THE PRESENT STATUS OF INDUSTRIAL ARTS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

by

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THE PRESENT STATUS OF INDUSTRIAL ARTS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

INTRODUCTION

The object of this thesis is to develop a background of information as to the most acceptable objectives, practices, opinions and plans of organization in the field of junior high school industrial arts in California. The hope is that this information will serve boards of education, administrators and teachers in the following ways:

1. In making programs of study.
2. In properly equipping junior high school shops.
3. In setting up standards for selecting industrial arts teachers.
4. In assisting teachers to plan their programs of self-improvement in the light of practices and needs in the industrial arts field of the junior high schools.
5. In helping to integrate further the junior high industrial arts program with the program of general education.

This study has been limited to a survey of industrial arts in the junior high schools of California for the following reasons:

1. It is necessary to limit the field of study.
2. The State of California offers a representative field.
3. This study was intended to be used in a California school system where it is felt necessary to conform to the general practices of the state.

The material for this thesis has been obtained as follows:

1. A questionnaire was compiled and sent to each of the junior high schools of California. In preparing this

questionnaire the California School Directory* was consulted. Inasmuch as this study was begun in 1937, the California School Directory for the year of 1936-1937 was used. From this directory was taken a list of the subjects mentioned therein as being taught in the industrial arts courses in the junior high schools. To this list was added a few additional subjects that might be taught in the junior high school industrial arts departments. This list was presented in the questionnaire to be checked as to whether or not the subjects listed were taught, and as to the grade placement of such instruction.

Other facts to be established by this questionnaire were as follows:

a. Extent of course offerings.
b. The degree of compulsion of these courses.
c. The status of certain courses, such as mechanical drawing and auto mechanics.
d. The extent of the employment of the general shop in the junior high schools of California.
e. The opinion of the industrial arts teachers as to what should be the practices in several phases of junior high school industrial arts education.

2. The returns of the first questionnaire were in some respects deficient, in that they did not sufficiently indicate shop organizations. A second questionnaire was therefore compiled. This questionnaire dealt principally with

* California School Directory, published by California Society of Secondary Education, Bliss Building, Santa Monica, California.

shop organization. Each of the junior high schools of California was questioned as to:

a. The organization and physical set-up of their shops.
b. Size of their student body.
c. Number of teachers in their industrial arts department.
d. Length of their school periods.
e. Student shop organization as to monitors, safety committees, clubs, etc.
f. Other factors of student shop organization that were being employed.

3. A questionnaire was sent to the heads or supervisors of industrial arts of the larger city systems of the state, questioning them as to the general program of study they were providing in their respective systems for their junior high school industrial arts departments.

4. A second questionnaire was sent to supervisors of industrial arts of the larger city systems asking them as to:

a. The general objectives for their junior high school industrial arts program.
b. The recent trends in their system in this field of education.
c. Their opinions as to the probable trends in the junior high school industrial arts program in their system for the next few years.
d. What they considered the most acceptable training for their industrial arts teachers and what certification they required for these teachers.

5. A questionnaire was sent to the heads of the industrial arts departments of the five state colleges of California, teaching industrial arts education, asking them as to:

a. What they considered to be the objectives of the junior high school industrial arts education in California.
b. What they considered were the recent trends in the field of junior high school industrial arts in California.
c. What they considered would be the trends in California in this field for the next few years.
d. What they considered the most acceptable training for the industrial arts teachers of the junior high schools.

6. In addition to the above questionnaires, letters were written to certain parties influential in the field of junior high school industrial arts, questioning them on certain specific problems.

7. For a general background of information and to supplement the above, monographs, city courses of study, bulletins, state publications and similar material were accumulated.

More than fifty per cent of all questionnaires and other correspondence was responded to, yielding a representative mass of material.

CHAPTER I

THE JUNIOR AND THE JUNIOR-SENIOR HIGH SCHOOLS OF CALIFORNIA; STATE LAWS AS THEY REGULATE THEIR COURSES OF STUDY; CERTIFICATION FOR INDUSTRIAL ARTS TEACHERS; DEFINITION OF THE TERM INDUSTRIAL ARTS, AND THE GENERALLY ACCEPTED SCOPE OF THIS FIELD IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

The junior and junior-senior high schools of California are an integral part of the secondary school system of the state. In order to properly relate the junior and junior-senior high schools to the secondary system as a whole, certain information will be given that is intended to show how these schools integrate with the system as a whole. The following table is a summary derived from reports from secondary school principals submitted to the State Department of Education as of October 15, 1937*:

TABLE I

NUMBER OF SECONDARY SCHOOLS OF EACH TYPE IN CALIFORNIA

1.	Separate junior high schools:	
	a. With grades 7, 8 and 9.....	[1]113
	b. With grades 7, 8, 9 and 10.....	17
	c. Total number of separate junior high schools.....	130
2.	Separate four-year high schools.....	[2]281

* "California Schools", June, 1938. Official publication issued monthly by the California State Department of Education, Sacramento, California. Page 131.

3. Four year high schools housing also grades 7 and 8 (not junior high schools)..... 38

4. Separate senior high schools (grades 10, 11 and 12).....443

5. Six year junior-senior high schools (grades 7-12).....554

6. High schools administered with junior colleges:

   a. Junior colleges maintained by high school districts:

      (1) With grades 7-14..... 1
      (2) With grades 9-14..... 15
      (3) With grades 10-14..... 4
      (4) With grades 11-14..... 1
      (5) Total high schools with junior colleges maintained by high school districts..... 21

   b. District junior colleges:

      (1) With grades 9-14..... 2
      (2) With grades 11-14..... 2
      (3) Total high schools with district junior colleges..... 4

   c. Total high schools administered with junior colleges..... 25

7. Junior colleges administered with state colleges:

   a. Junior colleges maintained by high school districts..... 62
   b. District junior colleges..... 71
   c. Total junior colleges administered with state colleges..... 3

8. Separate junior colleges:

   a. Junior colleges maintained by high school districts..... 2
   b. District junior colleges..... 12
   c. Total separate junior colleges..... 14

9. Total number of junior colleges:

   a. Junior colleges maintained by high school districts..... 25
   b. District junior colleges..... 17
   c. Total junior colleges..... 42

10. High school courses maintained by elementary school districts (grades 9-10).... 7

11. Evening high schools (with evening classes only, and administered by separate principal):

   a. With graded classes..... 83
   b. Ungraded..... 12
   c. Total evening high schools..... 95

12. Graded evening high schools and junior colleges maintained by high school districts..... 2

13. Continuation day high schools (with only compulsory continuation classes for minors or other special day classes, and administered by separate principal):

   a. With graded classes..... 9
   b. Ungraded..... 4
   c. Total continuation day high schools... 13

14. Total number of secondary schools.....676

[1]12 of these 113 were administered with elementary schools and 2 had no enrollment in grade 9.
[2]Of these, 1 had no enrollment in grade 10, 4 had no enrollment in grade 11, and 5 had no enrollment in grade 12.
[3]Of these, 1 housed grade 8 only of elementary school and 1 had no enrollment in grade 10.
[4]Of these, 1 housed high 9th grade, first semester.
[5]Of these, 1 had no enrollment in grade 7, 1 had no enrollment in grade 11, and 3 had no enrollment in grade 12.
[6]Fresno and San Diego.
[7]San Jose.

The following table* gives the location of 181 of the 184 junior and junior-senior high schools reported to the California State Board of Education, October 15, 1937:

TABLE II

LOCATION OF JUNIOR AND JUNIOR-SENIOR HIGH SCHOOLS OF CALIFORNIA

City	County	Number Junior High Schools	Number Junior-Senior High Schools
Albany	Alameda		1
Antioch	Contra Costa	1	
Berkeley	Alameda	3	
Boulder Creek	Santa Cruz		1
Burbank	Los Angeles	2	
Cardiff	San Diego	1	
Chino	San Bernardino		1
Claremont	Los Angeles		1
Coalinga	Fresno		1
Compton	Los Angeles	5	
Corcoran	Kings		1
Corona	Riverside	1	
Dos Palos	Merced		1
Downey	Los Angeles		1
Eureka	Humboldt	1	
Emeryville	Alameda		1
Fillmore	Ventura		1
Fort Bragg	Mendocino	1	1
Fresno	Fresno	3	2
Glendale	Los Angeles	4	
Hemet	Riverside	1	
Kerman	Fresno		1
Le Grand	Merced		1
Lompoc	Santa Barbara		1
Long Beach	Los Angeles	6	3

* California School Directory, 1936-37, published by California Society of Secondary Education, Bliss Building, Santa Monica, California. Pages 65-215.

TABLE II (continued)

City	County	Number Junior High Schools	Number Junior-Senior High Schools
Los Angeles	Los Angeles	23	16
Maricopa	Kern		1
Martinez	Contra Costa	1	
National City	San Diego	3	
Needles	San Bernardino		2
Oakland	Alameda	13	2
Ojai	Ventura		1
Palo Alto	Santa Clara	2	1
Pasadena	Los Angeles	5	
Petaluma	Sonoma	3	
Pomona	Los Angeles	2	
Quincy	Plumas		2
Redlands	San Bernardino	1	
Richmond	Contra Costa	2	
Riverside	Riverside	3	
Sacramento	Sacramento	5	
San Bernardino	San Bernardino	6	
San Diego	San Diego	5	2
San Francisco	San Francisco	10	1
San Luis Obispo	San Luis Obispo	1	
Santa Ana	Orange	2	
Santa Barbara	Santa Barbara	2	
Santa Cruz	Santa Cruz	2	
San Jose	Santa Clara	4	
Santa Monica	Los Angeles	2	
Santa Rosa	Sonoma	1	
South Pasadena	Los Angeles	1	
South San Francisco	San Mateo		1
Vallejo	Salano	1	
Ventura	Ventura	1	
Vista	San Diego		1
West Wood	Lassen		1
Willits	Mendocino		1
TOTALS		130	51

The above listing of schools places 101 of the 181 schools listed in the two large metropolitan areas of California. Within the included area of Los Angeles, Long

Beach, Santa Monica, Compton, Pasadena, Glendale, Downey and Burbank in the southern area there are 47 junior high schools and twenty junior-senior high schools - a total of 67 schools. Within the included area of San Francisco, Oakland, Berkeley, Richmond, Antioch, Martinez and Albany, in the northern area, there are 30 junior high schools and 4 junior-senior high schools - a total of 34 schools. The above table further develops the fact that more than 100 of the 130 junior high schools are located in the larger cities, while only 24 out of the 51 junior-senior high schools are located in the urban areas. This would indicate that the junior-senior organization is more suitable than the junior high school to rural California.

Table III lists the city systems which have more than one junior high school, or junior-senior high school, naming them in descending order with respect to the total number of such schools.

TABLE III

THE JUNIOR HIGH SCHOOL SYSTEMS OF CALIFORNIA WITH MORE THAN ONE JUNIOR HIGH SCHOOL OR JUNIOR-SENIOR HIGH SCHOOL

City System	Number Junior High Schools	Number Junior-Senior High Schools	Total
Los Angeles	23	16	39
Oakland	13	2	15
San Francisco	10	1	11
Long Beach	6	3	9
San Diego	5	2	7
San Bernardino	6		6
Pasadena	5		5
Sacramento	5		5
Compton	5		5
Fresno	3	2	5
Glendale	4		4
San Jose	4		4
Berkeley	3		3
National City	3		3
Palo Alto	2	1	3
Petaluma	3		3
Riverside	3		3
Burbank	2		2
Pomona	2		2
Quincy		2	2
Richmond	2		2
Santa Ana	2		2
Santa Barbara	2		2
Santa Cruz	2		2
Santa Monica	2		2
TOTALS	117	29	146

The table which follows* classifies the junior and junior-senior high schools according to their total enrollments. This table further develops the fact that the

* California Schools, published by California State Department of Education, Sacramento, California, June 1938. Page 134.

junior high schools are located in the larger cities more generally than are the junior-senior high schools. This table gives the median enrollment of the junior high schools as 924 and the median enrollment of the junior-senior high schools as 500.

TABLE IV

DISTRIBUTION OF JUNIOR AND JUNIOR-SENIOR HIGH SCHOOLS BY TOTAL ENROLLMENT IN REGULAR DAY CLASSES

Enrollment October 15, 1937	Separate Junior High Schools		6-Year Junior-Senior High Schools		Totals	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
25 or less	0		0		0	
26-50	1	.8	3	5.6	4	2.2
51-75	2	1.5	4	7.4	6	3.2
76-100	0		0		0	
101-125	1	.8	1	1.8	2	1.0
126-150	0		1	1.8	1	.5
151-175	2	1.5	4	7.4	6	3.2
176-200	2	1.5	1	1.8	3	1.5
201-225	0		0		0	
226-250	0		0		0	
251-300	3	2.3	2	3.7	5	2.7
301-350	2	1.5	4	7.4	6	3.2
351-400	2	1.5	2	3.7	4	2.2
401-450	3	2.3	3	5.6	6	3.2
451-500	5	3.8	2	3.7	7	3.7
501-600	11	8.5	3	5.6	14	7.4
601-700	7	5.4	3	5.6	10	5.4
701-800	13	10.0	1	1.8	14	7.4
801-900	8	6.2	1	1.8	9	4.6
901-1000	13	10.0	0		13	7.2
1001-1500	32	24.6	8	14.8	40	22.0
1501-2000	19	14.6	5	9.3	24	13.2
2001-2500	3	2.3	4	7.4	7	3.7
2501-3000	1	1.8	2	3.7	3	1.5
Totals	130	99.9	54	99.9	184	
Range	28-2553		34-2929		28-2929	
Median	924		500			

Table V, which follows, gives the total enrollment, by grades, for the junior and junior-senior high schools of California, as of October 15, 1937.*

TABLE V

TOTAL ENROLLMENT OF JUNIOR HIGH SCHOOLS BY GRADES AS OF OCTOBER 15, 1937

Grades	Separate Junior High Schools		6-Year Junior-Senior High Schools		Totals	
	No.	Enrollment	No.	Enrollment	No.	Enrollment
Grade 7	130	42,615	53	7,343	183	49,958
Grade 8	130	40,784	54	7,424	184	48,208
Grade 9	128	40,674	54	8,215	182	48,889
Grade 10	17	3,359	0		17	3,359
Total in Regular Classes	130	127,432	54	22,982	184	150,414

The California School Directory for 1936-37 lists the names of 4,947 teachers for 130 junior high schools. The official publication of the California State Board of Education, California Schools, June 1938, gives the attendance for these same junior high schools for the same year as 127,432. This would average about twenty-five pupils per

* California Schools, published by the California State Department of Education, Sacramento, California, June 1938. Page 135.

teacher. This figure will assist in approximating the significance of the following Table VI. This table will also give some basis for comparison of the various city systems of the state. It will be noted that the ratio of industrial arts instructors to total number of instructors is about 1 to 10. The fact that this ratio is higher for some systems and lower for others is some indication of the emphasis placed upon industrial arts instruction. The following table is also indicative of the extent to which the junior high schools are located in the larger centers of population.

The California School Directory for the school year of 1936-37 lists the names of 51 junior-senior high schools and the names of 1838 teachers employed in these schools. The publication, California Schools, for June 1938, gives the total enrollment for the 54 junior-senior high schools, as of October 15, 1937, as 44,407. This would place the pupil load per teacher at something less than twenty-four pupils per teacher, as a state average. This is somewhat less than the pupil-teacher ratio in the junior high schools of the state.

Inasmuch as many of the junior-senior high schools employ interlocking faculties, it is impossible to state the exact number of teachers employed in these schools in the seventh, eighth and ninth grades. In the subsequent chapters, in which the survey proper is developed, the term

junior high school will be employed to mean either the junior high school or the seventh, eighth and ninth grades of the junior-senior high school or a collective term for both. This use of the term is considered justifiable because it cannot be determined that the administration of the junior-senior junior high school departments differs from the administration of the junior high schools to any greater extent than the junior high schools differ among themselves in administration practices. Furthermore, the term junior high school is commonly employed by supervisors, administrators and teachers to mean either or both of these organizations.

TABLE VI

THE LARGER JUNIOR HIGH SCHOOL SYSTEMS OF CALIFORNIA WITH REFERENCE TO THE NUMBER OF SCHOOLS AND TO THE NUMBER OF TEACHERS

System	Number of Junior High School Teachers	Number of Industrial Arts Teachers	Number of Junior High Schools
Berkeley	136	10	3
Burbank	40	3	2
Compton	115	8	5
Fresno	78	7	3
Glendale	156	15	4
Long Beach	244	25	6
Los Angeles	1406	140	23
Oakland	459	34	13
Palo Alto	26	2	2
Pasadena	266	29	5
Pomona	50	3	2
Richmond	73	6	2
Riverside	77	8	3
Sacramento	184	16	5
San Bernardino	105	11	6
San Diego	238	21	5
San Francisco	453	49	10
San Jose	174	13	4
Santa Ana	66	7	2
Santa Barbara	82	10	2
Santa Cruz	35	3	2
Santa Monica	88	8	2
Totals	4551	428	111

THE CALIFORNIA SCHOOL CODE AS IT REGULATES THE COURSES OF STUDY OF THE JUNIOR HIGH SCHOOLS

The administrators of the junior high schools of California have great liberty in the construction of their courses of study. Those references pertinent to the making of a course of study found in the school code of California

are as follows:*

Part V. Courses of Study.
Chap. I. General Provisions.
Article I. The Curriculum Commission.

3.680 The Curriculum Commission shall study problems of courses of study in the schools of this state and shall have power to recommend to the state board of education the adoption of minimum standards for courses of study in the kindergarten, elementary, and secondary schools.

Chap. IV. High School Courses of Study.
Article I. Prescribed Courses.

3.800 A course of study for each high school shall be prepared under the direction of the high school board having control thereof, and shall be subject to the approval of the state board of education.

3.801 The course for four year high schools shall be designed to fit the needs of pupils of the ninth, tenth, eleventh, and the twelfth grades of the public schools.

3.802 The course for junior high schools shall be designed to fit the needs of pupils of the seventh, eighth, ninth, and tenth grades.

3.803 The course for senior high schools shall be designed to fit the needs of pupils of the tenth, eleventh and twelfth, or of the eleventh and twelfth grades.

3.804 Each high school district shall maintain in one or more of its day high schools, a course of study designed to prepare prospective students for admission to state normal schools, state teachers colleges, and the state university.

3.805 In addition to other subjects of instruction each high school course of study may include training in athletics, military drill and tactics,

* School Code 1937, issued by Supervisor of Documents, 214 State Capitol, Sacramento, California. Page 188 and pages 194-195.

manual training, domestic science and art, agriculture, horticulture, dairying, or other vocational work, for which credit may be given as a part of said high school work and instruction therein shall be given at such time and in such manner as said high school board shall determine.

3.806 Upon satisfactory evidence being shown to the superintendent of public instruction that the high school board of any high school district has neglected or refused to establish only such courses of study as have been approved by the state board of education, or to comply with any of the other provisions of this Article, it shall be the duty of such superintendent of public instruction to withhold from such high school district, all apportionments from the state high school funds, until said high school board shall fully comply with the provisions of this Article.

3.807 The course of study for special day or evening classes for adults maintained in connection with any high school shall be designed to fit the needs of adult pupils.

The California State Board of Education, in addition to the above, prescribes that English, history and two periods of physical education per week must be taught by all public secondary schools. It is also prescribed that a course of study must be deposited with the county superintendent of schools and the State Superintendent of Public Instruction each year. Such other provisions as the board of education see fit to prescribe for their respective schools is left to their discretion. This liberty of action naturally results in many approaches to the secondary course of study. Probably there are no two courses of study in the state of California that are exactly the same.

