II		14	79	137	230
Machine Drawing		33	126	65	224
Home Mechanics	4	21	48	60	133
Engineering Drawing		58	45	25	128
Cabinetmaking	51	13	19	27	110
Woodworking III		4	46	22	72
Radio (Electronics)		23	16	27	66
General Shop II		16	29	19	64

* Total students enrolled in woodworking included 503 students in grades seven and eight.
** Total students enrolled in general shop included 421 students in grades seven and eight.
*** Total students enrolled in drafting included 115 students in grades seven and eight.
‡ Total students enrolled in crafts included 84 students in grades seven and eight.
‡‡ Total students enrolled in printing included 22 students in grade eight.
‡‡‡ Total students enrolled in electricity included 146 students in grade eight.

TABLE XIX (continued)

Course	Number of Students Enrolled				
	Freshman	Sophomore	Junior	Senior	Total
Body and Fender			20	41	61
Farm Shop		20	15	14	49
Electricity		3	28	17	48
Advanced Printing			8	33	41
Drafting III			16	21	37
Advanced Cabinetmaking	1	10	9	15	35
Carpentry		2	12	14	28
Machine Shop II				18	18
Auto Mechanics III				12	12
Millwork			8	4	12
Electronics			5	6	11
Shop Maintenance			3	7	10
Industrial Processes				10	10
Sheet Metal			6	4	10
Leatherwork					10*
Advanced Machine Drawing			5	4	9
Bench Metal		1	4	4	9
General Shop III				9	9
Welding II				6	6
Blueprint Reading		2	2		4
Total	4752	7061	5293	4817	23,226

* Total students enrolled in leatherwork included 10 students in grades seven and eight.

Source: Information furnished by teachers for 376 senior high schools.

levels. Enrollments in industrial arts in the junior high were greatest at the eighth grade level.

With minor exceptions, average class sizes in the senior high school increased regularly with the size of school, as indicated in Table XXI.

Enrollments in industrial arts by class sections varied widely for all areas. The greatest variation appeared in drafting where the range in class size varied from one to thirty-four students. Small class sections appeared, as would be expected, mainly in the smaller senior high schools with enrollments of less than 200 students.

The numbers of sections of industrial arts courses offered in junior high schools increased as the number of schools in each size category increased, as indicated in Table XXII. Junior high schools had larger classes than senior high schools.

TABLE XX

GRADE PLACEMENTS OF INDUSTRIAL ARTS OFFERINGS IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Course	Number of Students Enrolled			
	7th Grade	8th Grade	9th Grade	Total
General Woodworking	2208	955	1379	4587*
General Shop	902	2294	608	3824**
General Metals	334	808	300	1442***
Drafting	301	517	437	1315
Electricity		895	56	951
Sheet Metal	89	616		705
Crafts	159	251	107	517
Printing	51	126	57	234
Advanced Woodworking			60	60
Electronics		26	18	44
Advanced Metals			25	25
Graphic Drawing		23		23
Special Education	4	6	3	13
Total	4048	6517	3050	13,740

* Total students enrolled in general woodworking included 45 students in grade ten.

** Total students enrolled in general shop included 20 students in grade ten.

*** Total students enrolled in general metals included 60 students in grade ten.

Source: Information furnished by teachers for 83 junior high schools.

TABLE XXI

SECTIONS AND CLASS SIZES OF THE MOST COMMON INDUSTRIAL ARTS COURSES OFFERED IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	General Wood			General Shop			Drafting			General Metals		
	Sections	Average Size	Range	Sections	Average Size	Range	Sections	Average Size	Range	Sections	Average Size	Range
— 24	8	6	6— 8	10	5	1—10	1	2	— 2	1	7	— 7
25 — 49	71	6	4— 8	50	7	2—16	26	6	1—11	7	5	3— 9
50 — 74	63	8	1—17	79	9	1—25	27	9	3—15	4	7	3—16
75 — 99	46	11	2—20	52	9	2—18	30	9	2—19	4	8	5—11
100 — 149	49	10	1—20	46	9	2—20	33	10	2—25	8	7	5—12
150 — 199	47	12	4—22	55	13	3—24	21	15	6—24	8	10	3—20
200 — 299	50	13	6—23	20	16	4—24	33	12	4—21	5	12	4—15
300 — 499	46	18	10—26	25	15	5—28	30	19	4—33	5	18	14—21
500 — 999	41	16	5—27	33	17	8—25	29	18	10—26	16	16	2—31
1000 — 1999	54	20	6—31	14	20	4—28	49	25	7—34	32	20	13—30
2000 +	8	22	17—26				8	23	20—28	8	19	15—26
Total	483			383			287			98		

Source: Information furnished by teachers for 376 senior high schools.

TABLE XXII

SECTIONS AND CLASS SIZES OF THE MOST COMMON INDUSTRIAL ARTS COURSES OFFERED IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	General Wood			General Shop			General Metals			Drafting		
	Sections	Average Size	Range	Sections	Average Size	Range	Sections	Average Size	Range	Sections	Average Size	Range
– 99				6	14	13–16						
100 – 299	23	18	13–25	20	12	2–24				2	24	23–24
300 – 499	30	24	10–31	53	20	7–46	9	17	14–23	5	17	6–23
500 – 999	119	22	7–37	76	24	16–35	52	22	10–36	34	22	12–30
1000 +	37	23	12–33	26	24	14–29	8	20	14–34	21	21	9–29
Total	209			181			69			62		

Source: Information furnished by teachers for 83 junior high schools.

TEXTBOOKS AND WORKBOOKS USED

Important functions of textbooks and workbooks are to expedite learning and teaching and to provide a common frame of reference for students, teachers, administrative and supervisory personnel.

A compilation of the commonly used textbooks and workbooks, together with their frequency of use, was made for each subject matter area in the junior high and the senior high school. The textbooks and workbooks used in senior high industrial arts courses are reported in Table XXIII. Twenty-six different texts were used for general woodworking during the second semester 1962-63. The most frequently used text was *Units for Hand Woodworking* by Douglass and Roberts which was used as a required textbook by ninety-three teachers. Workbooks were not used frequently in general woodworking.

The textbooks used for Woodworking II, although not as varied, appeared to be used less frequently than those for general woodworking.

The only book reported as being used in Woodworking III was *Advanced Woodworking and Furniture Making* by Feirer. Two books were listed as used in Cabinetmaking.

A wide variety of books in fields other than general shop as well as general shop textbooks were used in teaching this course. The most commonly used textbooks were *General Shop Woodworking* by Fryklund and LaBerge and *General Shop* by Groneman and Feirer. The use of different textbooks reflected the various areas of instruction taught in general shop courses over the state.

Eighteen textbooks were reported as commonly used in drafting courses in senior high schools of Kansas. *Mechanical Drawing* by French and Svensen was the most popular textbook in drawing.

For Drafting II, *Mechanical Drawing* by French and Svensen was also reported as the most commonly used textbook.

A limited number of textbooks were reported for Drafting III, Machine Drawing, and Engineering Drawing – courses infrequently offered in senior high schools of Kansas.

Architectural Drawing, which was offered in twenty-seven schools, had four commonly used textbooks. The most common textbook was *Architectural Drafting* by Hornung.

Apparently textbooks were infrequently required for general metals. Twenty-one teachers used *General Metals* by Feirer for a text. Eighteen teachers required *Metalwork Technology and Practice* by Ludwig for a text. In General Metals II, Ludwig's book was the most common text. *How to Run a Lathe* by South Bend Lathe Works was used as a text in both General Metals I and II.

Five texts and manuals were used for welding courses. The most commonly used text was the *Welding and Cutting Manual* by Linde Air Products Company. The most popular Machine Shop textbook was *Machine Shop Technology* by Felkner.

The six different texts used in teaching Auto Mechanics in senior high schools are listed in Table XXIII. Three different textbooks were used in electricity.