CERTIFICATION OF INDUSTRIAL ARTS TEACHERS FOR THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

There are three types of credentials in the State of California that will permit an industrial arts teacher to teach industrial arts courses in the seventh, eighth and ninth grades of the junior high schools. They are the general junior high school credential, the general secondary credential, and the special credentials. A general elementary credential will permit a teacher to teach in the seventh and eighth grades of the junior high schools. For the tenth grade of the junior high school the general secondary or the special credential is required of the industrial arts teacher.

The state provision for these credentials is taken from the School Code* and quoted below:

> Article II. Minimum General Standards for Credentials.
>
> 5.130 The minimum general standard for each type of credential shall be as prescribed in this Article.
>
> 5.131 For the general secondary school credential, five years of university or college, or of university, college, and normal school education of present-day standard, including a baccalaureate degree and the professional training prescribed by the state board of education; or equivalent qualifications.
>
> 5.132 For the general junior high school credential, four years of such collegiate training, including

* School Code, 1937, issued by Supervisor of Documents, 214 State Capitol, Sacramento, California. Pages 266-67.

the prescribed professional training; or equivalent qualifications.

5.133 For the general elementary credentials, the same number of years of collegiate training required at the time for graduation from a California State Teachers College, including the professional training prescribed by the state board of education.

5.135 For the special secondary credential, as high a general standard for each of the different subjects as conditions at the time will warrant.

No qualification shall be prescribed for certification to teach in any grade whatever a vocational subject, unless the candidate shall have had, as a minimum, three years' experience as a journeyman, or, where this terminology does not apply, its equivalent, in the vocation in which he desires certification.

DEFINITION OF THE TERM INDUSTRIAL ARTS, AND THE GENERALLY ACCEPTED SCOPE OF THIS FIELD IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

For the definition and statement of scope of industrial arts in junior high schools, Dr. H. A. Sotzin, Director of Division of Industrial Arts, San Jose State College, is quoted:*

> Industrial Arts is that part of general education concerned with materials, industrial processes, tools of manufacture, and the contributions of those engaged in industry. Pupil development comes through experiences with tools and materials; and the study of resultant conditions of life.
>
> NOTE: Industrial Arts is distinguished from vocational education, in that, the latter is specific occupational training; while the former is a part of general education.

* The General Shop, published by San Jose State College, Department of Industrial Arts Education. Page 6.

THE SCOPE OF INDUSTRIAL ARTS IN THE JUNIOR HIGH SCHOOLS*

The values to be acquired are those of general education. The work should be extensive rather than intensive. Subject matter content should be exploratory in character. Provisions should be made for guidance; an acquaintance with various occupational opportunities, training in household maintenance; vocational fields; development of hobbies; the development of a reasonable degree of manipulative skill with tools, machines, and processes of construction; all of which should integrate with other subjects, pupil needs and interests.

* The General Shop, published by San Jose State College, Department of Industrial Arts Education. Page 10.

CHAPTER II

OBJECTIVES AND TRENDS IN INDUSTRIAL ARTS DEPARTMENTS OF THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

As the purpose of this thesis will be to study the Industrial Arts in the junior high schools of California by discovering objectives, trends, programs of study, content of courses, shop organizations, and the relation of all these to general education and guidance, the first step in this chapter will be the study of objectives in the field of our study as expressed by those who set up these objectives, supervisors of industrial arts, and by those who clarify and disseminate these objectives, the heads of industrial arts departments of the California State Colleges.

In the search for general objectives the following question was asked of all those city supervisors having junior high schools in their systems:

> Would you please sum up what your system sets as general objectives for industrial arts work in the junior high schools?

The supervisors who assisted in the study of objectives were: D. G. Young, Berkeley; C. E. Nihart, Los Angeles; G. D. Henck, Pasadena; W. P. Dayton, Sacramento; A. R. Nichols, San Jose; H. A. Tiemann, San Diego; and R. L. Soules, Santa Barbara. They are quoted as follows:

GENERAL OBJECTIVES IN JUNIOR HIGH SCHOOL INDUSTRIAL ARTS

1. To satisfy that innate desire in every youth to construct something with tools and materials.
2. To offer an interesting field of possibilities for the development of worth while leisure-time pursuits.
3. To keep alive the joy and satisfaction in craftsmanship and good design in a machine age.
4. To develop in each pupil an active interest in industry and industrial life.
5. To develop a reasonable degree of skill in the use of hand tools and machines in doing simple repair and construction work for the home and shop.
6. To assist in a more intelligent selection, appreciation, and use of industrial products and services.
7. To develop in each pupil the habit of an orderly method of procedure in planning and performing any task.
8. To offer practical opportunity in mathematics, science, and drawing.
9. To contribute to the enrichment of other subject fields within the school.
10. To afford opportunities to discover individual aptitudes, abilities and interests in trade and industrial occupations by actual participation in typical manipulative experiences.

- C. E. Nihart, Los Angeles.

1. Appreciation of industrial work and workers.
2. Skills and knowledge.
3. Prevocational experience.
4. Vocational guidance.

- G. D. Henck, Pasadena.

1. Our general objective for industrial arts work in the junior high schools is <u>appreciation</u>. We have no thought of making mechanics in any sense of the word.

- A. R. Nichols, San Jose.

1. General Objectives.
   a. Controlling aim - developmental experiences through manipulative and informational activities leading to appreciative knowledge of the industrial world.
2. Desirable Outcomes to be Gained from the Industrial Arts Courses:
   a. Broad occupational intelligence resulting from the exploration of the representative industrial activities.
   b. A more substantial basis for occupational choice resulting from guidance values of shop courses.
   c. The finding of one's life work through school shop and industrial contact.
   d. Command of certain fundamental industrial processes.
   e. The cultivation of individual bents and aptitudes for avocational happiness.
   f. The development of a large number of character traits and attitudes necessary for successful industrial relationships.
   g. Domestic intelligence - a fitness for intelligent buying, utilizing, and maintaining our various industrial products.

- W. P. Dayton, Sacramento.

1. Objectives.
   a. To promote interest in mechanical things.
   b. To develop appreciation.
   c. To discover mechanical aptitudes.
   d. To provide opportunity for application of tool subjects - English, arithmetic, and science.
2. Type Projects.
   a. Models, toys, games and other light projects of a non-hazardous nature suited to the interests of this age group.
   b. Personal use projects are preferred.
3. Relational Instruction.
   a. Study of origin and materials used.
   b. Study of tool development and uses.
   c. Basic information covering the arts and crafts.
   d. Historical geography.
   e. Study of safety and first aid methods.
   f. Study of California natural resources and effect on future development of State.

- H. A. Tiemann, San Diego.

1. Ability to express self through construction.
   a. Skill to a degree necessary for self-satisfying results.
   b. Character of materials.
2. Ability to contribute to home life and appreciate surroundings.
3. Adjustments to a working group.
4. Ability to participate in group self-government.
5. Guidance.

- Roy L. Soules, Santa Barbara.

Mr. Soules has further issued a bulletin from the Industrial Arts and Vocational Education Department of the Santa Barbara City Schools. This bulletin contains the following outline upon objectives for industrial arts education:

BASIC LEARNING INHERENT IN INDUSTRIAL ARTS EDUCATION

I. VALUES PECULIARLY BELONGING TO INDUSTRIAL ARTS.
   A. Ability to express self through construction.
      1. Knowledge and skill to a degree necessary to obtain self-satisfying results.
         a. In the choice and use of materials available.
         b. In the choice and use of technical processes suitable to given situations.
         c. In the ability to design projects and plan work using various materials.
         d. In the choice and use of tools.
         e. Through appreciation of the possibilities for greater expressions through the use of more highly technical equipment than may be readily available in a home work shop.
      2. Understanding of the possibilities, characteristics, and limitations of materials.
         a. Sources.
         b. Manufacture and refinement.

c. Uses.
(1) Through experience in using.
(2) Through study about or demonstration of.
d. Specifications for purchase and costs.
e. Relative adaptability for various uses.

B. Adjustment to home and its surroundings as evidenced by
1. Ability to use effectively a variety of materials and equipment which contribute to home life.
2. Appreciation of home architecture, furniture and equipment.
3. Appreciation of the beauty and suitability of plant life in landscaped surroundings.
4. Appreciation of how mechanical equipment contributes to more satisfying living.

II. PERSONAL GROWTH AND SOCIAL UNDERSTANDING VALUES.

A. Adjustment to a working group.
1. Differing from other working groups of the school in the close resemblance to conditions in industry.

B. Participation in group self-government.
1. Selection of foreman.
a. Based upon true leadership abilities as agreed upon by the group.
b. Based upon organization of the group and responsibilities set up by the group through class discussion.
2. Delegation of authority by the group to its chosen leaders.
3. Respect for authority delegated.
4. Real life problems met by the group, closely resembling community problems met by their elders.

C. Appreciation of power equipment through study of:
1. Uses made of electrical, steam, internal combustion, and other power; their sources and values.
2. Its place in modern industrial society.
a. Resultant cheapness of human power (physical).
3. The growth of great corporations.
4. New opportunities for youth opened by power equipment in the developing industrial world.

5. A vision into the present and future world of industry with help in interpretation from industrial arts teacher's viewpoint:
   a. Through visitations.
   b. Through use of visual materials.
   c. Through reading and discussion.

D. Appreciation of new products developed by modern technics.
   1. Effects on certain industries.
   2. Effects felt by consumers.
      a. Better or cheaper living.

E. Experience of values as guidance, resulting in:
   1. Understanding of self through own reactions to the use of various materials, processes, tools and equipment.
   2. Appreciation of the work done, abilities required, and working and living opportunities in some occupational fields.
   3. Appreciation of the meaning to himself, on the part of the pupil, of the problems discussed under C and D of the outline above.

F. Ability to use the three R's effectively as applied to problems vital to the pupil.

The heads of college departments who assisted in this study were Gail Moore, Chico State College; E. E. Ericson, Santa Barbara State College; and H. A. Sotzin, San Jose State College. These men answered the question, "Would you please sum up what you consider to be the most acceptable objectives for junior high school industrial arts education?", as follows:

1. To develop in each pupil an active interest in industrial life and in the methods of production and distribution.
2. To develop in each pupil the ability to select wisely, care for, and use properly the things he buys or uses.
3. To develop in each pupil an appreciation of good workmanship and good design.

4. To develop in each pupil an attitude of pride or interest in his ability to do useful things.
5. To develop in each pupil the habit of an orderly method of procedure in the performance of any task.
6. To develop in each pupil the habit of self-discipline which requires one to do a thing when it should be done, whether it is a pleasant task or not.
7. To develop in each pupil the habit of careful, thoughtful work without loitering or wasting time (industry).
8. To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others.

- E. E. Ericson,
Santa Barbara State College.

Mr. Ericson appended this note, "Taken from Standards of Attainment in Industrial Arts Teaching by the American Vocational Association committee of which I was a member."

1. Finding or try-out courses for possible future vocations.
   a. As wide a variety as possible.
2. Development and stimulation of avocational interests.
3. Discipline.
4. Care and use of tools.
5. Safety.
6. Co-operation.
7. Appreciation and several others.

- Gail Moore,
Chico State College.

1. It is an essential part of pupil's general or liberal education.
2. It serves the needs of the primary impulses or instincts of the individual.
3. It provides necessary training and experiences with concrete things which are no longer furnished by the home.
4. It assists in equipping pupils to meet social, economic, and industrial problems in our present industrial civilization by giving

them an insight and appreciation of things industrial.

5. It has an economic value in that it provides for more intelligent production and consumption of economic products and in the development of "handiman" skills.
6. It provides opportunities for exploring and discovering one's abilities, capacities, aptitudes, etc.
7. It contributes occupational and educational guidance values.
8. It provides opportunity for developing avocational and recreational abilities.
9. It correlates and aids in vitalizing other school subjects.
10. It has high socializing value.

- H. A. Sotzin,
San Jose State College.

It is apparent from the above that college instructors and supervisors consider that industrial arts objectives are general and the same for the whole of the secondary system; that to achieve these objectives, various media of learning are introduced at different levels, with methods suitable to these levels.

TRENDS FOR THE LAST TEN YEARS IN JUNIOR HIGH SCHOOL INDUSTRIAL ARTS

Each of the above supervisors of industrial arts was asked, "What have been the principal trends in junior high school industrial arts work in your system during the last ten years?" They answered as follows:

1. Expanding the scope of unit shops to represent broad industrial fields.

- C. E. Nihart, Los Angeles.

1. The trend has been to increase the scope of the work, and to put emphasis on creative ability and appreciation from the artistic standpoint in industrial arts courses to which this will apply.
2. The trend also, is to enroll more girls in the classes; and to increase the required hours per grade for this type of work.

- D. G. Young, Berkeley.

1. More time devoted to work.
2. Offerings to girls.
3. Prevocational values - looking to choice of occupation.

- G. D. Henck, Pasadena.

1. Broadening the field, increasing the offerings.
2. Standardizing tools and supplies.
3. Raising the standard of qualifications for teachers.
4. Organizing courses of study.
5. A more serious attempt to relate industrial arts to real life.

- W. P. Dayton, Sacramento.

1. The trend has been toward more and more interest. All work done in the junior high schools must have a direct interest to the pupils, and not special interest to the instructor. Pupil's appreciation is the general aim.

- A. R. Nichols, San Jose.

1. There has been a tendency toward the development of the general shop - general metal, general wood, etc.

- H. A. Tiemann, San Diego.

1. Widening the range of experiences.
2. Critical evaluation of practices and values from various activities.

3. Attempt to eliminate non-productive experiences in favor of more general values without destroying the character of industrial arts.
4. Attempt to make industrial arts take its place as an integral part of a whole scheme of general education.

- R. L. Soules, Santa Barbara.

The heads of Industrial Arts Departments of the State Colleges were asked, "What have been the most significant trends in junior high school industrial arts courses of California for the last ten years?" They replied:

1. A broadening of fields, to take care of individual interests.
2. A better interpretation by the teacher of the child and of the situations and their relations to life.

- G. E. Moore,
Chico State College.

1. A generalization of shop work broadening the activities as indicated particularly by the development of the general metal shop, the craft shop, and the generalized wood shop involving carving, reed furniture, upholstery, etc.

- E. E. Ericson,
Santa Barbara State College.

1. In my humble opinion the junior high school has never done what it proposed to do. Many educators have spoken glibly about exploration, guidance, etc., but done little in actual practice.

- H. A. Sotzin,
San Jose State College.

The third question on the questionnaire to industrial arts supervisors was, "What in your opinion will be the trends in this work for the next few years in your system?" The answers were as follows:

1. I think that they will continue as above.

- D. G. Young, Berkeley.

1. Making the content more nearly meet the pupils' needs, correlating industrial arts more closely with other subject fields, introducing new materials and processes.

- C. E. Nihart, Los Angeles.

1. More equipment of the "unit" type to handle larger classes.
2. Wider variety of offerings.

- G. D. Henck, Pasadena.

1. A continuation of our past program profiting by our mistakes.
2. Increase the informational content of our courses.
3. An emphasis upon art, especially good design in industrial arts.
4. An increased recognition of the fact that the department of industrial arts does not exist as a feeder for vocational education, but that it has in itself subject matter worthwhile for all.
5. A tendency to change with the changing times and needs.

- W. P. Dayton, Sacramento.

1. We shall continue this development because it is less expensive, and because we can give a greater variety of industrial experiences to junior high school students by this method. We have some classes with as many as 35 and 40

students in the group. Effort will be made to limit the enrollment to twenty students per class.

- H. A. Tiemann, San Diego.

1. A continuation of number 2 with more and more material being brought into the picture. In art work, more clay modeling, more work in stone, such as carnelians, etc.

- A. R. Nichols, San Jose.

1. Continuation of the above.
2. We expect industrial arts to assume a more vital part in our junior high schools, furnishing the stimulating center of experience about which broader learning may take place. This means co-operative work between teachers, we do know just how.

- R. L. Soules, Santa Barbara.

Question number 3 of the questionnaire sent to heads of Industrial Arts Departments of the State Colleges read as follows: "What in your opinion will be the trends in this work for the next few years?" Answers were as follows:

1. We need expansion in the industrial arts in many fields and in numerous media. I believe that this will be the trend during the next ten years.

- H. A. Sotzin,
San Jose State College.

1. A progressive development of industrial arts work and a recognition of its worthwhileness to the child, in better fitting him for making a living - this will include better equipped teachers, development of stronger shop program, the very definite need for a child's right to make his own living.

- G. E. Moore,
Chico State College.

1. A further trend toward integration of craft activities setting aside sharp division between woodwork and drawing, electricity and wood, etc. Probably the extension of the "Core Curriculum" basing core study upon the industrial and mechanical background such as "Living in this machine age", "The effect of power on social living", etc.

- E. E. Ericson,
Santa Barbara State College.

The fourth question on the questionnaire sent to supervisors was, "What type of educational preparation do you consider most acceptable for industrial arts teachers?" Inasmuch as the identical question was sent to the heads of the college departments, their answers will be included in the following:

1. I prefer teachers who have graduated from Santa Barbara or San Jose Teachers Colleges in industrial arts, who have broad credentials, and who have had one to three years experience in industry in some trade.

- D. G. Young, Berkeley.

1. Four year college course, majoring in the field of industrial arts, plus some practical experience in trade or industry.

- C. E. Nihart, Los Angeles.

1. College graduates from industrial arts departments with some practical experience, with a strong hobby in at least one field, i.e. model building.

- G. D. Henck, Pasadena.

1. After educational and certification demands are out of the way, teachers will do well to enrich their preparation in four ways:
   a. Practical courses in art and shop from outstanding teachers.
   b. Travel and close contact with the industrial world.
   c. Cultivate a hobby that will bring relaxation and rest.
   d. Wide reading on present social, economic, and general educational problems.

- W. P. Dayton, Sacramento.

1. The ideal teacher is the man who has worked in a trade and has gotten his complete college course. This is almost impossible, but we have two or three teachers of that type, and they are the best we have.

- A. R. Nichols, San Jose.

1. Training such as is offered at the Santa Barbara State Teachers College, at Stout Institute at Menomonie, Wisconsin, Oregon State College, etc. In other words, technical school shop training plus training in teaching methods and procedures is most desirable.

- H. A. Tiemann, San Diego.

Most acceptable -
1. Several years trade experience.
2. Degree course in industrial arts.
3. Masters Degree in general education.
4. General Secondary credentials.

- R. L. Soules, Santa Barbara.

1. A broad background of liberal education, with a strong industrial arts major, with some experience in business or trade. I prefer at least a five year training program.

- G. E. Moore,
Chico State College.

1. Training for the industrial arts teacher should be at least four years and we are now thinking in terms of five which should consist of a broad basic academic training, plus a specialty in the major fields of Wood, Metal, Electricity, Ceramic Arts, Automotive and Transportation, the Graphic Arts, Agricultural Arts, etc.

- H. A. Sotzin,
San Jose State College

1. A well rounded four year training course with not less than forty-five semester hours of technical shop work and drawing with a broad background of studies in science, social science, and with effective use of English.
As a background for this work or intermingled with it there should be an amount of practical experience in some industrial pursuit that will give to the individual the proper perspective of relationship between school life and industrial life. The length of time in industry is less important than the ability of the individual to apply the atmosphere of industry to teaching situations. Mr. Nihart, Supervisor of Vocational and Practical Arts, Los Angeles City Schools, has concluded definitely that teacher training work is more important than industrial experience for junior high schools.

- E. E. Ericson,
Santa Barbara State College.

The fifth question on the questionnaire to city supervisors was as follows: "What credentials do you require of junior high school industrial arts teachers?" This question was answered as follows:

1. Special secondary, Industrial Arts type.

- D. G. Young, Berkeley.

1. Industrial Arts credentials.

- C. E. Nihart, Los Angeles.