In Printing I and II, *The Practice of Printing* by Polk was used most frequently. *General Leatherwork* and *General Plastics* by Cherry were the two commonly used textbooks for crafts.

TABLE XXIII

COMMON TEXTBOOKS REQUIRED FOR INDUSTRIAL ARTS COURSES IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Author and Textbook	Teachers Requiring Textbook — Number
General Woodworking	
Douglass, J. H., and R. H. Roberts. **Units for Hand Woodworking**	93
Feirer, John L. **Industrial Arts Woodworking**	52*
Groneman, Chris H. **General Woodworking**	20
Feirer, John L. **Advanced Woodworking and Furniture Making**	13**
Hjorth, Herman. **Principles of Woodworking**	13
Smith, Robert E. **Machine Woodworking**	13
Douglass, J. H. **Woodworking with Machines**	13
Fryklund, V. C., and A. J. LaBerge. **Bench Woodworking**	9
Hjorth, Herman. **Machine Woodworking**	9
Feirer, John L. **Industrial Arts Bench Woodworking**	7
Fryklund, V. C., and A. J. LaBerge. **General Shop Woodworking**	5
Hjorth, Herman. **Operation of Common Woodworking Machines**	4
Vernon, Ralph J. **Modern Woodwork**	4
Tustison, F. E., and A. G. Brown. **Instructional Units in Hand Woodworking**	3
Hjorth, Herman. **Basic Woodworking Processes**	2
* Teachers required the workbook to accompany 11 textbooks.	
** Teachers required the workbook to accompany 3 textbooks.	
Woodworking II	
Feirer, John L. **Advanced Woodworking and Furniture Making**	12*
Hjorth, Herman, and William Holtrop. **Operation of Modern Woodworking Machines**	12
Smith, Robert E. **Machine Woodworking**	8
Feirer, John L. **Industrial Arts Woodworking**	6
Douglass, J. H. **Woodworking with Machines**	4
Groneman, Chris H. **General Woodworking**	3
* Teachers required the workbook to accompany 5 textbooks.	
Woodworking III	
Feirer, John L. **Advanced Woodworking and Furniture Making**	6*
* Teachers required the workbook to accompany 3 textbooks.	
Cabinetmaking	
Douglass, J. H. **Woodworking with Machines**	2
Feirer, John L. **Advanced Woodworking and Furniture Making**	1
Carpentry	
Mix, Floyd, and Ernest H. Cirou. **Practical Carpentry**	2
General Shop	
Fryklund, V. C., and A. J. LaBerge. **General Shop Woodworking**	20
Groneman, Chris H., and John L. Feirer. **General Shop**	18
Ludwig, O. A. **Metalwork Technology and Practice**	12

TABLE XXIII (continued)

Author and Textbook	Teachers Requiring Textbook Number
Feirer, John L. **Industrial Arts Woodworking**	10
Cherry, Raymond. **General Plastics**	10
Jennings, Royalston F. **Gas and A. C. Arc Welding and Cutting**	10
Kugler, Harold L. **Arc Welding Lessons for Schools and Farm Shops**	9
Linde Air Products Company. **Welding and Cutting Manual**	7
Douglass, J. H., and R. H. Roberts. **Units for Hand Woodworking**	7
Berg, Edward. **Mechanical Drawing, I and II**	7
Hale, E. M., Harry McGinnis, and C. L. Hill. **Introduction to Applied Drawing**	7
Kuns, Roy F. **Automotive Essentials**	6
Feirer, John L. **Advanced Woodworking and Furniture Making**	6
Smith, Robert E. **Units in Sheet Metal Work**	6
Giachino, J. W. **Oxy-Acetylene Welding and Cutting**	6
Groneman, Chris H. **Exploring the Industries**	5
Feirer, John L. **Industrial Arts Bench Woodworking**	5
Smith, Robert E. **Units in Forging and Welding**	5
Smith, Robert E. **Units in Bench Metal Work**	4
Feirer, John L. **General Metals**	4
Jones, M. M. **Shopwork on the Farm**	4
Willoughby, G. A., and D. G. Chamberlain. **General Shop Handbook**	3
Dragoo, A. W., and Howard O. Reed. **General Shop Metalwork**	3
Douglass, J. H. **Woodworking with Machines**	3
Fryklund, V. C., and A. J. LaBerge. **Bench Woodworking**	3
Madden, Ira C. **Woodworking for Industrial Arts**	3
French, T. E., and C. L. Svensen. **Mechanical Drawing**	3
Jones, E. W. **General Electricity**	3
Steinberg, W. B., and W. B. Ford. **Electricity and Electronics-Basic**	3
Kenny, John B. **The Complete Book of Pottery Making**	2
Roehl, Louis M. **Farmer's Shop Book**	2
Hjorth, Herman. **Operation of Common Woodworking Machines**	2
Smith, Robert E. **Machine Woodworking**	2
Drafting	
French, T. E., and C. L. Svensen. **Mechanical Drawing**	98
Berg, Edward. **Mechanical Drawing, I and II**	33
Berg, Edward, and E. F. Kronquist. **Mechanical Drawing Problems**	16
Spencer, Henry C. **Basic Technical Drawing**	16
Scrogin, E., and William Bettencourt. **Applied Drawing and Design**	14
Fryklund, V. C., and F. R. Kepler. **General Drafting**	11
Shaeffer, Glenn A. **Basic Mechanical Drawing**	8
Feirer, John L. **Drawing and Planning for Industrial Arts**	7
Roberts, William E. **Beginning Mechanical Drawing**	6
Giachino, J. W., and Henry J. Beukema. **American Technical Society's Drafting**	6
French, T. E. **Engineering Drawing**	5
Ermeling, W. W., and others. **Mechanical Drawing**	5
Luzadder, Warren. **Fundamentals of Engineering Drawing**	4
Giesecke, F. E., A. Mitchell, and H. C. Spencer. **Technical Drawing**	4
Coover, Schriver L. **Drawing, Sketching, and Blueprint Reading**	3
Hornung, William J. **Architectural Drawing**	3
French, T. E., and C. J. Vierck. **A Manual of Engineering Drawing for Students and Draftsmen**	2
Hale, E. M., Harry McGinnis, and C. L. Hill. **Introduction to Applied Drawing**	2

TABLE XXIII (continued)

Author and Textbook	Teachers Requiring Textbook Number
Drafting II	
French, T. E., and C. L. Svensen. **Mechanical Drawing**	10
Spencer, Henry C. **Basic Technical Drawing**	7
Berg, Edward. **Mechanical Drawing, I and II**	4
Luzadder, Warren. **Fundamentals of Engineering Drawing**	4
Ermeling, W. W., and others. **Mechanical Drawing**	2
Drafting III	
French, T. E., and C. L. Svensen. **Mechanical Drawing**	2
French, T. E. **Engineering Drawing**	1
Scrogin, E., and William Bettencourt. **Applied Drawing and Design**	1
Machine Drawing	
Giesecke, F. E., A. Mitchell, and H. C. Spencer. **Technical Drawing**	2
Fryklund, V. C., and F. R. Kepler. **General Drafting**	1
Engineering Drawing	
French, T. E., and C. L. Svensen. **Mechanical Drawing**	1
French, T. E. **Engineering Drawing**	1
Architectural Drawing	
Hornung, William J. **Architectural Drafting**	14
Ray, Edgar. **Graphic Architectural Drafting**	6
Waffle, Harvey W. **Architectural Drawing**	4
Townsend, Gilbert. **How to Plan a House**	2
General Metals	
Feirer, John L. **General Metals**	21*
Ludwig, O. A. **Metalwork Technology and Practice**	18**
South Bend Lathe Works. **How to Run a Lathe**	4
Bruce, Leroy. **Sheet Metal Shop Practice**	2
* Teachers required the workbook to accompany 1 textbook.	
** Teachers required the workbook to accompany 4 textbooks.	
General Metals II	
Ludwig, O. A. **Metalwork Technology and Practice**	7
South Bend Lathe Works. **How to Run a Lathe**	3
Linde Air Products Company. **Welding and Cutting Manual**	2
Welding	
Linde Air Products Company. **Welding and Cutting Manual**	5
Kugler, Harold L. **Arc Welding Lessons for Schools and Farm Shop**	4
Lincoln. **Arc Welding Lessons**	4
Potter, Morgan H. **Electric Welding**	2
Machine Shop	
Felkner, Charles A. **Machine Shop Technology**	3
Giachino, J. W. **Oxy-Acetylene Welding and Cutting**	1
Lincoln, **Arc Welding Lessons**	1
Ludwig, O. A. **Metalwork Technology and Practice**	1
Smith, Robert E. **Units in Forging and Welding**	1
South Bend Lathe Works. **How to Run a Lathe**	1

TABLE XXIII (continued)

Author and Textbook	Teachers Requiring Textbook Number
Auto Mechanics	
Crouse, William H. **Automotive Mechanics**	19
Kuns, Ray F. **Automotive Essentials**	7
Glenn, Harold T. **Exploring Auto Mechanics**	4
Beeler, Samuel C. **Understanding Your Car**	4
Venk, Ernest A., and Walter E. Billiet. **Automotive Fundamentals**	3
Auto Information	
Crouse, William H. **Automotive Mechanics**	8
Electricity	
Steinberg, William B., and Walter B. Ford. **Electricity and Electronics-Basic**	6
Marcus, Abraham. **Basic Electricity**	2
Zbar, P. B., and S. Schildkraut. **Basic Electronics**	2
Printing I	
Polk, Ralph W. **The Practice of Printing**	4
Cleeton, G. U., and C. W. Pitkins. **General Printing**	3
Printing II	
Polk, Ralph W. **The Practice of Printing**	3
Polk, Ralph W. **Elementary Platen Presswork**	2
Crafts	
Cherry, Raymond. **General Leatherwork**	13
Cherry, Raymond. **General Plastics**	9

Source: Information furnished by teachers for 376 senior high schools.

Units for Hand Woodworking by Douglass and Roberts was the most frequently used textbook among junior high industrial arts teachers, as indicated in Table XXIV. The second choice of junior high teachers for a woodworking text was *Industrial Arts Woodworking* by Feirer.

In junior high general shop courses, a general shop textbook was used more frequently than other texts. The various areas included in the general shop courses as determined by the texts used were drafting, woodworking, plastics, leatherwork, metalworking, and electricity. This variety of specialized texts would indicate a need for a good comprehensive general shop text.

Eight different texts were commonly used by junior high teachers in drafting courses.

Modern Metalwork by Glazener was the most often required text for junior high metalworking classes.

Junior high teachers usually required *Electricity and Electronics-Basic* by Steinberg and Ford for a text in electricity.

Two different textbooks for Printing were used by junior high teachers.

TABLE XXIV

COMMON TEXTBOOKS REQUIRED FOR INDUSTRIAL ARTS COURSES IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Author and Textbook	Teachers Requiring Textbook Number
General Woodworking	
Douglass, J. H., and R. H. Roberts. **Units for Hand Woodworking**	40
Feirer, John L. **Industrial Arts Woodworking**	22
Feirer, John L. **Industrial Arts Bench Woodworking**	8
Vernon, Ralph J. **Modern Woodwork**	8
Groneman, Chris H. **General Woodworking**	6
General Shop	
Groneman, Chris H., and John L. Feirer. **General Shop**	10
Groneman, Chris H. **Exploring the Industries**	7
Berg, Edward. **Mechanical Drawing, I and II**	7
Douglass, J. H., and R. H. Roberts. **Units for Hand Woodworking**	5
Cherry, Raymond. **General Plastics**	4
Cherry, Raymond. **General Leatherwork**	3
Cramlet, Ross C. **Woodwork Visualized**	3
Vernon, Ralph J. **Modern Woodwork**	3
Fryklund, V. C., and A. J. LaBerge. **General Shop Woodworking**	2
Cope, D. W. **Cope's Plastic Book**	2
Nichols, Talmage, and Harold Stiles. **Woodworking Workbook**	2
Feirer, John L. **Drawing and Planning for Industrial Arts**	2
Glazener, Everett. **Modern Metalwork**	2
Jones, E. W. **Fundamentals of Applied Electricity**	2
Steinberg, William B., and Walter B. Ford. **Electricity and Electronics-Basic**	2
Drafting	
Schaeffer, Glenn A. **Basic Mechanical Drawing**	9
French, T. E., and C. L. Svensen. **Mechanical Drawing**	6
Fryklund, V. C., and F. R. Kepler. **General Drafting**	3
Giachino, J. W., and Henry J. Beukema. **American Technical Society's Drafting**	3
Roberts, William E. **Beginning Mechanical Drawing**	2
Berg, Edward. **Mechanical Drawing, I and II**	2
Feirer, John L. **Drawing and Planning for Industrial Arts**	2
Spencer, Henry C. **Basic Technical Drawing**	2
General Metals	
Glazener, Everett. **Modern Metalwork**	9
Fraser, Roland R., and Earle L. Bedell. **General Metal**	5
Feirer, John L. **General Metals**	5
Groneman, Chris H. **Exploring the Industries**	5
Ludwig, O. A. **Metalwork Technology and Practice**	3
Sheet Metalwork	
Giachino, J. W. **Basic Sheet-Metal Practice**	12
Electricity	
Steinberg, William B., and Walter B. Ford. **Electricity and Electronics-Basic**	13
Jones, E. W. **General Electricity**	1

TABLE XXIV (continued)

Author and Textbook	Teachers Requiring Textbook
	Number
Printing	
Cleeton, G. U., and C. W. Pitkins. **General Printing**	8
Karch, R. R. **Printing and the Allied Trades**	1

Source: Information furnished by teachers for 83 junior high schools.

A review of Tables XXIII and XXIV reveals several textbooks that were used for more than one course as well as in both junior and senior high school divisions.

Fifty-two teachers in schools with an enrollment of over 1,000 students indicated that they used course of studies prepared by their school system.

RELATED READING MATERIALS AVAILABLE

An industrial arts library is essential to satisfy the need of students for more and wider information about processes, materials, and occupations. A shop library normally would contain shop manuals, project or plan books, reference books, and occupational information books.

Wilber suggests that a minimum of ten books be available for use of students for each area represented in the general shop course, while a unit shop should have a minimum of thirty-five books in the area covered by the activity.[18] The approximate number of books available for student use in shop libraries in senior high schools is reported in Table XXV. The range of books in shop libraries was from none to 350, and the average was thirty-five. Two hundred ninety-six senior high teachers reported having less than thirty books in their shop libraries.

Almost 88 per cent of the junior high teachers reported having less than seventy-five books in the shop libraries, as indicated in Table XXVI. The size of shop libraries which appeared most frequently was a library containing fifty to seventy-four books. The average size was thirty-seven.

DIVERSITY OF SCHOOL DUTIES PERFORMED BY TEACHERS

For purposes of this study, secondary school teachers of industrial arts were designated as full-time teachers if they taught four or more industrial arts classes and part-time teachers if they taught three or fewer industrial arts classes.

As might be expected, fewer full-time industrial arts teachers were employed in the smaller schools than in the larger schools, as reported in Table XXVII. Fifty-eight per cent of the senior high teachers indicated that they were teaching four or more industrial arts classes daily.

In the junior high schools, almost 90 per cent of the industrial arts teachers were full-time, as revealed in Table XXVIII.

18. Gordon O. Wilber, *Industrial Arts in General Education* (Scranton, Pennsylvania: International Textbook Company, 1948), p. 189.