1. Special secondary.

- G. D. Henck, Pasadena.

1. General Junior High and Special Secondary in Industrial Arts.

- W. P. Dayton, Sacramento.

1. Same credential as any other junior high school teacher.

- A. R. Nichols, San Jose.

1. Junior High, Special Secondary, or General Secondary.

- H. A. Tiemann, San Diego.

1. Special secondary, Industrial Arts type.

- R. L. Soules, Santa Barbara.

ANALYSIS OF GENERAL OBJECTIVES AS EXPRESSED BY SUPERVISORS AND COLLEGE HEADS OF DEPARTMENTS

It was found that these professional educators were in substantial agreement with the basic idea that industrial arts in the junior high schools should be of general educational value. Their objectives can be groupe around ten headings that are generally accepted as objectives of general education. It is understood that there is overlapping of headings but it is believed that all of the objectives given can be placed under one or more of the headings

given. The headings will be listed below and statements that particularly relate to that heading will be listed:

1. Satisfaction of Innate Desires.

   a. Desire of every youth to construct something with tools and materials.
   b. Serves the needs of primary impulses or instincts of the individual.

2. Development of Leisure Time Pursuits.

   a. Cultivation of individual bents and aptitudes for avocational happiness.
   b. To develop appreciations.
   c. It provides opportunities for developing avocational and recreational abilities.

3. Development of Interest and Appreciation of Industrial Life.

   a. To develop in each pupil an active interest in industry and industrial life.
   b. To develop in each pupil an active interest in industrial life and in the methods of production and distribution.
   c. It assists in equipping pupils to meet social, economic and industrial problems in our present industrial civilization by giving them an insight and appreciation of things industrial.

4. Development of Basic Skills.

   a. To develop a reasonable degree of skill in the use of hand tools and machines in doing simple repair and construction work for the home and shop.
   b. Skills and knowledge.
   c. Command of certain fundamental industrial processes.
   d. In choice and use of technical processes suitable to given situations.

5. Useful Home Membership.

   a. To develop a reasonable degree of skill in the use of hand tools and machines in doing simple repair work for the home and shop.
   b. It has economic value in that it provides for more intelligent production and consumption of economic products and in the development of "handiman" skills.

6. Consumer Appreciation.

   a. To assist in a more intelligent selection, appreciation, and use of industrial products and services.
   b. Domestic intelligence, a fitness for intelligent buying, utilizing, and maintaining our various industrial products.
   c. Our general objective for industrial arts in the junior high school is appreciation.
   d. Choice and use of materials available.
   e. To develop in each pupil the ability to select wisely, care for, and use properly the things he buys or uses.
   f. Appreciation and several others.
   g. It has an economic value in that it provides for more intelligent production and consumption of economic products.

7. Educational Integration or Educational Guidance.

   a. To offer an opportunity for practical application of mathematics, science, and drawing.
   b. To provide opportunity for application of tool subjects - English, arithmetic, and science.
   c. It correlates and aids in vitalizing other school subjects.

8. General Guidance.

   a. To develop in each pupil the habit of an orderly method of procedure in planning and performing any task.
   b. To afford opportunities to discover individual aptitudes, abilities and interests in trade and industrial occupations by actual participation in typical manipulative experiences.
   c. Prevocational experiences.
   d. The cultivation of individual bents and aptitudes for avocational happiness.
   e. Our general objective for industrial arts work in the junior high schools is <u>appreciation</u>. We have no thought of making mechanics in any sense of the word.
   f. To discover mechanical aptitudes.
   g. To develop in each pupil the habit of careful, thoughtful work without loitering or wasting time (industry).
   h. Discipline.
   i. It is an essential part of the pupil's general or liberal education.

j. The development of a large number of character traits and attitudes necessary for successful industrial relationships.
k. To discover mechanical aptitudes.

9. Vocational Guidance.

a. A more substantial basis for occupational choice resulting from guidance values of shop courses.
b. Finding or try-out courses for possible future vocations.
c. It contributes occupational and educational guidance values.

10. Social Guidance.

a. Ability to participate in group self-government.
b. To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others.

SUMMARIZING THE TRENDS OF THE LAST TEN YEARS OF JUNIOR HIGH SCHOOL INDUSTRIAL ARTS IN CALIFORNIA

As observed by the supervisors of industrial arts and the heads of the college industrial arts departments there were sixteen more or less distinct trends in the junior high school industrial arts field during the last ten years. They were:

1. To increase scope of work generally.
2. Put emphasis upon creative ability.
3. More artistic appreciation.
4. To enroll more girls.
5. To increase required hours per grade for industrial arts work.
6. Expand the scope of unit shops to represent broad industrial fields.

7. Standardize the tools and supplies.

8. Raise the standards for qualifications for teachers.

9. Organize courses of study.

10. A more serious attempt to relate industrial arts to real life.

11. The trend has been toward more appreciation.

12. There has been a tendency toward the development of general shop, general metal, general wood, etc.

13. Critical evaluation of practices and values from various activities.

14. Attempt to eliminate non-productive experiences in favor of more general values without destroying the character of industrial arts.

15. Attempt to make industrial arts take its place as an integral part of the whole scheme of general education.

16. A better interpretation by the teacher of the child and of the situations and their relation to life.

Upon further consideration of the sixteen points enumerated it is believed that they can be reduced to three types of trends: 1, trends in organization; 2, trends in expansion; and 3, trends in teaching. They will be listed below with their sub-heads:

1. Trends in Organization.

   a. Standardizing tools and supplies.

   b. Organizing courses of study.

   c. Eliminating non-productive experiences in favor of more general values.

   d. To make industrial arts take its place as an integral part of the whole scheme of general education.

2. Trends in Expansion.

   a. More girls enrolled.

   b. Increasing required hours per grade of industrial arts work.

   c. Raising the standards for qualifications of teachers.

   d. Expanding the scope of unit shops to represent broad industrial fields.

   e. Development of general shop, general metal, general wood, etc.

3. Trends in Teaching.

   a. Putting emphasis upon creative ability.

   b. Encouraging artistic expression.

   c. Development of general appreciation.

   d. A better interpretation by the teacher of the child and of the situations and their relations to life.

   e. An attempt to relate industrial arts to real life.

   f. Critical evaluation of practices and values from various activities.

PROBABLE FUTURE TRENDS SUMMARIZED

As considered by the supervisors of industrial arts and heads of college industrial arts departments the past trends would continue, with the inclusion of the following tendencies:

1. Progressive development of industrial arts work and recognition of its worthwhileness to the child.

2. Development of better shop programs.

3. Better equipped teachers.

4. A further trend toward integration of craft activities, setting aside sharp division between woodwork and drawing, electricity and wood, etc.

5. Correlating industrial arts more closely with other subjects.

TEACHER TRAINING AS DESIRED BY SUPERVISORS OF INDUSTRIAL ARTS SYSTEMS AND HEADS OF COLLEGE DEPARTMENTS

The supervisors of industrial arts mentioned seven types of desired preparation for their industrial arts teachers. They were as follows:

TYPE OF TRAINING	Number of Supervisors Preferring this Type of Training
Four years of college training with major in industrial arts	6
Trade experience	6
Broad educational background	3
Hobby interest	2
Advanced training beyond college graduation	2
Masters degree	1

It will be noted by the above that the requirements for industrial arts teachers are on a par with the requirements for academic teachers for the junior high school or a little above.

The opinions of the heads of college departments with regard to acceptable training for industrial arts teachers is similar to the opinions of the supervisors except that they put more emphasis upon broad educational background

and not as much upon trade experience. They expressed themselves as follows:

TYPES OF TRAINING	Number of College Men Approving this Type of Training
Four years of college training with major in industrial arts	3
Broad educational background	3
Practical trade experience	2

Mr. E. E. Ericson, Head of the Department of Industrial Arts at Santa Barbara State College, is quoted again in this connection:

> As a background for this work or intermingled with it there should be an amount of practical experience in some industrial pursuit that will give to the individual the proper perspective of relationship between school life and industrial life. The length of time in industry is less important than the ability of the individual to apply the atmosphere of industry to teaching situations.
>
> Mr. Nihart, Supervisor of Vocational and Practical Arts, Los Angeles City Schools, has concluded definitely that teacher training work is more important than industrial experience for junior high schools.

TEACHING CREDENTIALS PREFERRED BY SUPERVISORS FOR INDUSTRIAL ARTS TEACHERS

Among the supervisors of industrial arts there was a strong preference expressed for the special secondary credential. They further expressed their preference for technically trained men. Of the seven, six expressed themselves for the special secondary credential, one preferred the general junior high school credential and two

others required general credentials in addition to the special credential.

It is believed that the supervisors of industrial arts departments of the larger school systems of California and the heads of industrial arts departments of California state colleges have strongly endorsed the objectives of general education and guidance as those best fitted to the junior high school program. The trends as expressed by these men are fairly consistent with these objectives. Better teacher training to assist in the program is being emphasized.

The following chapters will give something of an appraisal of the functioning of the objectives and the effectiveness of trends, teacher preparation and certification requirements as they will deal principally with the actual functioning of junior high school industrial arts departments.

CHAPTER III

INDUSTRIAL ARTS PROGRAMS OF STUDY; COURSES OFFERED AND THEIR GRADE PLACEMENT IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

Item number 1 of Questionnaire Number I* was designed to furnish specific data as to the subject matter taught in the industrial arts classes of the junior high schools of California, as well as grade placement of such subject material. This questionnaire contains nineteen other items designed to furnish information of a general and supplementary nature. This chapter will furnish tabulations of item 1 for each of the city systems submitting at least two returns, tabulations for two groups of junior high schools not included in these systems, and a total tabulation of the one hundred and twenty-two junior high schools assisting in this study. Items 2, 4, and 9 will be summarized for the state as a whole. The appended copy of this questionnaire will be utilized as a complete tabulation of the returns, by inserting total number of schools replying to each item or sub-item in the blanks calling for check marks.

Questionnaire Number III was a request to the supervisors of industrial arts of the city systems of California

* For complete copy of Questionnaire Number I, see Appendix III, pages i to vi, inclusive.

asking them to submit their junior high school industrial arts program of study. The programs of study for the cities which responded to the questionnaire will be included in this chapter with the tabulation of item 1. A complete summarization of Questionnaire Number III will be made at the end of this chapter.

This chapter is a study of programs of study, courses offered and their grade placement in the junior high school industrial arts classes of California.

Inasmuch as programs of study, course offerings and grade placement, in California, are the responsibility of individual schools or school districts*, and because the different schools and school districts adopt useful variations in their programs of study, their course offerings and their grade placement, it was thought well to divide the study of this chapter into a study of each individual system represented in the returns, provided that at least two returns were available from each system. After these school systems were grouped, forty-three returns remained as returns from the only school of their respective systems or the only return of such system. These were grouped into larger and smaller school groups. Of the larger schools, there were eighteen and of the smaller twenty-five. They will be tabulated in these groupings.

* Refer to pages 12-15, inclusive.

As far as possible the city systems will be studied in metropolitan groups. Two such large groups are included. The first is the Los Angeles area, including Los Angeles, Long Beach, Compton, Pasadena, Burbank and Glendale. The second group is the metropolitan area of San Francisco. This group includes San Francisco, Oakland, Berkeley and San Jose. It is difficult to give any logical grouping to the remaining city systems, which are: San Diego, Riverside, Fresno and Sacramento, but they will be studied in the order named. In general, it can be said the smaller junior high schools to be studied as a group are located in central and northern California and most of the larger junior high schools to be studied are located in Southern California.

TABULATIONS FOR THE SCHOOL SYSTEMS OF THE LOS ANGELES METROPOLITAN AREA

1. The Los Angeles Junior High Schools.

Los Angeles is the most populous school district of California. There are twenty-three junior high schools, with an attendance of 38,005, and sixteen junior-senior high schools, with an attendance of 23,007 in this system.*

* Pages 4, 7 and 12. Also under heading "Los Angeles", Appendix II, pages iii and iv - xii and xiii.

In answer to Questionnaire Number III, Mr. C. E. Nihart*, Supervisor of Vocational and Practical Arts, submits the following program of study:

> In the Los Angeles junior high schools a boy is routed through a series of six exploratory courses, each of ten weeks duration, as follows:
>
> B7 - Mechanical Drafting and Agriculture
> A7 - Woodwork and Electricity
> B8 - General Metal and Printing
>
> During the A8, B9 and A9 grades the boy may elect for further training one or more of the above courses.
>
> Each of these courses represents a large occupational field. For example, the general metal course includes sheet metal, art metal, metal casting, welding, elementary machine shop practice, and forging *** these included in our general shop program.

The following, Tables VII and VII-a are tabulations of item number 1 for the twenty-one Los Angeles schools making returns, by courses and grade placement, and also on a percentage basis:

* Refer to communication from C. E. Nihart, Appendix IV, page i.

TABLE VII

SYSTEM: Los Angeles Junior High Schools				Number Returns: 21
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	17	17	21	21
a. Wood Turning	2	6	12	12
b. Wood Finishing	12	12	13	14
c. Stage Craft	1	7	11	12
d. Home Mechanics	6	7	6	8
e. Wood Carving	2	5	6	7
f. Art Fibre Furniture	2	1	3	4
g. Basketry	4	4	4	5
2. MECHANICAL DRAWING:	17	16	20	20
3. METAL:	10	17	18	20
a. Sheet Metal	7	11	13	15
b. Art Metal	7	10	14	15
c. Cold Metal	7	15	14	15
d. Ornamental Iron	2	8	8	8
e. Metal Finishing	4	8	7	8
f. Jewelry				
4. ELECTRICITY:	16	18	19	20
a. Radio	6	9	15	15
5. PRINTING:	8	19	19	19
6. FORGE:	2	8	7	8
7. AUTO MECHANICS:	1	10	12	12
8. MACHINE SHOP:		4	5	5
9. FOUNDRY:		6	6	7
10. WELDING:	1	7	9	9
a. Brazing	1	7	9	9
11. MISCELLANEOUS:	2	4	4	4
a. Pottery	1	3	3	4
b. Concrete		1	1	1
c. Leather Craft	1	1	1	1
d. Plumbing				
e. Shoe Repairing				
f. Tile		2	3	3
g. Airplane Models				
h. Book Binding	1	1	1	1
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving	1	1	1	1
n. Plaster				

TABLE VII-a

SYSTEM: Los Angeles Junior High Schools				Number Returns: 21
	LOCATION BY GRADE			
COURSE OFFERINGS (percentages)	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	80.95	80.95	100.00	100.00
a. Wood Turning	9.52	28.57	57.14	57.14
b. Wood Finishing	57.14	57.14	61.91	66.67
c. Stage Craft	4.76	33.33	52.38	57.14
d. Home Mechanics	28.57	33.33	28.57	38.10
e. Wood Carving	9.52	23.81	28.57	33.33
f. Art Fibre Furniture	9.52	4.75	14.29	19.05
g. Basketry	9.52	23.81	28.57	33.33
2. MECHANICAL DRAWING:	80.95	76.19	95.24	95.24
3. METAL:	47.62	80.95	85.72	95.24
a. Sheet Metal	33.33	52.38	61.91	71.43
b. Art Metal	33.33	47.62	66.67	71.43
c. Cold Metal	33.33	71.43	66.67	71.43
d. Ornamental Iron	9.52	38.10	38.10	38.10
e. Metal Finishing	18.05	38.10	33.33	38.10
f. Jewelry				
4. ELECTRICITY:	76.19	85.72	90.47	95.24
a. Radio	28.57	42.86	71.43	71.43
5. PRINTING:	38.10	90.47	90.47	90.47
6. FORGE:	9.52	38.10	33.33	38.10
7. AUTO MECHANICS:	4.76	47.62	57.14	57.14
8. MACHINE SHOP:		19.05	23.81	23.81
9. FOUNDRY:		28.57	28.57	33.33
10. WELDING:	4.76	33.33	42.86	42.86
a. Brazing	4.76	33.33	42.86	42.86
11. MISCELLANEOUS:	9.52	19.05	19.05	19.05
a. Pottery	4.76	4.76	4.76	4.76
b. Concrete	4.76	4.76	4.76	4.76
c. Leather Craft	4.76	4.76	4.76	4.76
d. Plumbing				
e. Shoe Repairing				
f. Tile		9.52	14.29	14.29
g. Airplane Models				
h. Book Binding	4.76	4.76	4.76	4.76
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m, Weaving	4.76	4.76	4.76	4.76
n. Plaster				

2. The Long Beach Junior High Schools.

In response to Questionnaire Number III, Mr. F. Horridge, Coordinator for Long Beach City Schools, communicates as follows:

> The following industrial arts courses are provided in the Long Beach junior high schools:
>
> 1. Mechanical Drawing
> 2. Woodworking
> 3. Electricity
> 4. Printing
> 5. General Metal
>
> We advise that students take the mechanical drawing course in the first semester of the junior high school because it has interpretive value in most of the other courses. We do not believe, however, that there is any psychlogical or logical reason for arranging the above mentioned courses into chronological order; that is, there is no reason why they should take one course before another, with the exception of mechanical drawing. We therefore assign every student in the junior high school to four of the above shops according to his preference in the first four semesters. In the ninth year he is permitted to take advanced work in the form of electives or start courses which he has not taken. It is much easier to program students when courses are not arranged in a chronological order as you will readily see.

As is apparent by item number 1, Table VII-b following, all of the six schools replying to the questionnaire were not completely following this program of study, but a wide variety of industrial arts subjects are given; wood, mechanical drawing, metal and electricity being the bases of the courses. It is noted that three of the six schools reporting teach printing. Long Beach has six junior high

schools with an attendance of 6220, and three junior-senior high schools with an attendance of 1955. For further information pertaining to Long Beach or any other school system mentioned in this study, refer to Table II, pages 4 and 5, Table III, page 7, and Table VI, page 12; also to Appendix II.

TABLE VII-b

SYSTEM: Long Beach Junior High Schools			Number of Returns: 6	
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	4	6	6	6
a. Wood Turning			3	3
b. Wood Finishing	3	4	4	4
c. Stage Craft				
d. Home Mechanics	2	1	1	3
e. Wood Carving	1	1	2	2
f. Art Fibre Furniture				
g. Basketry				
2. MECHANICAL DRAWING:	4	4	5	5
3. METAL:	3	5	5	5
a. Sheet Metal	2	3	4	4
b. Art Metal	1	4	4	4
c. Cold Metal	3	3	3	3
d. Ornamental Iron	2	5	5	5
e. Metal Finishing	1	3	3	3
f. Jewelry				
4. ELECTRICITY:	2	3	4	4
a. Radio	1	1	2	2
5. Printing:	3	3	3	3
6. FORGE:	1	3	3	3
7. AUTO MECHANICS:		1	4	4
8. MACHINE SHOP:	1	2	3	3
9. FOUNDRY:	1	3	3	3
10. WELDING:				
a. Brazing				
11. MISCELLANEOUS:				
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

3. The Compton Junior High Schools.

The following is an excerpt from "Junior High Plan", a publication of the Compton Union Secondary District:

> The shop work offered in the junior high school is of a prevocational nature, and is designed to develop many of the habits, ideas and tendencies which the boy will find of use when he leaves school and goes into industry, business or commerce.
>
> Mechanical drawing, available in the 7th and 9th grades, precedes wood and metal work, thus enabling the boy to better understand the drawings and designs used in the manual arts.
>
> Correct manipulation of tools, a knowledge of materials used in industry, and strict adherence to safety procedures are emphasized, in order that students may have a better appreciation of the requirements of life in later years.
>
> From the very elementary processes taught in the lower grades, the student proceeds to more difficult problems through the succeeding grades, as his natural ability and strength develops. His interest is thus maintained through four successive years, to the end that he may become a more useful citizen, and learn to fit into the environment in which he finds himself in our present complex world, through the development of a spirit of co-operation in several useful and interesting fields of activity.
>
> Things to Expect from the Study of Shop Courses.
>
> 1. A variety of common skills that every person should know and which can be used for the solving of practical problems about the home or wherever these problems arise.
> 2. Students are provided with a means of properly using their leisure time by being taught to do and make things they like.
> 3. The courses have vocational value in that they give the student an insight into a number of trades.
> 4. The necessary preparatory background for further technical study is provided by shop courses.
> 5. Habits of accuracy, observation, neatness and careful planning are developed in all shop courses.