TABLE XXV

APPROXIMATE NUMBER OF RELATED BOOKS AVAILABLE IN INDUSTRIAL ARTS SHOPS IN PUBLIC SENIOR HIGH SCHOOL OF KANSAS IN 1962-63

Size of School	Number of Books								
	– 9	10– 19	20– 29	30– 49	50– 74	75– 99	100– 149	150+	Total
– 24	2	4	7						13
25 – 49	7	22	17	14	6	1	1		68
50 – 74	5	22	19	7	4		2		59
75 – 99	5	11	13	9	4	1			43
100 – 149	5	17	12	7	8	1	3		53
150 – 199	3	9	15	9	5	2	1		44
200 – 299	7	5		9	6	2	1	2	32
300 – 499	5	8	10	4	12	1	1	2	43
500 – 999	2	7	8	12	9	4	10	2	54
1000 – 1999	2	15	23	10	4	5	6	4	69
2000 +	1	2	6	2	2	3	1	2	19
Total	44	122	130	83	60	20	26	12	497

Source: Information furnished by 497 senior high school teachers.

Fields of teaching other than industrial arts are given in Table XXIX for senior high teachers. They taught 163 physical education classes and 145 classes of driver education.

Since 89.5 per cent of the junior high teachers were full-time teachers of industrial arts, it is not surprising that the range of courses taught other than industrial arts was not as large as that of senior high teachers, as shown in Table XXX. Most common of these courses was in the field of mathematics.

TABLE XXVI

APPROXIMATE NUMBER OF RELATED BOOKS AVAILABLE IN INDUSTRIAL ARTS SHOPS IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Number of Books								
	– 9	10– 19	20– 29	30– 49	50– 74	75– 99	100– 149	150+	Total
– 99			1		1				2
100 – 299	1	3	4	1	4	1			14
300 – 499	3	7	3	8	7		1		29
500 – 999	9	18	16	15	11		5		74
1000 +		2	4	3	9	3	5	2	28
Total	13	30	28	27	32	4	11	2	147

Source: Information furnished by 147 junior high school teachers.

TABLE XXVII

FULL-TIME AND PART-TIME INDUSTRIAL ARTS TEACHERS IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Full-time Teachers		Part-time Teachers	
	Number	Per Cent	Number	Per Cent
— 24			14	100.0
25 — 49	2	2.7	72	97.3
50 — 74	25	34.2	48	65.8
75 — 99	25	52.1	23	47.9
100 — 149	27	50.9	26	49.1
150 — 199	37	78.7	10	21.3
200 — 299	28	63.6	16	36.4
300 — 499	34	75.6	11	24.4
500 — 999	54	96.4	2	3.6
1000 — 1999	74	91.7	7	8.3
2000 +	18	85.7	3	14.3
Total	324	58.3	232	41.7

Source: Information furnished by 556 senior high school teachers.

School duties other than teaching are indicated in Table XXXI for senior high teachers. Four hundred nineteen, or 75.4 per cent, of the teachers reported working an average of three and one-half hours per week in maintaining their shops and equipment. An activity that took up a large amount of weekly time for 214 industrial arts teachers was athletic coaching.

TABLE XXVIII

FULL-TIME AND PART-TIME INDUSTRIAL ARTS TEACHERS IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Full-time Teachers		Part-time Teachers	
	Number	Per Cent	Number	Per Cent
— 99			2	100.0
100 — 299	10	83.3	2	16.7
300 — 499	23	88.5	3	11.5
500 — 999	75	90.4	8	9.6
1000 +	29	96.7	1	3.3
Total	137	89.5	16	10.5

Source: Information furnished by 153 junior high school teachers.

TABLE XXIX

NON-INDUSTRIAL ARTS COURSES TAUGHT BY INDUSTRIAL ARTS TEACHERS IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School		Non-Industrial Arts Courses														
		General Mathematics	Algebra	Geometry	Physical Education	American History	Government	Music	Chemistry	Physics	General Science	Biology	English	Driver Education	Health	Others
—	24	2	2	2	4	4	1				3	2	1	1	1	6
25 —	49	4	13	6	43	13	2	5	3	2	10	9	3	21	5	8
50 —	74	5	12	3	45	8	3		2	2	3	8	2	28	8	8
75 —	99	1			28	1		1		1	3	2		25		3
100 —	149	2	9	3	17	1	4		1		2	2	1	21	1	2
150 —	199	2	1	2	12	1		3			1			14		7
200 —	299		1		13					1	3			11		8
300 —	499	7	3		5		1				1			7	1	8
500 —	999		1		1									4		2
1000 —	1999	1												8		5
2000 +		5	1											5		2
Total		29	43	16	168	28	11	9	6	6	26	23	7	145	16	59

Source: Information furnished by teachers for 418 senior high schools.

TABLE XXX

NON-INDUSTRIAL ARTS COURSES TAUGHT BY INDUSTRIAL ARTS TEACHERS IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Non-Industrial Arts Courses										
	Science-7	Science-8	Mathematics-7	Mathematics-8	General Mathematics	Physical Education	Civics	Social Studies-8	Social Studies-9	Driver Education	Others
– 99							1				
100 – 299	3	4	2	2		1					
300 – 499				1	1			4		3	1
500 – 999	6		6	6	1				4		2
1000 +	3		2							3	
Total	12	4	10	9	2	1	1	4	4	6	3

Source: Information furnished by teachers for 85 junior high schools.

The non-teaching duties of junior high school teachers are revealed in Table XXXII. One hundred thirty-six of the 156 junior high teachers spent an average of two and seven-tenths hours in the maintenance of shop equipment. The duty that required the greatest amount of average time was athletic coaching.

TABLE XXXI

NON-TEACHING DUTIES OF INDUSTRIAL ARTS TEACHERS IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

School Duties	Teachers		Hours Per Week	
	Number	Per-Cent	Average	Range
Maintenance of shop equipment	419	75.4	3.5	½–20
Study hall supervision	218	39.2	4.6	½–17
Maintenance of other school equipment	215	38.7	2.0	¼–10
Athletic coaching	214	38.5	11.2	2–27
Homeroom sponsorship	126	22.7	3.4	½–18
Club sponsorship	103	18.5	1.4	½– 6
Evening school	29	5.2	4.6	2– 9
Principal's duties	7	1.3	27.8	5–40
Superintendent's duties	2	.4	17.5	15–20
Other	7	1.3	9.0	3–20

Source: Information furnished by 556 senior high school teachers.

TABLE XXXII

NON-TEACHING DUTIES OF INDUSTRIAL ARTS TEACHERS IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

School Duties	Teachers		Hours Per Week	
	Number	Per Cent	Average	Range
Maintenance of shop equipment	136	87.2	2.7	1–10
Homeroom sponsorship	95	60.9	2.7	½– 5
Maintenance of other school equipment	52	33.3	1.5	½– 5
Club sponsorship	44	28.2	1.4	¼– 3
Study hall supervision	43	27.6	2.8	1–10
Athletic coaching	33	21.2	8.5	2–15
Other	8	5.1	4.4	1– 6

Source: Information furnished by 156 junior high school teachers.

NUMBER AND AGES OF INDUSTRIAL ARTS TEACHERS

During the second semester of the 1962-63 school year, there were 833 teachers of industrial arts in the public secondary schools in Kansas; 670 of these were in the senior high schools, and 181 in the junior high schools. Seventeen of the senior high teachers spent a portion of their time teaching classes in the junior high schools.

Senior high school teachers of industrial arts were a comparatively young group, as shown in Table XXXIII. Almost three-fifths of the

TABLE XXXIII

AGES OF PUBLIC SENIOR HIGH SCHOOL INDUSTRIAL ARTS TEACHERS OF KANSAS IN 1962-63

Size of School	Ages of Industrial Arts Teachers							
	– 24	25– 29	30– 34	35– 39	40– 49	50– 59	60+	Total
– 24	1	4	4	2	1	3		15
25 – 49	14	40	18	2	5	14	4	97
50 – 74	8	33	24	12	7	4	2	90
75 – 99	11	21	11	6	2	3		54
100 – 149	9	20	17	11	5	1	3	66
150 – 199	2	13	17	9	9	1	3	54
200 – 299	2	14	13	3	12	6	1	51
300 – 499		10	7	10	11	11	4	53
500 – 999	2	12	12	13	10	11	9	69
1000 – 1999		14	26	19	18	11	8	96
2000 +	1	2	5	4	5	4	1	22
Total	50	183	154	91	85	69	35	667

Source: Information taken from records of the State Department of Public Instruction for 667 teachers.

industrial arts teachers in senior high schools were under thirty-five years of age, while only 15.6 per cent were above fifty years of age. The average age was thirty-six.