MECHANICAL DRAWING - SEVENTH GRADE

Essentials:

1. Instruction in and development of a knowledge of the names of, uses, and care of the common instruments of mechanical drawing; drawing board, T square, triangle, scale, ruler, pencils.

2. A study of how to interpret and use proper line values in drawing the plates for shop projects.

3. Instruction and study of how to draw simple Gothic sloping letters.

4. Development of ability to make pictorial drawings.

5. Practice in interpreting more complex drawings than seventh grade students are able or are expected to make.

WOODSHOP - SEVENTH GRADE

Essentials:

1. One of the first essentials is to gain the use and care of tools: plane, try-square, marking guage, ripple, hand saw, boring tools.

2. Development of skill in the following mechanical operations: driving a nail, sawing to a line, planing and squaring a board, laying out a pattern.

3. Instruction applying finishes: paint, varnish, shellac, stain, wax.

4. Drill in the proper use of abrasives, as sandpaper, emery, etc.

5. Learn how to make joints: cross-lap, mortise and tenon, dowel.

6. Acquire a general knowledge of rules of shop safety and precautions.

7. Instruction in how to select suitable material for a project to be constructed.

GENERAL SHOP - EIGHTH GRADE

Essentials:

1. Sheet Metal.

a. Development of understanding of the use and care of the following tools: tin-snips, try-squares, soldering copper, bar solder, mandrils, mallets, hand seamer, awl, forming roll, stakes, wiring machine, rivet punch, rivet set, header, burring machine, templates.

b. Drill in the following mechanical operations until the proper skill is developed: making a lap seam, a single lock seam, and a double lock seam; how to tin a soldering copper.

c. Acquire a knowledge of the nature of sheet metals and their uses: tin plates, galvanized sheets.

2. Bench Metal and Foundry.

a. Instruction in the use and care of the following: scribe, square, dividers, calipers, center punch, cold chisel, hack saw, file, drill, hammer, dies, taps, emery wheel, foundry furnace, drill press, machinist vises, rivet set, ram, slick, spoon, flask, spruce cutter or stick, riddle, crucible, pattern lifter, gate cutter, tongs.

b. Develop skill in the following mechanical operations: measuring and laying out, cutting and chopping, heat treating, foundry casting, forging.

c. Obtain a knowledge of the kinds of iron and steel and their uses.

3. Electricity.

a. A study of elementary electricity and its uses - direct and alternating current, bell circuits, meters and how to read them.

b. Develop ability to construct a telegraph key, a buzzer, and a small motor.

c. Learn how to repair a light cord and home electrical appliances.

MECHANICAL DRAWING - NINTH GRADE

Essentials:

All essentials listed for the seventh grade with the following added:

1. Drill in correct mechanical lettering until student has mastered this important part of drawing.

2. Instruction in sketching free-hand.

3. Development of ability to do orthographic drawing, pictorial drawing, geometrical drawing, revolutions, auxiliary views, intersections, and developments.

4. Learn how to read and interpret blueprints.

The Compton High School District has five junior high schools, with a total of 3002 students. These junior high

schools include the tenth grade. The course of study for their tenth grade is not considered in this study. These five schools are separated by some distance, being located in a district of interurban nature.

Table VII-c, following, and the course of study as given above indicate a simplified and uniform practice among the junior high schools of Compton.

TABLE VII-c

SYSTEM: Compton Junior High Schools				Number of Returns: 5
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	5			5
a. Wood Turning				
b. Wood Finishing				
c. Stage Craft				
d. Home Mechanics				
e. Wood Carving				
f. Art Fibre Furniture				
g. Basketry				
2. MECHANICAL DRAWING:	5		5	5
3. METAL:		5		5
a. Sheet Metal		5		5
b. Art Metal		5		5
c. Cold Metal		5		5
d. Ornamental Iron		5		5
e. Metal Finishing		5		5
f. Jewelry				
4. ELECTRICITY:		5		5
a. Radio				
5. PRINTING:				
6. FORGE:				
7. AUTO MECHANICS:				
8. MACHINE SHOP:				
9. FOUNDRY:		5		5
10. WELDING:				
a. Brazing				
11. MISCELLANEOUS:				
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

4. The Pasadena Junior High Schools.

In answer to Questionnaire Number III, Mr. George D. Henck, Director of Vocational Education for the Pasadena City Schools, submits the following:

> The work in the seventh grade is compulsory for all students and comprises one semester's work in wood working for the low seventh grade and ten weeks each of printing and mechanical drafting for the boys in the high seventh grade.
>
> In the eighth, ninth and tenth grades the work is elective. Eighth grade students electing the work are limited to our courses in sheet metal work and electricity, ten weeks each, and general metal working, one semester. The ninth and tenth grade students may elect any subject of the foregoing.

The junior high schools of Pasadena include the 7th, 8th, 9th and 10th grades. Only the 7th, 8th and 9th grades are considered in this study. There are five junior high schools in Pasadena with a total enrollment of five thousand nine hundred and twenty-five students. Table VII-d, which follows, tabulates the course offerings.

TABLE VII-d

SYSTEM: Pasadena Junior High Schools				Number of Returns: 5
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	5			5
a. Wood Turning			5	5
b. Wood Finishing	1		2	2
c. Stage Craft			4	4
d. Home Mechanics		1	1	1
e. Wood Carving				
f. Art Fibre Furniture				
g. Basketry				
2. MECHANICAL DRAWING:	5	1	5	5
3. METAL:		3	3	4
a. Sheet Metal		3	3	3
b. Art Metal		2	2	2
c. Cold Metal		1	1	1
d. Ornamental Iron		2	3	3
e. Metal Finishing		2	3	3
f. Jewelry				
4. ELECTRICITY:		4	4	4
a. Radio			1	1
5. PRINTING:	5	1	5	5
6. FORGE:		3	3	3
7. AUTO MECHANICS:			2	2
8. MACHINE SHOP:		4	4	4
9. FOUNDRY:		3	3	3
10. WELDING:			1	1
a. Brazing			1	1
11. MISCELLANEOUS:				
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

5. The Burbank Junior High Schools.

As an answer to Questionnaire Number III, the shop curriculum of one of their junior high schools, the John Burroughs Junior High School, was submitted. It is given as follows:

> Following is our present shop sequence of courses:
>
> 7B - Mechanical drawing, 10 weeks
> Elementary woodwork, 10 weeks
>
> 7A - Junior metal work, 10 weeks
> Sheet metal work, 10 weeks
>
> 8B - Advanced wood shop, 20 weeks
>
> 8A - Advanced metal shop, art metal and ornamental iron, 20 weeks
>
> These courses are required of all boys regularly enrolled in John Burroughs Junior High School. In ninth grade, boys may elect advanced wood shop, advanced metal shop, advanced mechanical drawing, forge and foundry, or individual combination projects in any of these fields. We require two years of fundamental skills on the theory that the ground work obtained is necessary to and will make much more productive activity.

The City of Burbank has two junior high schools with a total enrollment of 969 students.

The Burbank industrial arts plan for the junior high schools is rather peculiar in that they rotate both woodwork and metal work in the seventh and eighth grades, where usually a grade uses either one or the other of these subjects, but not both. Table VII-e, following, will indicate extensive offerings in industrial arts in both schools:

TABLE VII-e

SYSTEM: Burbank Junior High Schools				Number of Returns: 2
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	2	2	2	2
a. Wood Turning		2	2	2
b. Wood Finishing	2	2	2	2
c. Stage Craft			2	2
d. Home Mechanics			1	1
e. Wood Carving			2	2
f. Art Fibre Furniture				
g. Basketry				
2. MECHANICAL DRAWING:	2	1	2	2
3. METAL:	2	2	2	2
a. Sheet Metal	1	1	2	2
b. Art Metal		1	1	1
c. Cold Metal	2	2	2	2
d. Ornamental Iron	1	2	2	2
e. Metal Finishing	2	2	2	2
f. Jewelry				
4. ELECTRICITY:		1	2	2
a. Radio			1	1
5. PRINTING:				
6. FORGE:	2	1	2	2
7. AUTO MECHANICS:				
8. MACHINE SHOP:		1	2	2
9. FOUNDRY			2	2
10. WELDING:			2	2
a. Brazing			2	2
11. MISCELLANEOUS:				
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

6. The Glendale Junior High Schools.

In response to Questionnaire Number III, the following reply was received from Mr. A. L. Ferguson, Deputy Superintendent:

> In answer to your inquiry about Industrial Arts program in the junior high schools, I will give you the requirements for the Eleanor J. Toll Junior High School, which fairly well represents our program. Due to differences in facilities and equipment, the programs in the various junior high schools are not identical.
>
> B7 - Mechanical drawing required
>
> A7 - Wood shop required
>
> B8 - No industrial arts required and none offered, except to special students
>
> A8 - Wood shop or sheet metal elective
>
> B9 and A9 - Engineering drawing, wood shop or sheet metal elective

Glendale has four junior high schools with a total enrollment of 3,611 students.

Glendale is rather peculiar, for this region, in not requiring some form of industrial arts in the eighth grade. Table VII-f, following, indicates that the industrial arts offerings are somewhat meager as compared to other schools in this area:

TABLE VII-f

SYSTEM: Glendale Junior High Schools				Number of Returns: 3
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	3	3	3	3
a. Wood Turning				
b. Wood Finishing	1	1	1	1
c. Stage Craft				
d. Home Mechanics		1		1
e. Wood Carving				
f. Art Fibre Furniture				
g. Basketry				
2. MECHANICAL DRAWING:	3		1	3
3. METAL:		2	3	3
a. Sheet Metal		2	3	3
b. Art Metal			3	3
c. Cold Metal				
d. Ornamental Iron				
e. Metal Finishing				
f. Jewelry				
4. ELECTRICITY:				
a. Radio				
5. PRINTING:				
6. FORGE:				
7. AUTO MECHANICS:				
8. MACHINE SHOP:				
9. FOUNDRY:				
10. WELDING:				
a. Brazing				
11. MISCELLANEOUS:		1		1
a. Pottery				
b. Concrete		1		1
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

TABULATIONS FOR THE SCHOOL SYSTEMS OF THE SAN FRANCISCO METROPOLITAN AREA

It is apparent by a study of the following returns that this area lacks the uniformity and standardization found in the Los Angeles area. It could not be discovered that the systems in this area had the definite programs of study in written form that were furnished from the school systems of the Los Angeles area. San Francisco appears to have the most standardized and uniform system in the field of junior high school industrial arts education in this group. It shows some marked differences from the Los Angeles system, as will be revealed by a study of the tabulations of item number 1 for the two cities.

1. The San Francisco Junior High Schools.

No returns were received from San Francisco for Questionnaire Number III, but an article covering this subject, by Mr. Charles E. Barker, Director of Industrial Arts of the San Francisco Public Schools, appeared in the February, 1938, issue of the "California Industrial Education News Notes", published by the California Industrial Education Association of Los Angeles, California. This is quoted in lieu of a return for the questionnaire:

> Equipment for the shop work in the ten junior high schools (two of the San Francisco junior high schools are Jr.-Sen. high schools) in San Francisco is almost identical. Each school has an electric shop, machine shop,

print shop, elementary wood shop, advanced wood shop, sheet metal shop*, and drafting room.

The work is organized on a unit shop basis with an individual teacher for each subject. There are fifty-six** teachers, carrying an average load of 180 students a day in either five or six periods of forty-six minutes each, which means that approximately 10,000 different children receive shop instruction each school day.

Industrial arts are required of students in the low seventh grade, who take mechanical drawing and elementary woodwork. In the high seventh grade, where students take metal, and in the low eighth, where the subject required is electricity. The high eighth, low ninth and high ninth grades provide electives: students are permitted to choose printing, electricity, advanced woodwork, machine shop, mechanical drawing or sheet metal.

Courses of study in required subjects are of necessity very formal, as the board of education furnishes all the materials for projects. The only requirement which is made of a student when he deviates from the prescribed course of study is that he make a drawing of the contemplated project and that it will be useful or that it will operate when he has completed it.

A close relationship exists between the printing, social science, and English departments. Models of various types of conveyances and their evolution have been made for the use of the social science departments, the school paper is printed by the students, and short articles written by the students in English and social science classes are published in pamphlet form.

The activity program of "learning by doing" functions admirably in the industrial arts department. Work in the shop cannot be surpassed as a means for discovering the child's interest, which is an important function of the junior high school.

* In our Questionnaire Number II this was classified by instructors as a general metal shop.

** Only 49 were found in the California School Directory for 1936-37.

> The primary objectives of industrial arts in the junior high school - namely exploration, aptitude, and appreciation - are carefully adhered to. The elective courses beginning in the high eighth grade offer ample opportunity for determining interest in various fields of industry. Students are permitted to make whatever they choose provided they furnish their own materials, except fastening and finishing materials.
>
> The machine-tool equipment used by advanced students compares very favorably with equipment found in industry; thus the student becomes accustomed to the kind of machinery he will use later in life. We believe that the teaching of danger-consciousness and safety is of primary importance in our shops.
>
> The program is being developed so that the high eighth grade students will be able to gain access to three different shops in one semester. The semester is divided into three parts of six weeks each; and at the end of each six week period the student will change to a new shop. This can be done at the end of each report card period. In this way, students will have an opportunity to gain appreciation and experience in machine shop, print shop, and advanced woodwork. These additional shop experiences, plus the required courses in the junior high school, give the child a splendid opportunity to contact the basic industrial fields. Vocational guidance based upon the child's actual experience in a close approximation to a real industrial situation is reliable, since it affords the counselor an opportunity to observe aptitude and success in a given field.

The California School Directory for 1936-37 gives San Francisco ten junior high schools with about 11,882 students, and one junior-senior high school, which is for girls. While the above article is submitted there may be some question as to its actual significance to this study.

The above quotation and Table VII-g suggest the tendency of San Francisco to adhere much more closely to the

unit shop organization than do most of the junior high school systems of California. As is noted by the above figure, the average enrollment for the San Francisco junior high schools is nearly twelve hundred students.

TABLE VII-g

SYSTEM: San Francisco Junior High Schools				Number of Returns: 8
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	8	7	7	8
a. Wood Turning		2	4	4
b. Wood Finishing	1	2	2	3
c. Stage Craft			1	1
d. Home Mechanics		1		1
e. Wood Carving				
f. Art Fibre Furniture				
g. Basketry				
2. MECHANICAL DRAWING:	3	5	6	8
3. METAL:	7	4	4	8
a. Sheet Metal	7	3	3	8
b. Art Metal		3	3	3
c. Cold Metal		1	2	2
d. Ornamental Iron				
e. Metal Finishing				
f. Jewelry				
4. ELECTRICITY:		7	3	7
a. Radio			2	2
5. PRINTING:	4	8	8	8
6. FORGE:		1	1	1
7. AUTO MECHANICS:			2	2
8. MACHINE SHOP:		2	8	8
9. FOUNDRY:				
10. WELDING:				
a. Brazing				
11. MISCELLANEOUS:			1	1
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models			1	1
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

2. The Oakland Junior High Schools.

The Oakland junior high school system includes thirteen junior high schools with an attendance of 10,365, and two junior-senior high schools with an attendance of 4,669.

It was not possible to procure from Oakland a program of study for their junior high school industrial arts classes. A study of the tabulation for the seven Oakland schools reporting indicates the following:

a. No very uniform practices in the industrial arts departments of the junior high schools.

b. Woodwork the most emphasized course of study.

c. Mechanical drawing almost lacking from their course of study.

d. Quite a wide variety of subjects taught under metal; courses seem to be poorly standardized. Apparently no two schools trying to teach the same courses.

e. Printing offered in only two of the schools.

f. Quite a number of offerings under miscellaneous courses.

A study of item number 4 in the questionnaire shows that five of the seven schools making returns made industrial arts compulsory in the seventh and eighth grades, and one reported compulsory work in the ninth grade. One school did not answer this item.

A study of item number 2 of Questionnaire Number I in-

dicates that industrial arts are offered more frequently for one semester in the seventh and eighth grades than they are for one year.

TABLE VII-h

SYSTEM: Oakland Junior High Schools				Number of Returns: 7
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	7	5	6	7
a. Wood Turning	2	2	4	5
b. Wood Finishing	2	2	6	6
c. Stage Craft	1	2	2	3
d. Home Mechanics	1	2	1	3
e. Wood Carving			3	3
f. Art Fibre Furniture			1	1
g. Basketry		1	1	1
2. MECHANICAL DRAWING:	1	1	1	1
3. METAL:	2	5	6	6
a. Sheet Metal	2	4	4	5
b. Art Metal	1	3	4	4
c. Cold Metal	1	2	3	3
d. Ornamental Iron		1		1
e. Metal Finishing		1	1	1
f. Jewelry				
4. ELECTRICITY:	2	3	3	4
a. Radio				
5. PRINTING:	1	2	2	2
6. FORGE:	2	5	3	6
7. AUTO MECHANICS:				
8. MACHINE SHOP:	1	1	2	2
9. FOUNDRY:	1		1	1
10. WELDING:				
a. Brazing				
11. MISCELLANEOUS:	3	3	3	3
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models	2	2	2	2
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints	1	1	1	1
l. Hobby Craft				
m. Weaving			1	1
n. Plaster				

3. The Berkeley Junior High Schools.

The Berkeley junior high school system includes three junior high schools with an attendance of 3,256. Two schools responded to Questionnaire Number I, and no information other than this is available to indicate what their program of study may be. Item number 2 of this questionnaire indicates that industrial arts is offered for one semester in the seventh and eighth grades and for the full year in the ninth grade. Item number 4 indicates that industrial arts is compulsory in the seventh and eighth grades and is elective in the ninth grade.

TABLE VII-i

SYSTEM: Berkeley Junior High Schools				Number of Returns: 2
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	1	1	2	2
a. Wood Turning		1	2	2
b. Wood Finishing		1	1	2
c. Stage Craft		1	1	1
d. Home Mechanics	1		2	2
e. Wood Carving				
f. Art Fibre Furniture				
g. Basketry				
2. MECHANICAL DRAWING:	1	1	2	2
3. METAL:	2		2	2
a. Sheet Metal	2		2	2
b. Art Metal	1		2	2
c. Cold Metal	2		2	2
d. Ornamental Iron	1		2	2
e. Metal Finishing	1		2	2
f. Jewelry				
4. ELECTRICITY:		1	1	2
a. Radio				
5. PRINTING:		1	2	2
6. FORGE			1	1
7. AUTO MECHANICS:		1	2	2
8. MACHINE SHOP:			1	1
9. FOUNDRY:				
10. WELDING:			1	1
a. Brazing			1	1
11. MISCELLANEOUS:	1	1	1	1
a. Pottery	1	1	1	1
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

4. The Junior High Schools of San Jose.

The San Jose junior high school system includes four junior high schools with an attendance of 3,191.

In answer to Questionnaire Number III, the following communication was received from Mr. A. R. Nichols, Director of Vocational Education:

> We don't have what we would call a strict course of study. We believe our junior high school youngsters should have as much leeway as possible. They can make what they want to make, determined by their ability.
>
> For this reason we have developed operations and operation sheets and ask the pupil to make anything he wants to under the direction of the teacher, but suggest that he learn operations first. We have developed some twenty-five different operations, and hope to have as many as fifty in the three fields, sheet metal, electricity and woodwork.

Mr. N. O'Brien, Principal of Woodrow Wilson Junior High School submitted the following program of study which was considered fairly representative:

> In our school all our boys have 10 weeks each term in 7th and 8th grades in the shops * * *
>
> Low 7th - Woodwork
> High 7th - Electricity or mechanical drawing
> Low 8th - Mechanical drawing or sheet metal
> High 8th - Printing and woodwork
> Low and high 9th - Electives in any shop - every day for 2 terms

This communication also stated that industrial arts was offered to special classes for twenty weeks in each term from the high 7th up.

TABLE VII-j

SYSTEM: San Jose Junior High Schools				Number of Returns: 4
	LOCATION BY GRADE			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	4	4	4	4
a. Wood Turning			2	2
b. Wood Finishing	1	1	2	2
c. Stage Craft			1	1
d. Home Mechanics				
e. Wood Carving	1		1	2
f. Art Fibre Furniture			1	1
g. Basketry	1	1	1	1
2. MECHANICAL DRAWING:	3	2	4	4
3. METAL:	3	4	4	4
a. Sheet Metal	3	4	4	4
b. Art Metal		2	3	3
c. Cold Metal	2	3	3	3
d. Ornamental Iron		2	3	3
e. Metal Finishing	1	2	2	2
f. Jewelry				
4. ELECTRICITY:	3	3	4	4
a. Radio			2	2
5. PRINTING:		2	2	2
6. FORGE:				
7. AUTO MECHANICS:				
8. MACHINE SHOP:			1	1
9. FOUNDRY:				
10. WELDING:			2	2
a. Brazing			2	2
11. MISCELLANEOUS:				
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

TABULATIONS FOR THE JUNIOR HIGH SCHOOL
SYSTEMS OF OTHER CITY SCHOOLS

1. The San Diego Junior High Schools.

The San Diego junior high school system includes five junior high schools with an attendance of 6,074 and two junior-senior high schools with an attendance of 1,643.

In response to Questionnaire Number III, the following was submitted:

> In the junior high schools, woodwork, electricity, printing, and general shop work are offered. In the seventh grade, six weeks of exploratory courses are offered in some junior high schools and in others ten weeks.

Item number 2 of Questionnaire Number I supplements the above as follows:

Two of the six schools responding offered industrial arts one half semester for the 7th grade; one school offered this work for one semester in the 7th grade; and three of the schools offered this work for one year in the seventh grade. In the eighth grade the same distribution was noted. In the ninth grade one school offered industrial arts for one half semester, two schools for one semester, and three schools offered it for the full year.

In answer to item number 4 of Questionnaire Number I, all of these schools reported industrial arts compulsory in the seventh grade, three reported it compulsory in the eighth grade, and one reported industrial arts compulsory in the ninth grade.

TABLE VII-k

SYSTEM: San Diego Junior High Schools				Number of Returns: 6
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	5	6	6	6
a. Wood Turning	2	2	4	4
b. Wood Finishing	2	3	4	4
c. Stage Craft	1	2	3	3
d. Home Mechanics	2	2	2	2
e. Wood Carving	2	3	3	3
f. Art Fibre Furniture	1	1	2	2
g. Basketry	2	2	2	2
2. MECHANICAL DRAWING:	4	5	5	5
3. METAL:	4	6	6	6
a. Sheet Metal	4	5	5	5
b. Art Metal	2	2	2	2
c. Cold Metal	1	3	4	4
d. Ornamental Iron	2	2	2	3
e. Metal Finishing	2	3	4	4
f. Jewelry				
4. ELECTRICITY:	1	2	3	3
a. Radio		1	1	1
5. PRINTING:	2	3	3	4
6. FORGE:	1	3	4	4
7. AUTO MECHANICS:		2	3	3
8. MACHINE SHOP:			2	2
9. FOUNDRY:		2	2	2
10. WELDING:			2	2
a. Brazing			2	2
11. MISCELLANEOUS:	1	2	2	2
a. Pottery	1	1	1	1
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing		1	1	1
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

2. The Riverside Junior High Schools.

The Riverside junior high school system includes three junior high schools with an attendance of 2,055.

In response to Questionnaire Number III, the following information was submitted:

SEVENTH GRADE OFFERINGS

	Central Jr. High Periods per week	Chemawa Jr. High Periods per week	Univ. Hts. Jr. High Periods per week
Shop	4	5*	5
Mechanical Drawing	5*	5*	5*
EIGHTH GRADE			
Mechanical Drawing	5*	5*	5*
Woodshop	5*	5*	5*
NINTH GRADE			
Mechanical Drawing	5	5	5
Woodshop	5	5	
Electric shop	5		
Auto and Woodshop			5
Home Mechanics	5		

Item number 4 of Questionnaire Number I indicates that industrial arts is compulsory in these schools only in the seventh grade.

* The numbers above marked with an asterisk are one semester courses. Those not so marked are one year courses.

TABLE VII-1

SYSTEM: Riverside Junior High Schools				Number of Returns: 3
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	3	3	3	3
a. Wood Turning		3	3	3
b. Wood Finishing	2	2	2	2
c. Stage Craft				
d. Home Mechanics	1			1
e. Wood Carving				
f. Art Fibre Furniture				
g. Basketry				
2. MECHANICAL DRAWING:	2	2	2	2
3. METAL:	2	1	1	2
a. Sheet Metal	1			1
b. Art Metal	1			1
c. Cold Metal	1			1
d. Ornamental Iron				
e. Metal Finishing				
f. Jewelry				
4. ELECTRICITY:	1	1	1	1
a. Radio				
5. PRINTING:				
6. FORGE:				
7. AUTO MECHANICS:			1	1
8. MACHINE SHOP:				
9. FOUNDRY:				
10. WELDING:				
a. Brazing				
11. MISCELLANEOUS:				
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

3. The Fresno Junior High Schools.

The Fresno junior high school system includes three junior high schools with an attendance of 2,193 and two junior-senior high schools with an attendance of 2,359.

No returns are available for Questionnaire Number III. Item number 1 of Questionnaire Number I indicates that woodwork throughout the three grades is their most stressed offering. Mechanical drawing comes next in frequency. Metal work is offered in three of the five schools, with apparent lack of uniformity as to course offerings.

Item number 2 of this questionnaire indicates that in three of these schools shop courses were offered for one semester in the seventh grade. Two schools offered shop courses for one semester in the eighth grade and three schools offered these courses for one year. In the ninth grade all of the five schools sending returns offered industrial arts for one year.

Item number 4 states that in three of these schools industrial arts is compulsory in the seventh and eighth grades. No compulsory industrial arts courses are noted for the ninth grade.

TABLE VII-m

SYSTEM: Fresno Junior High Schools				Number of Returns: 5
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	4	5	5	5
a. Wood Turning	1	3	4	4
b. Wood Finishing	2	2	3	3
c. Stage Craft			1	1
d. Home Mechanics	1	1	1	1
e. Wood Carving		1	1	1
f. Art Fibre Furniture	3	3	4	4
g. Basketry	2	2	2	2
2. MECHANICAL DRAWING:	2	4	4	4
3. METAL:	1	1	3	3
a. Sheet Metal	1	1	3	3
b. Art Metal	1	1	1	1
c. Cold Metal	1	1	1	1
d. Ornamental Iron	1	1	1	1
e. Metal Finishing	1	1	1	1
f. Jewelry				
4. ELECTRICITY:	1	1	2	2
a. Radio				
5. PRINTING:			1	1
6. FORGE:	1	1	1	1
7. AUTO MECHANICS:			1	1
8. MACHINE SHOP:				
9. FOUNDRY:				
10. WELDING:		1	2	2
a. Brazing			1	1
11. MISCELLANEOUS:				
a. Pottery				
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

4. The Sacramento Junior High Schools.

The Sacramento junior high school system includes five junior high schools with an attendance of 4,291.

In response to Questionnaire Number III, Mr. W. P. Dayton, Supervisor, Industrial Arts, gives the following information:

> Sacramento is committed to the four shop set-up for our five junior high schools * * *, namely graphic arts, including mechanical drawing and printing, general metal shop, hand craft shop, and wood shop.
>
> We program as follows: Low seventh, mechanical drawing, including elementary drafting, free hand drafting, and blue print reading. High seventh, elementary woodwork. Low eighth, metal work, including elementary sheet metal and bench metal. High eighth, hand craft, including a brief exploration of five crafts: wood carving, pottery, basketry, jewelry, and leather craft. Either low or high eighth graders are privileged to elect printing instead of other shop activities if they so desire. In the ninth grades pupils may choose work in any of the shops, pursuing the work for a full year on a more advanced basis.
>
> In the McClatchy High School shop work is elective and students may choose work in any of the above named shops, pursuing the same type of work on a senior high school level. Shop work is required in the seventh grades and elective in the eighth and ninth grades, and all of the years of the senior high school.

Sacramento is one of the most standardized and uniformly organized systems in the State of California. It compares in this respect with Compton, Los Angeles, Long Beach, Pasadena and San Francisco. Other city systems

showing uniformity of course offerings, perhaps not to the same extent as the above, are Burbank, Glendale, Berkeley and San Jose. The school systems having individual school programs are San Diego, Riverside, Fresno and Oakland.

TABLE VII-n

SYSTEM: Sacramento Junior High Schools				Number of Returns: 2
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	2	2	2	2
a. Wood Turning	1	1	2	2
b. Wood Finishing	2	1	2	2
c. Stage Craft				
d. Home Mechanics				
e. Wood Carving		2	2	2
f. Art Fibre Furniture				
g. Basketry		2	2	2
2. MECHANICAL DRAWING:	2			2
3. METAL:	1	2	2	2
a. Sheet Metal	1	2	2	2
b. Art Metal	1	2	2	2
c. Cold Metal	1	2	2	2
d. Ornamental Iron	1	2	2	2
e. Metal Finishing	1	1	2	2
f. Jewelry		1	1	1
4. ELECTRICITY:				
a. Radio				
5. PRINTING:		2	2	2
6. FORGE:				
7. AUTO MECHANICS:				
8. MACHINE SHOP:				
9. FOUNDRY:				
10. WELDING:			1	1
a. Brazing			1	1
11. MISCELLANEOUS:		2	2	2
a. Pottery		2	2	2
b. Concrete				
c. Leather Craft				
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

TABULATIONS FOR INDEPENDENT JUNIOR HIGH SCHOOLS

The following tables, VII-o to VII-t, inclusive, are tabulations of item number 1, Questionnaire Number I, for the independent larger junior high schools, eighteen in number; the smaller independent junior high schools, numbering twenty-five; and for the total of one hundred and twenty-two junior high schools of the state which assisted in this study. These one hundred and twenty-two junior high schools include all previously tabulated groups. Table VII-s is a summary of all schools reporting, and Table VII-t is the same summary worked out on a percentage basis.

It will be noted that the group of larger independent junior high schools have much in common in their teaching of woodwork, mechanical drawing, and metal work, but with great divergence in other course offerings.

The group of smaller junior high schools have the teaching of woodwork as their commonly taught subject, with a great disparity in the uniformity of other courses offered. This, of course, is explainable by smaller schools, less equipment, smaller faculties, etc.

The total tabulation for the state of item number 1 can be interpreted by referring to the other tabulations in this chapter. For instance, it may be noted that electricity is taught by thirty-one schools in the seventh grade.

The question might arise, "What schools are teaching this course and among what schools is electricity not taught in the seventh grade?" Reference to these tabulations will indicate that Los Angeles teaches electricity in sixteen of her junior high schools in the seventh grade, Long Beach in two junior high schools in the seventh grade, etc.

This complete tabulation, or summary of tabulations, should answer the question, "What is being taught in the industrial arts classes in the junior high schools of California, and what is the grade placement of these subjects?"

TABLE VII-c

SYSTEM: Large Independent Junior High Schools				Number of Returns: 18
	LOCATION BY GRADES			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	15	14	17	18
a. Wood Turning	2	6	13	14
b. Wood Finishing	11	11	14	14
c. Stage Craft		3	6	6
d. Home Mechanics		4	2	4
e. Wood Carving	2		3	3
f. Art Fibre Furniture			2	2
g. Basketry				
2. MECHANICAL DRAWING:	16	11	13	18
3. METAL:	7	13	11	15
a. Sheet Metal	6	12	9	15
b. Art Metal	3	9	8	11
c. Cold Metal	2	8	8	10
d. Ornamental Iron	2	2	3	3
e. Metal Finishing	1	3	3	4
f. Jewelry				
4. ELECTRICITY:	3	9	5	10
a. Radio	1	2	3	3
5. PRINTING:	4	5	6	7
6. FORGE:		4	6	6
7. AUTO MECHANICS:		2	4	5
8. MACHINE SHOP:		1	5	5
9. FOUNDRY:	1	3	4	4
10. WELDING:		2	2	2
a. Brazing		1	1	1
11. MISCELLANEOUS:	1	2	1	2
a. Pottery				
b. Concrete				
c. Leather Craft	1	2	1	2
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

TABLE VII-p

SYSTEM: Large Independent Junior High Schools				Number of Returns: 18
	LOCATION BY GRADE			
COURSE OFFERINGS (percentages)	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	83.33	77.77	94.44	100.00
a. Wood Turning	11.11	33.33	72.21	77.77
b. Wood Finishing	61.11	61.11	77.77	77.77
c. Stage Craft		16.66	33.33	33.33
d. Home Mechanics		22.22	11.11	22.22
e. Wood Carving	11.11		16.66	16.66
f. Art Fibre Furniture			11.11	11.11
g. Basketry				
2. MECHANICAL DRAWING:	88.88	61.11	72.21	100.00
3. METAL:	38.88	72.21	61.11	83.33
a. Sheet Metal	33.33	66.66	50.00	83.33
b. Art Metal	16.66	50.00	44.44	61.11
c. Cold Metal	11.11	44.44	44.44	55.55
d. Ornamental Iron	11.11	11.11	16.66	16.66
e. Metal Finishing	5.55	16.66	16.66	22.22
f. Jewelry				
4. ELECTRICITY:	16.66	50.00	27.77	55.55
a. Radio	5.55	11.11	16.66	16.66
5. PRINTING:	22.22	27.77	33.33	38.88
6. FORGE:		22.22	33.33	33.33
7. AUTO MECHANICS:		11.11	22.22	27.77
8. MACHINE SHOP:		5.55	27.77	27.77
9. FOUNDRY:	5.55	16.66	22.22	22.22
10. WELDING:		11.11	11.11	11.11
a. Brazing		5.55	5.55	5.55
11. MISCELLANEOUS:	5.55	11.11	5.55	11.11
a. Pottery				
b. Concrete				
c. Leather Craft	5.55	11.11	5.55	11.11
d. Plumbing				
e. Shoe Repairing				
f. Tile				
g. Airplane Models				
h. Book Binding				
i. Brick				
j. Forge Welding				
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

TABLE VII-q

SYSTEM: Small Independent Junior High Schools				Number of Returns: 25
	LOCATION BY GRADE			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	20	23	21	25
a. Wood Turning	6	10	13	15
b. Wood Finishing	13	16	15	18
c. Stage Craft			1	1
d. Home Mechanics		2	3	4
e. Wood Carving	3	3	3	4
f. Art Fibre Furniture	1	1	2	4
g. Basketry		2		2
2. MECHANICAL DRAWING:	5	7	13	17
3. METAL:	7	7	12	15
a. Sheet Metal	5	5	8	13
b. Art Metal	1		3	3
c. Cold Metal	2	4	3	6
d. Ornamental Iron	2	2	3	3
e. Metal Finishing	1	1	1	1
f. Jewelry				
4. ELECTRICITY:	2	4	6	8
a. Radio			1	1
5. PRINTING:		3	4	5
6. FORGE:	2	5	7	8
7. AUTO MECHANICS:		1	4	4
8. MACHINE SHOP:			2	2
9. FOUNDRY:			1	1
10. WELDING:			1	1
a. Brazing			1	1
11. MISCELLANEOUS:	1	1	4	4
a. Pottery			1	1
b. Concrete			1	1
c. Leather Craft			2	2
d. Plumbing			2	2
e. Shoe Repairing			1	1
f. Tile	1			1
g. Airplane Models				
h. Book Binding			1	1
i. Brick				
j. Forge Welding		1		1
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

TABLE VII-r

SYSTEM: Small Independent Junior High Schools				Number of Returns: 25
	LOCATION BY GRADE			
COURSE OFFERINGS (percentages)	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	80.00	92.00	84.00	100.00
a. Wood Turning	24.00	40.00	52.00	60.00
b. Wood Finishing	52.00	64.00	60.00	72.00
c. Stage Craft			4.00	4.00
d. Home Mechanics		8.00	12.00	16.00
e. Wood Carving	12.00	12.00	12.00	16.00
f. Art Fibre Furniture	4.00	4.00	8.00	16.00
g. Basketry		8.00		8.00
2. MECHANICAL DRAWING:	20.00	28.00	52.00	68.00
3. METAL:	28.00	28.00	48.00	60.00
a. Sheet Metal	20.00	20.00	36.00	52.00
b. Art Metal	4.00		12.00	12.00
c. Cold Metal	8.00	16.00	12.00	24.00
d. Ornamental Iron	8.00	8.00	12.00	12.00
e. Metal Finishing	4.00	4.00	4.00	4.00
f. Jewelry				
4. ELECTRICITY:	8.00	16.00	24.00	32.00
a. Radio			4.00	4.00
5. PRINTING:		12.00	16.00	20.00
6. FORGE:	8.00	20.00	28.00	32.00
7. AUTO MECHANICS:		4.00	16.00	16.00
8. MACHINE SHOP:			8.00	8.00
9. FOUNDRY:			4.00	4.00
10. WELDING:			4.00	4.00
a. Brazing			4.00	4.00
11. MISCELLANEOUS:	4.00	4.00	16.00	16.00
a. Pottery			4.00	4.00
b. Concrete			4.00	4.00
c. Leather Craft			8.00	8.00
d. Plumbing			8.00	8.00
e. Shoe Repairing			4.00	4.00
f. Tile	4.00			4.00
g. Airplane Models				
h. Book Binding			4.00	4.00
i. Brick				
j. Forge Welding		4.00		4.00
k. Linoleum Block Prints				
l. Hobby Craft				
m. Weaving				
n. Plaster				

TABLE VII-s

COMPLETE TABULATIONS: All Junior High Schools Making Returns				Number of Returns: 122
	LOCATION BY GRADE			
COURSES OFFERED	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK:	108	92	110	122
a. Wood Turning	16	38	73	77
b. Wood Finishing	53	58	71	76
c. Stage Craft	3	16	33	35
d. Home Mechanics	14	21	20	32
e. Wood Carving	11	16	26	29
f. Art Fibre Furniture	7	6	15	18
g. Basketry	9	14	12	15
2. MECHANICAL DRAWING:	75	59	88	103
3. METAL:	51	76	81	102
a. Sheet Metal	42	61	65	90
b. Art Metal	19	44	52	62
c. Cold Metal	25	51	48	59
d. Ornamental Iron	14	34	34	41
e. Metal Finishing	15	31	29	36
f. Jewelry		1	1	1
4. ELECTRICITY:	31	62	57	76
a. Radio	8	13	28	28
5. PRINTING:	27	49	56	59
6. FORGE:	11	34	38	43
7. AUTO MECHANICS:	1	17	35	36
8. MACHINE SHOP:	2	15	35	35
9. FOUNDRY:	3	23	22	29
10. WELDING:	1	11	22	22
a. Brazing	1	8	22	22
11. MISCELLANEOUS:	8	14	17	19
a. Pottery	3	7	7	8
b. Concrete	1	6	4	8
c. Leather Craft	3	5	6	7
d. Plumbing	2	3	6	7
e. Shoe Repairing		1	3	3
f. Tile		2	3	3
g. Airplane Models	1	1	1	2
h. Book Binding	2	2	2	2
i. Brick			1	1
j. Forge Welding		1		1
k. Linoleum Block Prints	1	1	1	1
l. Hobby Craft			1	1
m. Weaving	1	1	1	1
n. Plaster	0	0	0	0