A similar age pattern is evident in junior high schools, as reported in Table XXXIV. Fifty-four per cent of the industrial arts teachers in junior high schools were under thirty-five years of age, however, 24.7 per cent were over fifty years of age. The average age was thirty-eight.

TABLE XXXIV

AGES OF PUBLIC JUNIOR HIGH SCHOOL INDUSTRIAL ARTS TEACHERS OF KANSAS IN 1962-63

Size of School	Ages of Industrial Arts Teachers							
	— 24	25— 29	30— 34	35— 39	40— 49	50— 59	60+	Total
— 99				1		1		2
100 — 299		5	6	2	3	4		20
300 — 499	4	9	6	1	3	5	4	32
500 — 999	3	21	23	9	13	12	2	83
1000 +	1	8	8	6	9	4	1	37
Total	8	43	43	19	28	26	7	174

Source: Information taken from records of the State Department of Public Instruction for 174 teachers.

COLLEGE PREPARATION OF INDUSTRIAL ARTS TEACHERS

The senior high school industrial arts teachers of Kansas received college degrees from institutions in eleven different states, as shown in

TABLE XXXV

INSTITUTIONS FROM WHICH INDUSTRIAL ARTS TEACHERS IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS RECEIVED COLLEGE DEGREES BY 1962-63

Colleges and Universities	Bachelor's Degrees		Master's Degrees	
	Number	Per Cent	Number	Per Cent
Kansas State College of Pittsburg	150	28.7	67	40.4
Fort Hays Kansas State College	79	15.1	15	9.0
Kansas State Teachers College	77	14.8	25	15.1
Kansas State University	41	7.9	9	5.4
McPherson College	31	5.9		
Northwestern State College Alva, Oklahoma	21	4.0		
Bethel College	18	3.4		
Southwestern College	16	3.1		
Northeastern State College Tahlequah, Oklahoma	15	2.9	1	.6
University of Wichita	13	2.5	3	1.8

TABLE XXXV (continued)

Colleges and Universities	Bachelor's Degrees		Master's Degrees	
	Number	Per Cent	Number	Per Cent
Panhandle A and M College Goodwell, Oklahoma	7	1.3		
Friends University	6	1.1		
Colorado State College at Greeley	5	1.0	19	11.5
College of Emporia	4	.7		
Kansas Wesleyan University	4	.7		
Northwest Missouri State Teachers College	4	.7		
Sterling College	3	.6		
Central State College Edmond, Oklahoma	3	.6		
Southwestern State College Weatherford, Oklahoma	3	.6		
Stout State College Menomonie, Wisconsin	3	.6		
Northeast Missouri State Teachers College	3	.6	1	.6
Tabor College	2	.4		
Colorado State University	2	.4	10	6.0
East Central State College Ada, Oklahoma	2	.4		
Washburn University	1	.2		
Bethany College	1	.2		
Oklahoma City University	1	.2		
Southeastern State College Durant, Oklahoma	1	.2		
Oklahoma State University	1	.2	6	3.6
State Normal and Industrial College Ellendale, North Dakota	1	.2		
University of Missouri	1	.2	1	.6
Southwest Missouri State Teachers College	1	.2		
Central Missouri State Teachers College	1	.2		
University of Kansas			2	1.2
University of Wyoming			1	.6
Nebraska State Teachers College Peru, Nebraska			1	.6
Arkansas State College			1	.6
University of Minnesota			1	.6
Iowa State University			2	1.2
University of Oklahoma	1	.2	1	.6
Total	522	100.0	166	100.0

Source: Information furnished by 522 senior high teachers.

Table XXXV. Colleges and universities in Kansas accounted for 85.1 per cent of the Bachelor's degrees completed by these teachers.

Over 31 per cent of the industrial arts teachers earned Master's degrees from colleges and universities in nine states. Kansas institutions accounted for almost three-fourths of these degrees.

Industrial arts teachers in junior high schools of Kansas received college degrees from institutions in nine different states, as revealed in Table XXXVI. Over 80 per cent of the junior high teachers completed degrees in Kansas colleges and universities. Bachelor's degrees were completed by 86.3 per cent of the teachers in Kansas institutions. Of the sixty-nine Master's degrees completed, forty-seven were granted by Kansas colleges and universities.

TABLE XXXVI

INSTITUTIONS FROM WHICH INDUSTRIAL ARTS TEACHERS IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS RECEIVED COLLEGE DEGREES BY 1962-63

Colleges and Universities	Bachelor's Degrees		Master's Degrees	
	Number	Per Cent	Number	Per Cent
Kansas State College of Pittsburg	44	28.6	25	36.2
Kansas State Teachers College	24	15.6	13	18.8
Fort Hays Kansas State College	20	13.0	4	5.8
Kansas State University	9	5.8	4	5.8
Bethel College	9	5.8		
Friends University	6	3.9		
University of Wichita	5	3.2	1	1.4
McPherson College	5	3.2		
Oklahoma State University	3	2.0	7	10.2
Panhandle A and M College Goodwell, Oklahoma	3	2.0		
Colorado State College at Greeley	2	1.3	3	4.3
Northwestern State College Alva, Oklahoma	2	1.3		
Central State College, Edmond, Oklahoma	2	1.3		
Central Missouri State Teachers College	2	1.3	1	1.4
Nebraska State Teachers College Peru, Nebraska	2	1.3	1	1.4
University of Minnesota	2	1.3		
Washburn University	1	.6		
Baker University	1	.6		
Bethany College	1	.6		
Ottawa University	1	.6		
St. Benedict's College	1	.6		
Southwestern College	1	.6		
East Central State College Ada, Oklahoma	1	.6		
Northeastern State College Tahlequah, Oklahoma	1	.6		

TABLE XXXVI (continued)

Colleges and Universities	Bachelor's Degrees		Master's Degrees	
	Number	Per Cent	Number	Per Cent
Southeastern State College Durant, Oklahoma	1	.6		
Phillips University, Enid, Oklahoma	1	.6	1	1.4
Northwest Missouri State Teachers College	1	.6		
Northeast Missouri State Teachers College	1	.6		
Nebraska Wesleyan College	1	.6		
Stout State College Menomonie, Wisconsin	1	.6		
Michigan College of Mining and Technology			1	1.4
Colorado State University			5	7.2
Western State College of Colorado			1	1.4
Bemidji State College			1	1.4
Iowa State University			1	1.4
Total	154	100.0	69	100.0

Source: Information furnished by 154 junior high teachers.

Secondary schools of Kansas are divided by the Kansas State Department of Public Instruction into two classifications for teacher certification purposes. To teach industrial arts in a school with a "minimum" classification, a teacher must present fifteen semester hours in the industrial arts field. The requirement for the "standard" classification is twenty-four hours.[19] In Table XXXVII semester hours were tabulated to indicate the number of teachers who did not meet "minimum" and "standard" requirements.

Six senior high school industrial arts teachers failed to meet the "minimum" requirement for teaching this subject. Forty-six met "standard" requirements, having fifteen to twenty-three semester hours in the field of industrial arts. Over two-thirds of the junior high teachers had earned forty or more semester hours, while slightly over half of the senior high teachers had forty or more. The average number of hours was forty-four for senior high teachers and forty-eight for junior high teachers.