TABLE VII-t

COMPLETE TABULATIONS: All Junior High Schools Making Returns				Number of Returns: 122
	LOCATION BY GRADE			
COURSE OFFERINGS (percentages)	Grade 7	Grade 8	Grade 9	One or More Grades
1. WOODWORK	86.07	75.41	90.16	100.00
a. Wood Turning	13.12	31.15	59.84	63.11
b. Wood Finishing	43.34	47.44	58.20	62.29
c. Stage Craft	2.46	13.12	27.05	28.69
d. Home Mechanics	11.48	17.21	16.39	26.23
e. Wood Carving	9.02	13.12	21.31	23.77
f. Art Fibre Furniture	5.74	4.92	12.30	14.76
g. Basketry	7.38	11.48	9.84	12.30
2. MECHANICAL DRAWING:	61.48	48.26	72.13	84.43
3. METAL:	41.70	62.29	66.39	83.61
a. Sheet Metal	34.43	50.00	53.28	73.77
b. Art Metal	15.58	36.07	42.52	50.82
c. Cold Metal	20.49	41.70	39.35	48.26
d. Ornamental Iron	11.48	27.87	27.87	33.61
e. Metal Finishing	12.30	25.41	23.77	29.51
f. Jewelry		.82	.82	.82
4. ELECTRICITY:	25.41	50.82	46.62	62.29
a. Radio	6.56	10.66	22.95	22.95
5. PRINTING:	22.13	40.16	45.80	48.26
6. FORGE:	9.02	27.87	31.15	35.25
7. AUTO MECHANICS:	.82	13.94	28.69	29.51
8. MACHINE SHOP:	1.64	12.30	28.69	28.69
9. FOUNDRY:	2.46	18.85	18.03	23.77
10. WELDING:	.82	9.02	17.21	17.21
a. Brazing	.82	6.56	16.39	17.21
11. MISCELLANEOUS:	6.56	11.48	13.94	15.58
a. Pottery	2.46	5.74	5.74	6.56
b. Concrete	.82	4.92	3.28	6.56
c. Leather Craft	2.46	4.10	4.92	5.74
d. Plumbing	1.64	2.46	4.92	5.74
e. Shoe Repairing		.82	2.46	2.46
f. Tile		1.64	2.46	2.46
g. Airplane Models	.82		.82	1.64
h. Book Binding	1.64	1.64	1.64	1.64
i. Brick			.82	.82
j. Forge Welding		.82		.82
k. Linoleum Block Prints	.82	.82	.82	.82
l. Hobby Craft			.82	.82
m. Weaving	.82	.82	.82	.82
n. Plaster	.00	.00	.00	.00

SUMMARY OF QUESTIONNAIRE NUMBER I

Item number 1 of this questionnaire has been previously tabulated.

Item number 2 asked the junior high schools of California as to the length of their courses in industrial arts by grades. The following indicates the number of schools giving courses, by period of time in each grade:

	Half Semester	One Semester	One Year
Seventh grade course offered	7	32	74
Eighth grade course offered	2	37	82
Ninth grade course offered	1	5	111

Item number 4 asked the junior high schools as to compulsory courses and grade placement of these courses. The following will indicate their responses:

	Number of Schools
Courses compulsory in seventh grade	105
Not compulsory in seventh grade	11
Courses compulsory in eighth grade	89
Not compulsory in eighth grade	29
Courses compulsory in ninth grade	14
Not compulsory in ninth grade	90

Item number 9 asked the junior high schools if they use the general shop in their industrial arts set-up.

Eighty-three junior high schools reported that they used some form of the general shop. Thirty-eight schools reported that they did not use the general shop organization. The related general shop was reported used about twice as frequently as the composite general shop.

SUMMARY OF QUESTIONNAIRE NUMBER III

In a general summary of Questionnaire Number III it may be noted that industrial arts courses are compulsory in the 7B, 7A and 8B grades in the cities of Los Angeles and San Francisco; for the 7B and 8A grades in Compton; in the 7B and 7A grades in Glendale, Pasadena and Sacramento; and in the 7B, 7A, 8B and 8A grades in Long Beach, San Jose and Burbank. Other systems permit more individual school methods of programming.

The following is the most commonly followed plan in developing a program as to sequence of subjects: elementary mechanical drawing is generally placed in the 7B grade, preceding the courses of woodwork and general metal; woodwork is most commonly placed in the 7A grade and general metal in the 8B grade. Woodwork is frequently found programmed in the 8A grade. General metal generally includes sheet metal, art metal, and frequently electricity in the same shop. The ninth grade industrial arts offerings are generally on an elective basis, and include a variety of

offerings in wood, metal, electricity, with mechanical drawing generally included. Machine shop is offered generally in San Francisco, and to some extent in Los Angeles, Oakland and Long Beach. Where the 8A grade offerings are elective about the same programs are indicated for this grade as for the ninth grade.

It is observed by comparing the results of Questionnaire Number III with the tabulations of item number 1 of Questionnaire Number I, that the programs of study are generally applied to fit the needs of the various schools of the system, and are not invariable.

CHAPTER IV

SHOP ORGANIZATION IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

Questionnaire Number II* deals with the shop organization of the junior high schools of California. This questionnaire includes sixteen items. Item number I is divided into thirteen parts which will be referred to as sub-items. These sub-items may in turn be itemized under sub-headings. Item number I deals with the shop organizations found in the industrial arts departments of the junior high schools of California. Item number II, Questionnaire Number II, asks for the enrollment in each of the respective schools so as to relate this fact to shop organizations mentioned in item I. The remaining fourteen items of this questionnaire will be tabulated in the appendices** as supplementary material. Questionnaires were sent to one hundred and eighty-four junior high schools in California. One hundred and eleven schools responded.

This chapter will deal with these returns as follows: Item number I will be tabulated by sub-items and sub-headings in Table VIII. The sub-items show separate distinct shops, with the sub-headings including the inclusive

* Copy of Questionnaire Number II, Appendix III, pages viii to x, inclusive.
** Appendix III, pages xi to xx, inclusive.

type of work done in each shop. The number of schools checking these items and sub-headings is shown. Sub-items of item number I will then be tabulated with item number II, in Table IX, in order that shop organizations may be studied in relation to enrollments. From these tabulations each type of shop organization will be studied as it is related to schools of different enrollments and location. The summary will include a list of the different types of shop set-ups reported from the State of California. The sub-items under item number I are indicated by A, B, C, D, E, F, G, H, I, J, K, L and M, respectively. The sub-headings are numbered.

The following table shows the number of schools which checked the types of shops used in their industrial arts departments and the types of work done in these shops, with the sub-items A to M, inclusive, indicating separate distinct shops, and the sub-headings showing the types of work included in each type of shop.

TABLE VIII

TYPES OF SHOPS USED BY ONE HUNDRED AND ELEVEN JUNIOR HIGH SCHOOLS OF CALIFORNIA AND TYPES OF WORK DONE IN THESE SHOPS

TYPE OF SHOP	NUMBER OF SCHOOLS
A. General Shop	35
Including equipment for:	
1. Woodwork	29
2. Sheet Metal	31
3. Art Metal	20
4. Ornamental Iron	17
5. Cold Iron	18
6. Forging	18
7. Foundry	7
8. Jewelry	8
9. Welding	8
10. Brazing	6
11. Machine Shop	10
12. Auto Shop	8
13. Printing	7
14. Mechanical Drawing	23
15. Electricity	20
16. Leather	7
17. Basketry and Wicker Work	11
18. Wood Carving	6
19. Ceramics	5
20. Concrete	2
21. Plaster Casting	2
B. Wood Shop	104
Including equipment for:	
1. General Woodwork	104
2. Wood Turning	98
3. Mechanical Drawing	47
4. Wood Finishing	97
5. Wood Carving	47
6. Home Mechanics	36
7. Stage Craft	48
8. Basketry	11
9. Wood Pattern Making	1
10. Sheet Metal	1
11. Archery	1
12. Boat Building	2
13. Upholstering	1
14. Visual Education-Motion Pictures	1

TABLE VIII (continued)

TYPE OF SHOP	NUMBER OF SCHOOLS
C. Separate Drafting Room	72
D. General Metal Shop	76
Including equipment for:	
1. Sheet Metal	59
2. Art Metal	53
3. Ornamental Iron	47
4. Cold Iron	46
5. Electricity	14
6. Forge	34
7. Foundry	19
8. Welding	31
9. Brazing	27
10. Machine Shop	29
11. Auto Shop	9
12. Mechanical Drawing	12
13. Agricultural Mechanics	2
14. Elementary Plumbing	2
15. Copper Work	1
16. Tool Forging	1
17. Jewelry	2
18. Photography	1
E. Separate Sheet Metal Shop	20
F. Separate Art Metal Shop	2
G. Separate Forge Shop	0
H. Separate Foundry	0
I. Machine Shop	11
Including equipment for:	
1. General Machine Shop	9
2. Welding	2
3. Electricity	2
4. Forge	7
5. Foundry	2
6. Mechanical Drawing	1
7. Art Craft-Copper	1
8. Incidental Auto Repair	1

TABLE VIII (continued)

TYPE OF SHOP	NUMBER OF SCHOOLS
J. Auto Shop	20
Including equipment for:	
1. General Auto Mechanics	20
2. Welding	16
3. Machine Shop	5
4. Electricity	7
5. Mechanical Drawing	2
6. Sheet Metal	1
7. Forge	1
8. General Metal Activities	1
K. Electric Shop	42
Including equipment for:	
1. General Elctric Shop	42
2. Radio	32
3. Mechanical Drawing	8
4. Sheet Metal	2
L. Print Shop	47
M. Special Shop Set-up not Mentioned Above. (The items mentioned under this heading were not considered of enough importance to include in this tabulation.)	

TABLE IX

SHOP SET-UPS IN ONE HUNDRED AND ELEVEN
JUNIOR HIGH SCHOOLS OF CALIFORNIA

Key:

A. General Shop.
B. Wood Shop.
C. Separate Drafting Room.
D. General Metal Shop.
E. Separate Sheet Metal Shop.
F. Separate Art Metal Shop.
G. Separate Forge Shop.
H. Separate Foundry.
I. Machine Shop.
J. Auto Shop.
K. Electric Shop.
L. Print Shop.

School	City	A	B	C	D	E	F	G	H	I	J	K	L	Enrollment
Adams	Los Angeles		x	x	x							x	x	1887
Audubon	" "	x	x	x	x							x	x	1356
Bancroft	" "		x	x	x							x	x	1750
Banning	" "		x	x	x		x				x	x	x	961
Belvedere	" "	x	x	x							x	x	x	2000
Bret Harte	" "	x	x	x	x							x	x	1900
Burroughs	" "		x	x		x					x	x	x	2100
Central	" "		x	x	x						x	x	x	2000
Dana	" "	x	x	x	x							x	x	1700
Edison	" "		x	x	x						x	x	x	1850
Emerson	" "		x		x	x						x	x	1773
Foshay	" "		x	x	x	x						x	x	1400
Gardena	" "		x	x	x						x	x	x	1150
Garfield	" "	x									x	x		800
Hollenbeck	" "	x	x	x	x	x					x	x	x	2664
John Muir	" "		x	x			x				x	x	x	1800
Lafayette	" "		x	x	x									1450
Le Conte	" "		x	x	x							x	x	1567
Mann	" "		x	x							x	x		1675
McKinley	" "		x	x	x							x	x	1400
Mt. Vernon	" "		x	x	x							x	x	1850
Stevenson	" "		x	x							x	x	x	1850
Venice	" "		x	x	x	x				x		x	x	1200
Avalon	Long Beach	x	x											96
Lindberg	" "		x	x	x						x		x	1000
Lowell	" "		x									x		600
Washington	" "		x	x	x								x	1100
Lynwood	Compton	x	x	x	x									1000
Elliott	Pasadena		x	x	x	x				x			x	1300
Marshall	"		x	x		x				x	x	x	x	1600
McKinley	"		x	x		x				x		x		1450
Wilson	"		x	x	x							x	x	1100

TABLE IX (continued)

School	City	A	B	C	D	E	F	G	H	I	J	K	L	Enrollment
Washington	Pasadena		x	x	x								x	1000
John Muir	Burbank		x		x									625
La Crescenta	Glendale		x		x									412
Roosevelt	"		x	x	x									750
Toll	"		x	x	x									1500
Chula Vista	National City		x	x	x							x		450
National City	" "		x	x	x							x		600
South West	" "		x											154
San Dieguito	Cardiff		x											360
Lincoln	Santa Monica		x	x	x					x		x	x	1060
Downey	Downey		x		x						x			720
Emerson	Pomona		x		x									700
Fremont	"		x		x									740
Santa Ana	Santa Ana		x	x	x							x		700
La Jolla	San Diego	x		x										550
Mann	" "		x	x	x	x						x		1110
Point Loma	" "		x	x	x						x		x	600
Roosevelt	" "		x	x	x							x	x	1275
Central	Riverside		x	x								x		950
Chemawa	"		x	x										450
University Hts.	"		x			x					x			650
Arrow View	SanBernardino	x	x	x	x									650
Highlands	" "	x	x											154
Sturges	" "		x	x	x									1200
Nordhoff	Ojai	x	x	x	x								x	180
Redlands	Redlands		x	x	x									1000
Needles	Needles	x	x			x					x			200
Santa Barbara	Santa Barbara		x	x	x	x				x		x		985
Lompoc	Lompoc	x												450
San Luis Obispo	SanLuisObispo				x	x				x	x			525
Aptos	San Francisco		x	x	x					x		x	x	1250
Francisco	" "		x	x	x	x				x				1344
James Lick	" "		x	x	x	x				x			x	660
John Swett	" "		x			x				x		x	x	1200
Mann	" "		x	x	x	x						x	x	1240
Presidio	" "	x	x	x	x	x				x		x	x	1400
Roosevelt	" "		x		x	x							x	1700
Garfield	Berkeley		x	x	x						x		x	1200
Willard	"		x	x	x							x		950
Roosevelt	Richmond		x	x	x									600
Antioch	Antioch	x		x										300
Martinez	Martinez	x	x											485
San Leandro	San Leandro		x		x									800

TABLE IX (continued)

School	City	A	B	C	D	E	F	G	H	I	J	K	L	Enrollment
Bret Harte	Oakland		x		x									750
Claremont	"		x		x									900
Hamilton	"		x		x									1158
Hoover	"		x		x									650
Lockwood	"		x		x									450
Oakland	"		x		x									2900
Westlake	"		x		x									1050
S.San Francisco	S.San Franc.		x	x	x									277
Vallejo	Vallejo		x	x	x									950
Canning	Palo Alto	x	x	x										774
Branciforte	Santa Cruz		x		x									350
Mission Hills	" "	x	x	x	x	x								450
Boulder Creek	Boulder Creek	x	x		x									50
Burnett	San Jose	x												600
Hoover	" "	x	x											600
Roosevelt	" "	x	x	x	x							x	x	1107
Wilson	" "		x	x	x							x	x	900
Santa Rosa	Santa Rosa		x											400
Petaluma	Petaluma	x	x										x	600
Willits	Willits		x	x	x									150
Fort Bragg	Fort Bragg		x	x										300
Westwood	Westwood	x	x		x									260
Portola	Quincy	x	x	x	x							x		250
California	Sacramento	x	x	x	x								x	890
Carson	"	x	x	x	x								x	860
Lincoln	"	x	x	x	x								x	540
Sutter	"	x	x	x	x								x	1040
Stanford	"	x	x	x	x								x	990
Hamilton	Fresno		x		x									800
Longfellow	"	x	x											600
Roosevelt	"		x		x									650
Washington	"		x											850
Le Grand	Le Grand	x	x	x										190
Kerman	Kerman	x												220
Corcoran	Corcoran		x	x										310
Coalinga	Coalinga	x	x	x										288

SUMMARY

The greatest enrollment reported from California was 2,664 from Hollenbeck Junior High School of Los Angeles. The smallest enrollment reported was 50, from Boulder Creek Junior High School of Santa Cruz County. For purposes of comparison the one hundred and eleven junior high schools reporting on this questionnaire will be grouped according to enrollments. This is without any reference to location. The following groupings will be used:

1. Schools with an enrollment of less than 500. Twenty-six such enrollments were reported.
2. Schools with an enrollment of from 500 to 999, inclusive. Thirty-eight such schools reported.
3. Schools with an enrollment of 1000 or more. Forty-seven schools reported this enrollment.

The complete tabulations of sub-items and sub-headings under item number I are summarized as follows:

A. The General Shop.

The general shop, or as it is sometimes more explicitly referred to as the composite general shop, was reported from thirty-five junior high schools. The function of the general shops in California were found to be:

1. To supplement the program in the larger schools.

2. As a means of using all available space economically in larger schools where the industrial arts department has not been sufficiently provided for.

3. The composite general shop is used in smaller systems to give students as broad opportunities as possible with limited equipment, limited faculty, etc.

As the above data will indicate, the general shop is found in the small school more often than in the large school. The following table will show how the general shops of California are distributed with regard to the size of schools:

TABLE X

DISTRIBUTION OF GENERAL SHOPS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY ENROLLMENT

School Enrollment	Number Composite General Shops
Less than 500	14
500-999, inclusive	13
1000 or over	8
Total general shops reported	35

B. Wood Shop.

The wood shop is reported more often than any other type of shop in the junior high schools of California. One hundred and four such shops were reported. They are generally a part of the shop set-up of both large and small schools. There are a few cases in which the wood shop was not reported as the function of the wood shop was being performed by the composite general shop. There were four junior high schools that reported their industrial arts

program limited to wood shop. Their respective enrollments were rather significant and were as follows: 154, 360, 400 and 850. The school with the enrollment of 850 does not consider industrial arts as favorably as most junior high schools of California. This school makes industrial arts entirely elective and has small industrial arts classes.

C. Drafting Room.

Drafting rooms were distributed among the California junior high schools as shown by Table XI, following. This table shows about forty-two per cent of the small schools, sixty per cent of the medium sized schools, and about eighty-one per cent of the large schools with separate drafting rooms. These figures indicate that more than half of the junior high schools of California have separate drafting rooms in their shop set-up.

TABLE XI

DISTRIBUTION OF DRAFTING ROOMS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY ENROLLMENT

School Enrollment	Number Drafting Rooms
Less than 500	11
500-999, inclusive	23
1000 or over	38
Total drafting rooms reported	72

D. General Metal Shop.

Seventy-six of the junior high schools of California reported general metal shops. Forty-two per cent of the small schools, sixty-eight per cent of the medium sized schools, and eighty-two per cent of the large schools have general metal shops. Reference to sub-item D on page 97 will show the type of courses taught in this shop. With the exclusion of wood and printing it often offers an almost complete range of industrial arts experiences. The distribution of the general metal shops is shown below:

TABLE XII

DISTRIBUTION OF GENERAL METAL SHOPS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY ENROLLMENT

School Enrollment	Number General Metal Shops
Less than 500	11
500-999, inclusive	26
1000 or over	39
Total general metal shops	76

E. Separate Sheet Metal Shop.

Of the twenty sheet metal shops reported, the percentage distributions were: small schools, eight per cent; medium sized schools, eleven per cent; and large schools, thirty per cent. These shops were distributed as follows:

TABLE XIII

DISTRIBUTION OF SHEET METAL SHOPS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY ENROLLMENT

School Enrollment	Number Sheet Metal Shops
Less than 500	2
500-999, inclusive	4
1000 or over	14
Total sheet metal shops reported	20

F. Separate Art Metal Shop.

No tabulation is necessary for separate art metal shops, as only two were reported. These were both from Los Angeles, in schools with an enrollment of over 1000.

G. Separate Forge Shop.

No separate forge shops were reported by the junior high schools of California.

H. Foundry.

None of the returns from California junior high schools indicated a separate foundry.

I. Machine Shop.

No separate machine shops were reported from the small schools. One machine shop was reported from the medium sized group; and the large schools reported ten machine shops. This indicates that only twenty-one per cent of these large schools had separate machine shops. Six of the machine shops reported were from the San Francisco junior high school system. The distribution is shown as follows:

TABLE XIV

DISTRIBUTION OF MACHINE SHOPS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY ENROLLMENT

School Enrollment	Number Machine Shops
Less than 500	0
500-999, inclusive	1
1000 or over	10
Total machine shops reported	11

J. Auto Shop.

Four per cent of the small schools, eighteen per cent of the medium sized schools, and twenty-six per cent of the large schools reported auto shops, distributed as follows:

TABLE XV

DISTRIBUTION OF AUTO SHOPS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY ENROLLMENT

School Enrollment	Number Auto Shops
Less than 500	1
500-999, inclusive	7
1000 or over	12
Total auto shops reported	20

K. Electric Shop.

Forty-two electric shops were reported. Five per cent of the small schools, twenty-four per cent of the medium sized schools, and sixty-six per cent of the large schools reported electric shops, with distribution as follows:

TABLE XVI

DISTRIBUTION OF ELECTRIC SHOPS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY ENROLLMENT

School Enrollment	Number Electric Shops
Less than 500	2
500-999, inclusive	9
1000 or over	31
Total electric shops reported	42

L. Print Shops.

Four per cent of the small schools, twenty-nine per cent of the medium sized schools, and seventy-five per cent of the large schools reported print shops. They have the following distribution:

TABLE XVII

DISTRIBUTION OF PRINT SHOPS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY ENROLLMENT

School Enrollment	Number Print Shops
Less than 500	1
500-999, inclusive	11
1000 or over	35
Total print shops reported	47

Summarizing the percentage distributions for all of the shops mentioned reveals that more than one half of the large schools with an enrollment of 1000 or over have five distinct shop organizations: the wood shop, drafting room, general metal shop, electric shop and print shop.

Over fifty per cent of the junior high schools with an enrollment of 500-999, inclusive, have three shops: the wood shop, drafting room and general metal shop. More than half of the small schools with an enrollment of less than 500 have two shops: the composite general shop and the wood shop. This distribution of shops might, therefore, be considered as standard shop set-up for the schools under the respective enrollment groupings. The following table shows these percentage distributions for all schools reporting:

TABLE XVIII

SUMMARY OF SHOP DISTRIBUTION IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA BY PERCENTAGE AND ENROLLMENT

Type of Shop	PERCENTAGE DISTRIBUTION		
	Schools of 1000 or over	Schools of 500-999, inclusive	Schools of less than 500
General Shop	19	32	54
Wood Shop	100	92	88
Drafting Room	81	60	42
General Metal Shop	82	68	42
Separate Sheet Metal Shop	30	11	8
Separate Art Metal Shop	4	0	0
Separate Forge Shop	0	0	0
Separate Foundry	0	0	0
Machine Shop	21	4	0
Auto Shop	26	18	4
Electric Shop	66	24	5
Print Shop	75	29	4

A summary of the frequency of combinations of shops in use by the schools reporting is interesting due to the great number of variations, with very few of the schools using identical shop combinations. Using the same letter symbols as in Table IX, repeated below for convenience, the following table shows the frequency of the different combinations:

TABLE XIX

FREQUENCY OF SHOP COMBINATIONS IN THE JUNIOR HIGH SCHOOLS OF CALIFORNIA

Key:

A. General Shop.
B. Woodshop.
C. Separate Drafting Room.
D. General Metal Shop.
E. Separate Sheet Metal Shop.
F. Separate Art Metal Shop.
G. Separate Forge Shop.
H. Separate Foundry.
I. Machine Shop.
J. Auto Shop.
K. Electric Shop.
L. Print Shop.

Shop Combination	Frequency
A	3
AB	5
ABC	3
ABCD	2
ABCDE	1
ABCDEIKL	1
ABCDEJKL	1
ABCDK	1
ABCDKL	4
ABCDL	6
ABCJKL	1
ABD	2
ABEF	1
ABL	1
AC	2
AJK	1

TABLE XIX (continued)

Shop Combination	Frequency
B	4
BC	3
BCD	9
BCDEI	1
BCDEIKL	1
BCDEIL	2
BCDEK	1
BCDEKL	2
BCDEJL	1
BCDFJKL	1
BCDIKL	2
BCDJKL	3
BCDJL	3
BCDK	4
BCDKL	8
BCDL	3
BCEIJKL	1
BCEIK	1
BCEJKL	1
BCFJKL	1
BCJK	1
BCJKL	1
BCK	1
BD	13
BDEJK	1
BDEKL	1
BDEL	1
BDJ	1
BDL	1
BEIKL	1
BEF	1
BK	1

CHAPTER V

CONCLUSIONS

CHAPTER I -

1. In the State of California the junior high schools are an integral part of the secondary school system. There are six hundred and seventy-six secondary schools in California. Of this number, one hundred and thirteen are three year junior high schools enrolling the seventh, eighth and ninth grades; seventeen are four year junior high schools enrolling the seventh, eighth, ninth and tenth grades; fifty-four are junior-senior high schools enrolling the seventh, eighth, ninth, tenth, eleventh and twelfth grades. There are a total of one hundred and eighty-four junior high school organizations.

2. The junior high schools of California are located generally in the large cities. In the metropolitan area of Los Angeles there are forty-seven junior high schools and twenty junior-senior high schools, a total of sixty-seven schools. In the metropolitan area of San Francisco there are thirty junior high schools and four junior-senior high schools. In the area of these two metropolitan districts there are one hundred and one of the one hundred and eighty-four junior high school organizations of the state. In the metropolitan areas of San Jose, Sacramento and San Diego

there are twenty junior high school organizations. One hundred and one of the junior high schools of California are located in metropolitan areas having a population of over a million, one hundred and twenty-one are located in metropolitan areas of one hundred thousand or more, twenty-two are located in cities of between five thousand and one hundred thousand, and twenty-one junior high school organizations, mostly junior-senior high schools, are located in towns of less than five thousand.

3. The range in size of the junior high schools is 28-2553, and their median is 924. The range in size of the junior-senior high schools is 34-2929, and their median is 500. These figures indicate that the junior-senior high school meets the need for economy in the smaller districts better than the junior high school.

4. The total enrollment for the junior high schools of California for the school year of 1937-38 was 150,414. Seventh grade enrollment was 49,958; eighth grade enrollment was 48,208; ninth grade enrollment was 48,889; and tenth grade enrollment was 3,359.

5. Ninety-one per cent of the junior high schools reported industrial arts compulsory in the seventh grade, seventy-five per cent reported industrial arts compulsory in the eighth grade, thirteen per cent reported industrial arts compulsory in the ninth grade. Using figures of en-

rollment and above percentages, and considering that half the enrollment is girls, the following figures can be given: 22,730 seventh grade junior high school boys taking industrial arts; 18,078 eighth grade junior high school boys taking industrial arts; and 3,177.78 ninth grade junior high school boys taking industrial arts - about 43,987 pupils required to take industrial arts during the school year of 1937-38. Combined with these figures, the fact that in many junior high schools there are elective classes in industrial arts and that about twenty-five per cent of the junior high schools reported giving some industrial arts to girls, it can be concluded that about one third of the 150,414 children enrolled in the junior high schools of California, or at least 50,000 pupils, are in the industrial arts classes.

6. In a study of the twenty-two largest cities of California, one hundred and eleven junior high schools in these cities were found to have a combined faculty of 4,551, with 428 industrial arts teachers. These figures indicate that one teacher out of every ten for these large city systems is an industrial arts teacher.

7. The school laws of California do not require industrial arts to be taught in the junior high schools.

8. All the junior high schools of California with the exception of two orthopedic schools and one junior high

school for girls teach industrial arts.

9. Teachers in California may teach industrial arts in the junior high schools with the following certificates: a general elementary credential will permit a teacher to teach any subject in the seventh and eighth grades in the junior high school; a general junior high school credential or a general secondary credential will permit a teacher to teach any subject in any grade of the junior high school. The industrial arts credential will permit a teacher to teach industrial arts in any grade of the junior high school.

10. Industrial arts is that part of general education concerned with materials, industrial processes, tools of manufacture, and the contributions of those engaged in industry. Pupil development comes through experiences with tools and materials, and the study of resultant conditions of life.*

11. Industrial arts is distinguished from vocational education, in that the latter is specific occupational training, while the former is a part of general education.*

12. The values to be acquired in industrial arts in the junior high school are those of general education. The work should be extensive rather than intensive. Subject matter content should be exploratory in character. Provisions should be made for guidance; an acquaintance with various occupational opportunities; training in household maintenance; vocational fields; development of hobbies; the development of a

* The General Shop, published by San Jose State College, Department of Industrial Arts Education. Page 6.

reasonable degree of manipulative skill with tools, machines, and processes of construction; all of which should integrate with other subjects, pupil needs and interests.

CHAPTER II -

13. The objectives stressed in the junior high school industrial arts classes of California are:

a. Satisfaction of innate desires.

b. Development of leisure time pursuits.

c. Development of interest and appreciation of industrial life.

d. Development of basic skills.

e. Useful home membership.

f. Consumer appreciation.

g. Educational integration or educational guidance.

h. General guidance.

i. Vocational guidance.

j. Social guidance.

14. General trends of the last ten years in junior high school industrial arts education in California have been:

a. To increase the scope of work generally.

* The General Shop, published by San Jose State College, Department of Industrial Arts Education. Page 10.

b. To put emphasis upon creative ability.

c. To create artistic ability.

d. To enroll more girls.

e. To increase required hours per grade for industrial arts work.

f. To expand the scope of unit shops to represent broad industrial fields.

g. To standardize tools and supplies.

h. To raise the standards for qualifications for teachers.

i. To organize courses of study.

j. To more seriously attempt to relate industrial arts to real life.

k. To develop the general shop.

l. To critically evaluate practices and values of various activities.

m. To attempt to eliminate non-productive experiences in favor of more general values without destroying the character of industrial arts.

n. To attempt to make industrial arts take its place as an integral part of the whole scheme of general education.

15. Acceptable standards for industrial arts teacher training in California are:

a. Four years of college training with major in industrial arts.

b. Trade experience.

c. Broad educational background.

d. Hobby interest.

e. Advanced training beyond college graduation.

f. Masters degree.

CHAPTER III - (Reports from one hundred and twenty-two junior high schools of California.)

16. Woodwork is taught by 108 junior high schools in the seventh grade, 92 junior high schools in the eighth grade, 110 junior high schools in the ninth grade, and by 122 schools in some grade.

17. Mechanical drawing is taught by 75 schools in the seventh grade, 59 schools in the eighth grade, 88 schools in the ninth grade, and 103 schools in some grade.

18. General metal work is taught by 51 schools in the seventh grade, 76 schools in the eighth grade, 81 schools in the ninth grade, and 102 schools in some grade.

19. Electricity is taught by 31 schools in the seventh grade, 62 schools in the eighth grade, 57 schools in the ninth grade, and 76 schools in some grade.

20. Printing is taught by 27 schools in the seventh grade, 49 schools in the eighth grade, 56 schools in the ninth grade, and 59 schools in some grade.

21. Auto mechanics is taught by 1 school in the seventh grade, 17 schools in the eighth grade, 35 schools in the ninth grade, and 36 schools in some grade.

22. Machine shop is taught by 2 schools in the seventh grade, 15 schools in the eighth grade, 35 schools in the ninth grade, and 35 schools in some grade.

23. Miscellaneous courses were taught by 8 schools in the seventh grade, 14 schools in the eighth grade, 17 schools in the ninth grade, and 19 schools in some grade.

24. Miscellaneous courses included pottery, concrete, leather craft, plumbing, shoe repairing, tile, airplane models, book binding, brick, forge welding, linoleum block prints, hobby craft, and weaving.

25. For the seventh grade 7 schools offered industrial arts for one half semester, 32 schools for one semester, and 74 schools offered industrial arts for the full year.

26. For the eighth grade 2 schools offered industrial arts for one half semester, 37 schools for one semester, and 82 schools for the full year.

27. For the ninth grade 1 school offered industrial arts for one half semester, 5 schools for one semester, and 111 schools for the full year.

28. A substantial majority of the junior high schools of California offer industrial arts for three full years.

29. Ninety-one per cent of the junior high schools reporting required industrial arts in their seventh grades.

30. Seventy-five per cent of the schools reporting required industrial arts in their eighth grades.

31. Thirteen per cent of the schools reporting required industrial arts in their ninth grades.

32. The following is the most commonly followed plan in developing a program of study as to sequence of subjects: elementary mechanical drawing is generally located in the 7B grade, preceding the courses in woodwork and general metal; elementary woodwork is commonly placed in the 7A grade; general metal is most commonly placed in the 8B grade. General metal courses commonly include sheet metal, art metal, bench metal, and frequently electricity. 8A and ninth grade offerings consist of the above course as electives, with greater emphasis upon technique and the finished product.

33. In the 8A, 9B and 9A grades the junior high schools are in substantial agreement in giving semester or courses for the one unit of work.

34. For the seventh grade fifty-six schools reported that they split their courses up into short rotating units. Thirty-eight schools reported that they did not do so.

35. For the eighth grade fifty-seven schools re-

ported that they split their courses up into short rotating units. Fifty-four schools reported that they did not.

36. For the ninth grade 19 schools reported that they split their courses up into rotating units. Seventy-eight schools reported that they did not.

37. The cities of California offering short unit courses of from four to ten weeks are: Los Angeles, Burbank, Pasadena, San Jose and San Diego.

38. The cities of California not commonly using the short unit course in any grade are: San Francisco, Oakland, Berkeley, Long Beach, Glendale, Sacramento, Riverside and Fresno.

39. The plan of short rotating unit courses was not common among the small towns and rural schools.

40. A standard junior high school of California should teach woodwork, elementary mechanical drawing, general metal, electricity and printing.

CHAPTER IV - (One hundred and eleven schools reporting.)

41. The schools reporting from Los Angeles averaged an enrollment of about 1,650. A substantial majority of these schools had five distinct shops. They were: wood shop, drafting room, general metal shop, electric shop, and print shop. Eleven of these schools out of twenty-three had auto shop.

42. The schools reporting from San Francisco had an average enrollment of about 1,300. These schools had an average of about six shops each. The majority of these schools had wood shops, drafting rooms, general metal shops, separate sheet metal shops, machine shops, electric shops and print shops.

43. The schools reporting from Oakland had an average enrollment of about 900. These schools had an average of two shops. Every school had a wood shop and a general metal shop.

44. Los Angeles is peculiar in shop organization in that it teaches more auto mechanics than any other system.

45. San Francisco is peculiar in shop organization in that it teaches more machine shop than any other system.

46. Oakland is peculiar in its shop organization in that it does not give the usual emphasis to the teaching of mechanichal drawing.

47. The composite general shop is employed by seventeen per cent of the junior high schools with an enrollment of more than 1,000, by thirty-four per cent of the schools with an enrollment between 500 and 999, inclusive, and by fifty-four per cent of the junior high schools with an enrollment of less than 500.

48. The wood shop is used by one hundred per cent of the junior high schools with an enrollment over 1,000, by

ninety-two per cent of the schools with an enrollment between 500 and 999, inclusive, and by eighty-eight per cent of the schools with an enrollment less than 500.

49. The drafting room is employed by eighty-one per cent of the junior high schools with an enrollment over 1,000, by sixty per cent of the schools with an enrollment between 500 and 999, inclusive, and by forty-two per cent of the schools with less than 500 enrollment.

50. The general metal shop is used by eighty-two per cent of the junior high schools with an enrollment of 1,000 or more, by sixty-eight per cent of the schools with an enrollment between 500 and 999, inclusive, and by forty-two per cent of the schools with less than 500 enrollment.

51. The separate sheet metal shop is used by thirty per cent of the schools with an enrollment of 1,000 or more, by eleven per cent of the schools with an enrollment between 500 and 999, inclusive, and by eight per cent of the schools with an enrollment of less than 500.

52. The separate art metal shop is only used by two per cent of the schools with an enrollment of over 1,000.

53. The machine shop is employed by twenty-one per cent of the schools with an enrollment of 1,000 or more, by four per cent of the schools with an enrollment of between 500 and 999, inclusive, and by none of the schools with a lesser enrollment.

54. The electric shop is employed by sixty-six per cent of the schools with an enrollment of over 1,000, by twenty-four per cent of the schools of between 500 and 999, inclusive, and by five per cent of the schools with an enrollment of less than 500.

55. The print shop is employed by seventy-five per cent of the schools with an enrollment of 1,000 or more, by twenty-five per cent of the schools with an enrollment between 500 and 999, inclusive, and by four per cent of the schools with an enrollment less than 500.

56. From this study a standard junior high school shop set-up for a school enrollment of 1,000 or more would be: a wood shop, drafting room, general metal shop, electric shop, and print shop.

57. A standard shop set-up for a junior high school with an enrollment of between 500 and 999, inclusive, would be: a wood shop, general metal shop, and drafting room.

58. A standard set-up for a junior high school shop organization for the school with an enrollment of less than 500 would be a composite general shop and a wood shop.

SUMMARY

There are six hundred and seventy-six secondary schools in the State of California. Of these, one hundred and thirteen are three-year junior high schools, with seventh,

eighth and ninth grades; seventeen are four year junior high schools, with seventh, eighth, ninth and tenth grades; and fifty-four are junior-senior high schools, with seventh, eighth, ninth, tenth, eleventh and twelfth grades; making a total of one hundred and eighty-four junior high school organizations in the State of California.

One hundred and twenty-one of these junior high schools are located in metropolitan areas with a population of more than one hundred thousand, twenty-two are located in cities with a population between five thousand and one hundred thousand, and twenty-one are found in localities with a population less than five thousand.

The range in size of the junior high schools is 25-2,553, and their median is 924. The range in size of the junior-senior high schools is 34-2,929, and their median is 500.

The total enrollment of the junior high schools for the state approximates 150,000, with approximately 50,000 children in the industrial arts classes.

About one teacher in ten in the junior high schools of California is an industrial arts teacher.

There is no provision in the state law that requires industrial arts to be taught in the junior high schools.

All of the junior high schools, with the exception of

two orthopedic junior high schools and one junior high school for girls, teach industrial arts.

The objectives of teaching industrial arts in the junior high school are those of general education plus several specific objectives such as development of interest and appreciation of industrial life, development of basic skills, and consumer appreciation.

The general trends are toward a general expansion to include experiences in broader occupational fields and toward the adoption of methods that will make these experiences more vital to the student.

A standard programming of industrial arts courses should consist of elementary mechanical drawing in grade 7B and elementary woodwork in 7A. General metal which may include electricity, or general metal and electricity in grade 8B. The 8A, 9B and 9A grades should be elective from the courses shown above.

A standard junior high school of California, therefore, should teach woodwork, elementary mechanical drawing, general metal and electricity.

Courses in industrial arts are generally compulsory in the junior high schools of the State of California in the 7B, 7A and 8B grades, with elective courses for the 8A, 9B, and 9A grades.