Semester hours earned by senior high teachers in other fields of study are reported in Table XXXVIII. One hundred six industrial arts teachers had no hours in the field of mathematics. Almost three-fourths had less than ten hours. The average was fifteen in language arts, eighteen in social science, nineteen in natural science, nine in mathematics, and twenty-six in education.

In the field of language arts, 93.6 per cent of the junior high teachers had nine to nineteen semester hours of credit, as indicated in Table

19. State Department of Public Instruction, *Certificate Handbook* (Topeka, Kansas: State Printer, July 1, 1963) p. 58.

TABLE XXXVII

SEMESTER HOURS EARNED IN INDUSTRIAL ARTS COURSES BY PUBLIC SENIOR AND JUNIOR HIGH SCHOOL INDUSTRIAL ARTS TEACHERS OF KANSAS IN 1962-63

Semester Hours	Senior High Teachers		Junior High Teachers	
	Number	Per Cent	Number	Per Cent
— 14	6	.9	1	.6
15 — 23	46	6.9	9	5.0
24 — 29	93	13.7	10	5.5
30 — 39	176	26.3	40	22.1
40 — 49	155	23.1	49	27.0
50 — 59	70	10.5	27	14.9
60 +	124	18.6	45	24.9
Total	670	100.0	181	100.0

Source: Information taken from records of the Kansas State Department of Public Instruction for 670 senior high school teachers and 181 junior high school teachers.

TABLE XXXVIII

ACADEMIC PREPARATION OF PUBLIC SENIOR HIGH INDUSTRIAL ARTS TEACHERS OF KANSAS IN 1962-63

Fields	Semester Hours							
	- 9	10-19	20-29	30-39	40-49	50-59	60+	Range
Language Arts	116	463	74	8	2			6-44
Social Science	98	375	127	46	10	6	1	3-63
Natural Science	92	337	155	61	13	2	3	0-88
Mathematics	485	109	61	7	1			0-48
Education		158	367	80	44	9	5	14-87

Source: Information taken from records of the Kansas State Department of Public Instruction for 663 senior high school teachers.

XXXIX. One hundred twenty-four teachers had less than ten hours in mathematics; twenty-eight had no hours. The average was fourteen in language arts, eighteen in social science, seventeen in natural science, nine in mathematics, and twenty-eight in education.

TEACHING EXPERIENCE

The total years of teaching experience of industrial arts teachers is reported in Table XL. As might be expected from a group of relatively young teachers, over 60 per cent had less than ten years of teaching ex-

TABLE XXXIX

ACADEMIC PREPARATION OF PUBLIC JUNIOR HIGH INDUSTRIAL ARTS TEACHERS OF KANSAS IN 1962-63

Fields	Semester Hours							
	- 9	10- 19	20- 29	30- 39	40- 49	50- 59	60+	Range
Language Arts	34	127	11					8-27
Social Science	18	107	31	8	5	3		6-58
Natural Science	34	88	35	13	2			0-45
Mathematics	124	31	15	2				0-35
Education		36	86	25	17	6	2	15-73

Source: Information taken from records of the Kansas State Department of Public Instruction for 172 junior high school teachers.

perience. The average was ten years for senior high teachers and twelve for junior high teachers.

As indicated in Table XLI, the pattern of years of tenure in present position is similar to the total years of teaching experience, 64.8 per cent of the teachers had taught less than six years in their present position. The average was six years for senior high teachers and eight for junior high teachers.

SALARIES OF INDUSTRIAL ARTS TEACHERS

Industrial arts teachers in the public secondary schools of Kansas received annual salaries averaging $5368 and ranging from $3950 to $8350, as indicated in Table XLII. Over 60 per cent of the teachers received a salary of less than $5500.

TABLE XL

TOTAL TEACHING EXPERIENCE OF INDUSTRIAL ARTS TEACHERS IN PUBLIC SECONDARY SCHOOLS OF KANSAS IN 1962-63

Years	Senior High Teachers		Junior High Teachers	
	Number	Per Cent	Number	Per Cent
— 4	262	39.1	50	27.6
5 — 9	150	22.4	50	27.6
10 — 14	108	16.1	31	17.1
15 — 19	41	6.1	7	3.9
20 — 24	27	4.1	10	5.5
25 — 29	31	4.6	14	7.8
30 +	51	7.6	19	10.5
Total	670	100.0	181	100.0
Average	10		12	

Source: Information taken from records of the State Department of Public Instruction.

TABLE XLI

TEACHING EXPERIENCE IN PRESENT POSITION OF INDUSTRIAL ARTS TEACHERS IN PUBLIC SECONDARY SCHOOLS OF KANSAS IN 1962-63

Years	Senior High Teachers		Junior High Teachers	
	Number	Per Cent	Number	Per Cent
– 1	141	21.1	21	11.6
2 – 3	187	27.9	42	23.2
4 – 5	106	15.8	36	19.9
6 – 9	104	15.5	33	18.2
10 – 14	53	7.9	19	10.5
15 – 19	36	5.4	11	6.1
20 +	43	6.4	19	10.5
Total	670	100.0	181	100.0
Average	6		8	

Source: Information taken from records of the Kansas State Department of Public Instruction.

Junior high teachers received an average salary of $5807. The salary range was from $4250 to $8655. Less than 40 per cent of the junior high teachers received a salary of less than $5500.

TABLE XLII

ANNUAL SALARIES OF INDUSTRIAL ARTS TEACHERS IN PUBLIC SECONDARY SCHOOLS OF KANSAS IN 1962-63

Salary Range	Senior High Teachers		Junior High Teachers	
	Number	Per Cent	Number	Per Cent
– $3999	6	.9		
$4000 – $4499	65	9.8	3	1.7
$4500 – $4999	179	26.9	21	12.0
$5000 – $5499	152	22.9	43	24.6
$5500 – $5999	93	14.0	40	22.9
$6000 – $6499	84	12.6	30	17.1
$6500 – $6999	47	7.1	20	11.4
$7000 – $7499	23	3.5	8	4.6
$7500 +	15	2.3	10	5.7
Total	664	100.0	175	100.0
Average Annual Salary	$5368		$5807	
Range of Salaries	$3950–$8350		$4250–$8655	

Source: Information taken from records of the Kansas State Department of Public Instruction.

The average annual salary for senior high teachers with Master's degrees was $6182, as revealed in Table XLIII. Salaries ranged from $4700 to $8350 yearly. Salaries for junior high teachers with Master's degrees ranged from $4400 to $8655, with an average of $6356. Senior high teachers with bachelor's degrees received an average annual salary of $5050, whereas junior high teachers, who were older and had taught longer, received $5456.

TABLE XLIII

SALARIES OF INDUSTRIAL ARTS TEACHERS IN PUBLIC SECONDARY SCHOOLS OF KANSAS WITH MASTER'S DEGREES BY 1962-63

Salary Range	Senior High Teachers		Junior High Teachers	
	Number	Per Cent	Number	Per Cent
$4000 – $4499	1	.6	1	1.5
$4500 – $4999	7	4.5	3	4.4
$5000 – $5499	29	18.7	7	10.3
$5500 – $5999	26	16.8	13	19.1
$6000 – $6499	39	25.2	18	26.5
$6500 – $6999	28	18.1	10	14.7
$7000 – $7499	9	5.8	7	10.3
$7500 +	16	10.3	9	13.2
Total	155	100.0	68	100.0
Average Annual Salary	$6182		$6356	
Range of Salaries	$4700—$8350		$4400-$8655	

Source: Information furnished by 155 senior high school teachers and 68 junior high school teachers.

For beginning industrial arts teachers in senior high schools, the average annual salary was $4467, as shown in Table XLIV. The range of beginning salaries was $4000 to $5300.

Average beginning salary for junior high teachers was $4834, $367 higher than the beginning salary for senior high teachers, as indicated in Table XLV. The salary range for beginning junior high teachers was $4400 to $5200. The school year 1962-63 was the first year of teaching for sixty-three senior high teachers and eleven junior high teachers.

EDUCATIONAL JOURNALS READ BY INDUSTRIAL ARTS TEACHERS

Professional educational journals read regularly by industrial arts teachers are listed in Table XLVI. *The Kansas Teacher* was read regularly by 75 per cent of the senior high teachers, while 93.6 per cent of the junior high teachers read this journal. The *Industrial Arts and Vocational Education*, top ranking of the journals pertaining directly to industrial education, was read by 66 per cent of the senior high teachers and 75 per cent of the junior high teachers. *School Shop*, an

TABLE XLIV

AVERAGE BEGINNING SALARIES OF INDUSTRIAL ARTS TEACHERS IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Number of Teachers	Annual Salary	
		Average	Range
– 24	3	$4200	$4200–$4200
25 – 49	16	$4359	$4000–$4600
50 – 74	10	$4470	$4200–$4650
75 – 99	9	$4422	$4000–$4900
100 – 149	13	$4500	$4100–$4800
150 – 199	1	$4400	$4400–$4400
200 – 299	1	$4400	$4400–$4400
300 – 499	3	$4500	$4200–$5000
500 – 999	2	$4700	$4500–$4900
1000 – 1999	5	$4850	$4600–$5300
2000 +	0		
Total	63		

Source: Information taken from records of the Kansas State Department of Public Instruction.

industrial education magazine furnished free-of-charge to qualified teachers, was read by 56 per cent of the senior high teachers, and 92 per cent of the junior high teachers. Two professional magazines read infrequently by teachers of industrial arts were the *American Vocational Journal* and *The Industrial Arts Teacher.*

TABLE XLV

AVERAGE BEGINNING SALARIES OF INDUSTRIAL ARTS TEACHERS IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Size of School	Number of Teachers	Annual Salary	
		Average	Range
300 – 499	2	$4800	$4400–$5200
500 – 999	5	$4870	$4650–$5100
1000 +	4	$4806	$4400–$5150
Total	11		

Source: Information taken from records of the Kansas State Department of Public Instruction.

INDUSTRIAL ARTS TEACHERS' MEMBERSHIP IN PROFESSIONAL EDUCATIONAL ORGANIZATIONS

Years of membership in various professional educational organizations are reported in Table XLVII. Membership in the Kansas State Teachers Association was claimed by 94.2 per cent of the senior high

TABLE XLVI

EDUCATIONAL JOURNALS READ BY INDUSTRIAL ARTS TEACHERS IN PUBLIC SECONDARY SCHOOLS OF KANSAS IN 1962-63

Journals	Senior High Teachers		Junior High Teachers	
	Number	Per Cent	Number	Per Cent
The Kansas Teacher	417	75.0	146	93.6
N. E. A. Journal	397	71.4	151	96.2
Industrial Arts and Vocational Education	370	66.5	118	75.6
School Shop	313	56.3	144	92.3
American Vocational Journal	50	9.0	24	15.3
The Industrial Arts Teacher	28	7.0	21	13.5
Phi Delta Kappan	7	1.3	1	.6

Source: Information furnished by 556 senior high school teachers and 156 junior high school teachers.

TABLE XLVII

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS OF INDUSTRIAL ARTS TEACHERS IN PUBLIC SENIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Organizations	Years of Membership						
	1–4	5–9	10–14	15–19	20+	Total	Per Cent
Kansas State Teachers Association	237	121	80	26	60	524	94.2
National Education Association	200	80	69	27	41	417	75.0
Kansas Industrial Education Association	62	22	18	7	11	120	21.0
American Industrial Arts Association	45	7	3	3	1	59	10.6
Kansas Vocational Association	22	12	8	5	4	51	9.2
American Vocational Association	23	14	7	1	4	49	7.6
Phi Delta Kappa	9	4				13	2.3
Epsilon Pi Tau	11	3	1			15	2.7

Source: Information furnished by 556 senior high teachers.

teachers while 75 per cent belonged to the National Education Association.

Junior high teachers as a whole held membership in professional educational organizations in greater percentages than did senior high teachers, as revealed in Table XLVIII. Membership in the Kansas State Teachers Association and National Education Association ranked one and

TABLE XLVIII

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS OF INDUSTRIAL ARTS TEACHERS IN PUBLIC JUNIOR HIGH SCHOOLS OF KANSAS IN 1962-63

Organizations	Years of Membership						
	1–4	5–9	10–14	15–19	20+	Total	Per Cent
Kansas State Teachers Association	60	29	25	2	32	148	94.9
National Education Association	63	27	24	4	27	145	92.9
Kansas Industrial Education Association	49	19	14	2	11	95	60.9
American Industrial Arts Association	28	4	4	1		37	23.7
Kansas Vocational Association	8	6	5	1	4	24	15.3
American Vocational Association	14	8	5	3		30	19.2
Phi Delta Kappa	2	5				7	4.5
Epsilon Pi Tau	1	1	1			3	1.9

Source: Information furnished by 156 junior high teachers.

two respectively with 94.9 per cent and 92.9 per cent of the teacher members. Over 60 per cent of the junior high teachers belonged to the Kansas Industrial Education Association as compared to 21 per cent of the senior high teachers. Memberships in the American Industrial Arts Association and the American Vocational Association were likewise higher for the junior high teachers.

FUTURE PLANS OF INDUSTRIAL ARTS TEACHERS FOR GRADUATE STUDY

Of 284 senior high teachers of industrial arts, 135 indicated that they had begun work on a Master's degree. One hundred twenty-one indicated that they planned to begin graduate study within the next

five years. Fifty-four of the seventy-nine junior high teachers responding to this question had begun on a Master's degree.

Seventy-six per cent of the senior high teachers and 82.3 per cent of the junior high teachers planned to take graduate work in the field of industrial arts, as revealed in Table XLIX.

The various colleges and universities in which industrial arts teachers proposed to do future graduate work are reported in Table L. Kansas State College of Pittsburg was the choice of 39 per cent of the senior high teachers and 35.6 per cent of the junior high teachers. Ranking second was Kansas State Teachers College, with 25.7 per cent of the senior high and 27.1 per cent of the junior high teachers naming it.

TABLE XLIX

FIELDS OF SPECIALIZATIONS DESIGNATED BY INDUSTRIAL ARTS TEACHERS OF KANSAS FOR FUTURE GRADUATE STUDY

Fields	Senior High Teachers		Junior High Teachers	
	Number	Per Cent	Number	Per Cent
Industrial Arts	149	76.0	51	82.3
Physical Education	14	7.2	1	1.6
Administration	12	6.1	2	3.2
Guidance	8	4.1	4	6.5
Trade and Industrial Education	8	4.1	2	3.2
Driver Education	1	.5		3.2
Biology	1	.5		
Science	1	.5		
Agriculture Education	1	.5		
Printing	1	.5		
Special Education			2	3.2
Total	196	100.0	62	100.0

Source: Information furnished by 196 senior high school teachers and 62 junior high school teachers.

TABLE L
INSTITUTIONS DESIGNATED BY INDUSTRIAL ARTS TEACHERS OF KANSAS FOR FUTURE GRADUATE STUDY

Colleges and Universities	Senior High Teachers		Junior High Teachers	
	Number	Per Cent	Number	Per Cent
Kansas State College of Pittsburg	76	39.0	21	35.6
Kansas State Teachers College	50	25.7	16	27.1
Fort Hays Kansas State College	29	14.9	5	8.4
Colorado State College at Greeley	9	4.7	4	6.8
Kansas State University	8	4.1	2	3.4
Wichita University	7	3.6	2	3.4
Kansas University	2	1.0	1	1.7
Stout State College Menomonie, Wisconsin	2	1.0		
University of Missouri	2	1.0		
Colorado State University	1	.5	1	1.7
Oklahoma State University			3	5.1
East Central State College Ada, Oklahoma			1	1.7
Southwestern State College Weatherford, Oklahoma	1	.5		
Northeastern State College Tahlequah, Oklahoma	1	.5		
Northwestern State College Alva, Oklahoma	1	.5		
Oklahoma University	1	.5		
Southeastern State College Durant, Oklahoma	1	.5		
Arizona State College Flagstaff, Arizona	1	.5		
Oregon State College Corvallis, Oregon	1	.5		
University of West Virginia	1	.5		
West Texas State College	1	.5		
Central Missouri State Teachers College			1	1.7
Arizona State College Tempe, Arizona			2	3.4
Total	195	100.0	59	100.0

Source: Information furnished by 195 senior high teachers and 59 junior high teachers.

SUMMARY

1. At the time of the study, approximately 88 per cent of the 547 public senior high schools of Kansas and all ninety-five public junior high schools offered courses in industrial arts. These programs were either relatively old or new. Approximately 50 per cent of the public senior high school programs had been in operation thirty years or more, while, on the other hand, nearly three-fourths of the public junior high industrial arts programs had been in operation less than ten years.

2. Woodworking, General Shop, and Drafting lead industrial arts course offerings in Kansas public senior high schools, with forty-eight different courses comprising the programs. Thirteen courses made up the industrial arts programs in public junior high schools. General Woodworking predominated among industrial arts offerings in nearly all sizes of schools. General Woodworking and Drafting were offered in similar proportions in the public senior high schools with little regard to the size of school, but General Shop was infrequently offered in schools with enrollments of over 1,000 students. Drafting and General Metals were taught more frequently in junior high schools with enrollments greater than 300 students.

3. General Shop was offered in more than one-half of the public junior and senior high schools. Woodworking, Drawing ,and Welding ranked one, two, and three as General Shop activities most frequently taught.

4. The rotating of students through unit shops for introductory purposes was reported in twenty-four senior high schools and fourteen junior high schools with intervals ranging from six to twelve weeks in each shop.

5. In the public senior high schools, Woodworking was taught predominantly to freshmen and sophomores while Auto Mechanics and Welding were taught mainly to juniors and seniors. General Shop was taught more frequently to freshmen than any other class. Woodworking was taught more frequently to seventh grade students than to any other junior high grade level. General Shop, General Metals, Sheet Metal, Drafting, and Electricity were taught more often on the eighth grade level than on any other grade level.

6. Average class size of ten or less students was reported in public senior high schools of less than 150 enrollment. The range of enrollment in senior high school industrial arts classes was from one to thirty-four students. Class sizes in the junior high schools ranged from two to forty-six students.

7. Many different textbooks were used in industrial arts courses with the widest selection in senior high General Shop. *Units for Hand Woodworking* by Douglass and Roberts was used most frequently as a Woodworking text, and *Mechanical Drawing* by French and Svensen was the most common drafting text.

8. Almost 60 per cent of the public senior high schools and nearly 50 per cent of the public junior high schools had less than thirty books in their shop libraries, with an average of thirty-five books for senior high school shop libraries and thirty-seven for junior high school libraries.

9. Four or more industrial arts classes were taught by almost 60 per cent of the public senior high teachers, while 90 per cent of the junior high teachers taught four or more industrial arts classes daily.

10. Industrial arts teachers taught physical education more frequently than any other non-industrial arts course. Senior high industrial arts teachers who coached athletic activities spent an average of almost twelve hours a week in this task. Junior high teachers of industrial arts averaged less time in various non-teaching duties than did senior high teachers.

11. The public senior high schools of Kansas employed 670 industrial arts teachers in the school year 1962-63 and the public junior high schools employed 181. Seventeen senior high teachers also taught classes in the junior high school. Industrial arts teachers of Kansas were a comparatively young group; three-fifths of these were less than thirty-five years of age.

12. Over 85 per cent of the industrial arts teachers in the public secondary schools of Kansas had earned bachelor's degrees in Kansas colleges and universities. Almost one-third held Master's degrees, of which almost 75 per cent had been granted by Kansas institutions.

13. In 1962-63, seven industrial arts teachers had not met state "minimum" certification requirements for teaching industrial arts, and fifty-five teachers had not met the "standard" requirement. Almost three-eighths of the industrial arts teachers had from twenty-four to forty semester hours of credit in the field of industrial arts. One-fifth of the teachers had less than ten hours in language arts, and almost three-fourths had less than ten hours in mathematics.

14. Three-fifths of the public school teachers of industrial arts had less than ten years of teaching experience. The average tenure in the position they held in 1962-63 was six years for senior high teachers and eight years for junior high teachers.

15. The average salary of beginning senior high school industrial arts teachers in Kansas was $4467, and for begining junior high teachers, it was $4834. The average salary of senior high school teachers of industrial arts was $5368, with a range of from $3950 to $8350. Junior high school teachers of industrial arts received an average salary of $5807, with a range of from $4250 to $8655. The average salary for industrial arts teachers holding a Master's degree was $6182, which was $1132 more than that earned by those with only a Bachelor's degree.

16. Industrial arts teachers in Kansas public school regularly read *The Kansas Teacher* more than any other educational journal. Likewise, more of these teachers were members of the Kansas State Teachers Association than any other professional education organization. Lack of interest in professional industrial education associations was revealed by the low membership in these groups.

17. Less than one-third of the industrial arts teachers were working toward a Master's degree or expected to start within the next five years. Three-fourths of these expected to do graduate work in the field of industrial arts in Kansas colleges and universities.

CONCLUSIONS

To the extent that the facts obtained are accurate, and insofar as the respondents are representative of the whole, the following conclusions may be drawn as of the time this study was made.

The evidence presented in this study supports the conclusion that the small high schools of Kansas should be consolidated into larger units in order that they may provide a more adequate educational program including industrial arts. Larger school service areas would result in larger enrollments, would permit more effective use of teachers and, in some cases, more economical operation.

In view of the evidence presented, it appears that there are both over-developed and under-developed industrial arts programs in the state, and there is an imbalance within these programs. Woodworking has been overemphasized as an industrial arts area and as an activity in General Shop. The large number of General Shops in the smaller high schools would seem to indicate that General Shop programs are used in the size of schools which could most effectively use them. The evidence presented seems to indicate that many unit shops were not true unit shops but were, in fact, General Shops.

Since a large number of shop libraries were limited to less than thirty books available for student use, it seems evident that a need exists for more adequate library facilities for industrial arts in the state.

In view of the wide range of textbooks used for industrial arts courses, it appears that course content varies widely over the state, and that there is some need for a standardization of instructional content.

The evidence presented would seem to indicate that specialized training of industrial arts teachers is not fully utilized with many duties assigned to teachers other than the teaching of industrial arts courses.

From the evidence presented, it is apparent that it is economically advantageous for industrial arts teachers to secure the Master's degree.

It is apparent that there was little interest on the part of the industrial arts teachers of Kansas in professional activities and growth as revealed by low membership in professional industrial educational organizations and the small percentage intending to work toward a Master's degree within the next five years.

RECOMMENDATIONS

In view of the findings and conclusions of this study, the following recommendations are made:

Because of the large number of small high schools in Kansas, it is recommended that consolidation of these schools into larger units progress as rapidly as possible in order that they may provide a more adequate educational program including industrial arts.

To help establish a minimum standardization of instructional content in industrial arts courses, the State Supervisor of Industrial Arts should provide industrial arts teachers with a recommended list of textbooks for each industrial arts course taught.

Inasmuch as industrial arts libraries are essential for student use, it is recommended that at least ten books be available for student use in each area represented in the General Shop course and at least thirty books available in each unit shop.

Assuming that membership in professional industrial education organizations is of benefit to industrial arts teachers, it is recommended that persons preparing to teach as well as those already teaching be urged to join and participate in these organizations by the teacher education institutions and supervisors. It is further recommended that the Kansas Industrial Education Association be strengthened to promote higher professional standards among the teachers of Kansas, with the publication of bulletins and newsletters as one of the organization's primary functions.

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