There is a division of opinion in California as to the relative value of semester courses and the short rotating unit courses of from four to ten weeks each for junior high schools. The practice is about evenly divided. The cities of Los Angeles, Burbank, Pasadena, San Diego and San Jose favor the short unit course. The cities of San Francisco, Oakland, Sacramento, Glendale, Compton and Riverside favor the semester course. The short unit course is seldom found in the smaller systems.

The type of shop set-up is generally dependent upon the size of the school. The standard set-up for a school with an enrollment of 1,000 or more is: Woodshop, Drafting Room, General Metal Shop, Electric Shop and Print Shop. The standard set-up for schools with an enrollment of between 500 and 999, inclusive, is: Woodshop, Drafting Room, and General Metal Shop. The standard set-up for a school with less than 500 enrollment is: Composite General Shop and Woodshop.

(Standard School as used above signifies that the school follows practices or employs set-ups used by at least fifty per cent of the schools of the state.)

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APPENDICES

APPENDIX I

LIST OF CITY SUPERVISORS OF INDUSTRIAL ARTS, AND HEADS OF INDUSTRIAL ARTS DEPARTMENTS OF CALIFORNIA STATE COLLEGES

CITY SUPERVISORS OF INDUSTRIAL ARTS AND HEADS OF INDUSTRIAL ARTS DEPARTMENTS OF CALIFORNIA STATE COLLEGES

Barker, C. E.
Director of Vocational Education,
San Francisco, California

Beswick, J. C.
Commissioner for Vocational Education and
Chief of the Bureau if Trade and Industrial
Education,
Sacramento, California

Crawford, W. C.
City Superintendent of Schools,
San Diego, California

Dayton, W. P.
Director of Industrial Arts Education,
Sacramento, California

Ericson, Emanuel E.
Industrial Education,
Santa Barbara State College,
Santa Barbara, California

Grosse, Marion
Industrial Arts Department,
Fresno State College,
Fresno, California

Hemphill, Franklin G.
Director of Junior High Schools,
Compton, California

Henck, G. D.
Director of Vocational Education,
Pasadena, California

Horridge, F.
Director of Vocational Education,
Long Beach, California

Jackey, Dr. D. F.
Supervisor of Teacher Training,
University of California at Los Angeles,
Los Angeles, California

Jenkins, Horace R.
Professor of Industrial Arts,
Humboldt State College,
Arcata, California

Love, F. R.
Director of Vocational Education,
Stockton, California

Mathews, W. C.
Supervisor of Industrial Arts Education,
Oakland, California

Moore, Gail
Instructor in Industrial Arts,
Chico State College,
Chico, California

Nichols, A. R.
Director of Vocational Education,
San Jose, California

Nihart, C. E.
Supervisor of Industrial Arts Education,
Chamber of Commerce Building,
Los Angeles, California

Sotzin, Heber Allen
Professor Industrial Arts,
San Jose State College,
San Jose, California

Soules, F. R.
Director of Vocational Education,
Santa Barbara, California

Tiemann, H. A.
Supervisor of Industrial Arts Education,
San Diego, California

Young, D. G.
Director of Vocational and Industrial Education,
Berkeley, California

APPENDIX II

JUNIOR HIGH SCHOOLS OF CALIFORNIA, WITH ADDRESSES, RESPONSES TO QUESTIONNAIRES I AND II, AND SCHOOL ENROLLMENT

CALIFORNIA JUNIOR HIGH SCHOOLS

The junior high schools of California, with addresses and school enrollments as shown in the California School Directory for 1937-38; and with responses to Questionnaires I and II indicated by Q-I and/or Q-II, following name of school:

			Enrollment
ANTIOCH - (Contra Costa County)			
Antioch Junior High School		Q-II	207
BERKELEY - (Alameda County)			
Burbank Junior High School University Ave., between Curtis & Bonar Sts.	Q-I		979
Garfield Junior High School Rose & Josephine Sts.	Q-I	Q-II	1254
Willard Junior High School Ward St. & Telegraph Ave.		Q-II	1023
BURBANK - (Los Angeles County)			
John Burroughs Junior High School 1920 Clark St.	Q-I	Q-II	359
John Muir Junior High School 3rd & Grinnell	Q-I	Q-II	610
CARDIFF - (San Diego County)			
San Dieguito Junior High School		Q-II	300
COMPTON - (Los Angeles County)			
Clearwater Junior High School Paramount Blvd. & 3rd St. Clearwater, Calif.	Q-I		433
Compton Junior High School 1200 E. Olive St.	Q-I		723
Enterprise Junior High School Compton Blvd. & McKinley	Q-I		447

COMPTON - (continued)			Enrollment
Lynwood Junior High School Bullis Rd. & Cedar Ave. Lynwood, Calif.	Q-I	Q-II	855
Willowbrook Junior High School Wilmington & El Segundo Blvd. Willowbrook, Calif.	Q-I		545
CORONA - (Riverside County)			
Corona Junior High School			344
EUREKA - (Humboldt Co.)			
Eureka Junior High School Del Norte & J Sts.	Q-I		973
FORT BRAGG - (Mendocino County)			
Fort Bragg Union Junior High School	Q-I	Q-II	295
FRESNO - (Fresno County)			
Alexander Hamilton Junior High	Q-I	Q-II	731
Longfellow Junior High School 868 Hazelwood Blvd.	Q-I	Q-II	612
Washington Junior High School Glenn & Englewood Ave.	Q-I	Q-II	859
GLENDALE - (Los Angeles County)			
La Crescenta Junior High School 2920 Community Drive, La Crescenta, Calif.	Q-I	Q-II	288
Theodore Roosevelt Junior High 1017 S. Glendale Ave.	Q-I	Q-II	752
Eleanor J. Toll Junior High 700 Glenwood Rd.	Q-I	Q-II	1419
Woodrow Wilson Junior High 146 S. Verdugo Rd.			1167

			Enrollment
HEMET - (Riverside County)			
Hemet Union Junior High School	Q-I		284
LONG BEACH - (Los Angeles County)			
Franklin Junior High School 6th St. & Cerritos Ave.			1693
Hamilton Junior High School State St. & Alamitos Ave.	Q-I		1235
Jefferson Junior High School 7th St. & Euclid Ave.	Q-I		1450
Lindberg Junior High School Market St. & Lewis Ave.	Q-I	Q-II	820
Lowell Junior High School Broadway & Nieto Ave.	Q-I	Q-II	390
Washington Junior High School 1450 Cedar Ave.		Q-II	722
LOS ANGELES - (Los Angeles County)			
John Adams Junior High School 151 West 30th St.	Q-I	Q-II	1716
Audubon Junior High School 4201 Creed Ave.	Q-I	Q-II	1260
Bancroft Junior High School 929 N. Los Palmos Ave.	Q-I	Q-II	1751
Belvedere Junior High School 320 North Record St.	Q-I	Q-II	1779
Berendo Junior High School 1145 S. Berendo St.			1176
Burbank Junior High School 6460 North Figueroa St.			1305
Burroughs Junior High School 600 S. McCadden Place	Q-I	Q-II	2215
Central Junior High School 1575 W. 2nd St.	Q-I	Q-II	1845

LOS ANGELES - (continued)			Enrollment
Dana Junior High School 1501 Cabrillo Ave., San Pedro, Calif.		Q-II	1708
Edison Junior High School 6500 Hooper Ave.	Q-I	Q-II	1981
Emerson Junior High School 1650 Selby Ave., West Los Angeles, Calif.	Q-I	Q-II	920
Foshay Junior High School 3571 S. Harvard Blvd.	Q-I	Q-II	1428
Bret Harte Junior High School 9301 S. Hoover St.	Q-I	Q-II	1677
Hollenbeck Junior High School 602 S. Soto St.	Q-I	Q-II	2552
King Junior High School 1400 Myra St.			1760
Lafayette Junior High School 1515 E. 14th St.		Q-II	1220
Le Conte Junior High School 1316 N. Bronson Ave., Hollywood, Calif.	Q-I	Q-II	1631
Mann Junior High School 7001 S. St. Andrews Place		Q-II	1613
McKinley Junior High School 885 E. 45th St.		Q-II	1561
Mount Vernon Junior High School 4066 W. 17th St.	Q-I	Q-II	2197
Muir Junior High School 5929 S. Vermont Ave.	Q-I	Q-II	1560
Stevenson Junior High School 725 S. Indiana St.	Q-I	Q-II	1547
Virgil Junior High School 152 N. Vermont Ave.	Q-I		1603

			Enrollment
MARTINEZ - (Contra Costa County)			
Martinez Junior High School	Q-I	Q-II	454
NATIONAL CITY - (San Diego County)			
Chula Vista Junior High School Chula Vista, Calif.	Q-I	Q-II	350
National City Junior High School National City, Calif.	Q-I	Q-II	532
South West Junior High School Nestor, Calif.	Q-I	Q-II	153
OAKLAND - (Alameda County)			
Claremont Junior High School College Ave. & Birch Court	Q-I	Q-II	946
Elmhurst Junior High School 98th Ave. & Cherry St.			962
Frick Junior High School 63rd Ave. & Foothill Blvd.	Q-I		1521
Garfield Junior High School 22nd Ave. & Foothill Blvd.			725
Goldengate Junior High School 53rd St. & San Pablo Ave.	Q-I		526
Hamilton Junior High School 2101 35th Ave.	Q-I	Q-II	1407
Bret Harte Junior High School 2874 Florida St.			821
Hoover Junior High School 33rd & West Sts.		Q-II	615
Lockwood Junior High School 68th Ave. & E. 14th St.	Q-I	Q-II	511
Lowell Junior High School 14th & Myrtle Sts.			777
Prescott Junior High School 9th & Campbell Sts.			348

OAKLAND - (continued)			Enrollment
Westlake Junior High School 26th & Harrison Sts.	Q-I	Q-II	1347
Wilson Junior High School 48th & Webster Sts.			859
PALO ALTO - (Santa Clara County)			
Channing Junior High School 549 Channing Ave.	Q-I	Q-II	351
Mayfield Junior High School 2650 El Camino Real			124
PASADENA - (Los Angeles County)			
Elliot Junior High School 2350 N. Lake Ave.	Q-I	Q-II	1231
Marshall Junior High School 990 N. Allen Ave.	Q-I	Q-II	1527
McKinley Junior High School 325 S. Oak Knoll Ave.	Q-I	Q-II	1338
Washington Junior High School N. Raymond Ave. & Howard St.	Q-I	Q-II	851
Wilson Junior High School Madra & Blanche Aves.	Q-I	Q-II	978
PETALUMA - (Sonoma County)			
Cotati Junior High School Cotati, Calif.	Q-I		50
Penngrove Junior High School Penngrove, Calif.	Q-I		84
Petaluma Junior High School Petaluma, Calif.	Q-I	Q-II	646
POMONA - (Los Angeles County)			
Emerson Junior High School N. Gibbs & Pearl	Q-I	Q-II	736
Fremont Junior High School Garey Ave. at 9th		Q-II	491

			Enrollment
REDLANDS - (San Bernardino County)			
Redlands Junior High School	Q-I	Q-II	1001
RICHMOND - (Contra Costa County)			
Longfellow Junior High School 23rd St. & McDonald Ave.			777
Roosevelt Junior High School 9th St. & Russell Ave.		Q-II	681
RIVERSIDE - (Riverside County)			
Central Junior High School 4795 Magnolia Ave.	Q-I	Q-II	949
Chemawa Junior High School 8834 Magnolia Ave.	Q-I	Q-II	421
University Heights Junior High 2060 8th St.	Q-I	Q-II	685
SACRAMENTO - (Sacramento County)			
California Junior High School Vallejo Way & Land Park Drive	Q-I	Q-II	881
Carson Junior High School 54th & M Sts.		Q-II	858
Lincoln Junior High School 4th & P Sts.	Q-I	Q-II	529
Stanford Junior High School 10th Ave. & Sacramento Blvd.		Q-II	987
Sutter Junior High School 19th & K Sts.		Q-II	1036
SAN BERNARDINO - (San Bernardino County)			
Allesandro Junior High School West 7th St.			432
Arrow View Junior High School Highland Ave. & G St.	Q-I	Q-II	481
Highland Junior High School Highland, Calif.	Q-I	Q-II	155

SAN BERNARDINO - (continued)			Enrollment
Rialto Junior High School Rialto, Calif.	Q-I		133
Richardson Junior High School Mill & K Sts.			283
Sturges Junior High School 8th & E Sts.		Q-II	1478
SAN DIEGO - (San Diego County)			
Mann Junior High School 4254 Park Blvd.	Q-I	Q-II	940
Memorial Junior High School 2834 Marcey Rd.	Q-I		1628
Pacific Beach Junior High School 1234 Tourmaline St., Pacific Beach, Calif.	Q-I		137
Roosevelt Junior High School 3366 Park Blvd.	Q-I	Q-II	1700
Wilson Junior High School 3737 El Cajon Ave.			1669
SAN FRANCISCO - (San Francisco County)			
Aptos Junior High School Upland Drive & Aptos Ave.	Q-I	Q-II	1275
Everett Junior High School 450 Church St.	Q-I		1845
Francisco Junior High School Francisco & Powell St.	Q-I	Q-II	1273
Lick Junior High School 25th & Noe Sts.	Q-I	Q-II	609
Mann Junior High School 23rd & Valencia Sts.	Q-I	Q-II	1371
Marina Junior High School Fillmore & Bay Sts.	Q-I		1200

SAN FRANCISCO - (continued)			Enrollment
Portola Junior High School Girard near Bacon St.			956
Presidio Junior High School 30 Ave., near Geary St.		Q-II	1540
Roosevelt Junior High School Arguello Blvd., near Geary St.	Q-I	Q-II	1266
Swett Junior High School McAllister, near Franklin		Q-II	757
SAN JOSE - (Santa Clara County)			
Burnett Junior High School 2nd & Mission Sts.	Q-I	Q-II	499
Hoover Junior High School Park Ave. & Naglee Sts.	Q-I	Q-II	575
Roosevelt Junior High School 20th & E. Santa Clara Sts.		Q-II	1174
Wilson Junior High School Grant & Vine Sts.	Q-I	Q-II	943
SAN LUIS OBISPO -(San Luis Obispo County)			
San Luis Obispo Junior High School	Q-I	Q-II	538
SANTA ANA - (Orange County)			
Lathrop Junior High School 1120 S, Main St.			295
Willard Junior High School 1342 N. Ross St.	Q-I		820
SANTA BARBARA - (Santa Barbara County)			
La Cumbre Junior High School Route 1, Box 394, Modoc Rd.	Q-I		895
Santa Barbara Junior High School 721 E. Cota St.		Q-II	856

			Enrollment
SANTA CRUZ - (Santa Cruz County)			
Branciforte Junior High School Branciforte Ave. & Water St.	Q-I		322
Mission Hill Junior High School King St.	Q-I	Q-II	456
SANTA MONICA - (Los Angeles County)			
Adams Junior High School 16 & Pearl St., Ocean Park, Calif.			618
Lincoln Junior High School 15th & California Ave.	Q-I	Q-II	1005
SANTA ROSA - (Sonoma County)			
Santa Rosa Junior High School			550
SOUTH PASADENA - (Los Angeles County)			
South Pasadena Junior High School Fair Oaks Ave. & Oak St.	Q-I	Q-II	782
VALLEJO - (Solano County)			
Vallejo Junior High School 1347 Amador St.		Q-II	933
VENTURA - (Ventura County)			
Ventura Union Junior High School	Q-I		1360

JUNIOR-SENIOR HIGH SCHOOLS OF CALIFORNIA

ALBANY - (Alameda County)			
Albany Junior-Senior High School	Q-I		632
BOULDER CREEK - (Santa Cruz County)			
Boulder Creek Union Junior-Sr. High	Q-I	Q-II	75
CHINO - (San Bernardino County)			
Chino Junior-Senior High School			628

			Enrollment
CLAREMONT - (Los Angeles County)			
Claremont Junior-Senior High School			865
COALINGA - (Fresno County)			
Coalinga Union Junior-Senior High	Q-I	Q-II	594
CORCORAN - (Kings County)			
Corcoran Union Junior-Senior High	Q-I	Q-II	250
DOS PALOS - (Merced County)			
Dos Palos Joint Union Junior-Senior High School	Q-I		415
DOWNEY - (Los Angeles County)			
Downey Union Junior-Senior High	Q-I	Q-II	619
EMERYVILLE - (Alameda County)			
Emery Junior-Senior High School 4727 San Pablo Ave.	Q-I		255
FILLMORE - (Ventura County)			
Fillmore Union Junior-Senior High			524
FORT BRAGG - (Mendocino County)			
Leggett Valley Junior-Senior High, Cummings, Calif.			44
FRESNO - (Fresno County)			
Edison Technical Junior-Senior High 540 California Ave.			1152
Roosevelt Junior-Senior High School	Q-I	Q-II	1207
KERMAN - (Fresno County)			
Kerman Union Junior-Senior High	Q-I	Q-II	371
LE GRAND - (Merced County)			
Le Grand Union Junior-Senior High	Q-I	Q-II	181

			Enrollment
LOMPOC - (Santa Barbara County)			
Lompoc Union Junior-Senior High	Q-I	Q-II	414
LONG BEACH - (Los Angeles County)			
Avalon Junior-Senior High School Avalon, Santa Catalina Island	Q-I	Q-II	187
Dewey Junior-Senior High School 8th & Locust Ave.	Q-I		890
Ticknor Orthopedic Junior-Sr. High 4031 Wilton St.	Q-I		
LOS ANGELES - (Los Angeles County)			
Banning Junior-Senior High School 1500 N. Avalon Blvd., Wilmington, Calif.	Q-I		1534
Bell Junior-Senior High School 4328 E. Bell Ave., Bell, Calif.			1663
Eagle Rock Junior-Senior High School 1750 Yosemite Drive, Eagle Rock, Calif.	Q-I		1623
El Retiro Junior-Senior High School 13161 Borden St., San Fernando, Calif.			50
Gardena Junior-Senior High School Nordie Ave. & 165 St., Gardena, Calif.	Q-I	Q-II	1050
Garfield Junior-Senior High School 5101 E. 6th St.	Q-I	Q-II	2548
Jordan Junior-Senior High School 2265 E. 103rd St.			1416
Narbonne Junior-Senior High School 25243 Redondo & Wilmington Blvd., Lomita, Calif.	Q-I		920
North Hollywood Junior-Senior High 5231 Colfax Ave., North Hollywood			1597

			Enrollment
LOS ANGELES - (Los Angeles County)			
Riis Junior-Senior High School 139 W. 69 St.	Q-I		475
San Fernando Junior-Senior High 2nd & Brand Blvd., San Fernando, Calif.	Q-I		2113
Southgate Junior-Senior High 3351 Firestone Blvd., Southgate, Calif.			1699
Torrance Junior-Senior High Carson & Watson Sts., Torrance, Calif.			756
University Junior-Senior High 11800 Texas Ave., West Los Angeles, Calif.			1529
Van Nuys Junior-Senior High 6535 Cedros Ave., Van Nuys, Calif.	Q-I		1628
Venice Junior-Senior High School Wallgrove Ave. & VeniceBlvd., Venice, Calif.		Q-II	2046
MARICOPA - (Kern County)			
Maricopa Junior-Senior High School			330
NEEDLES - (San Bernardino County)			
Needles Junior-Senior High School	Q-I	Q-II	302
PARKER DAM - (San Bernardino County)			
Parker Dam Junior-Senior High	Q-I		54
OAKLAND - (Alameda County)			
Oakland Junior-Senior High School 3233 Park Blvd.	Q-I	Q-II	3409
SAN LEANDRO - (Alameda County)			
San Leandro Junior-Senior High	Q-I		1260

			Enrollment
OJAI - (Ventura County)			
Nordhoff Junior-Senior High	Q-I	Q-II	364
PALO ALTO - (Santa Clara County)			
Palo Alto Junior-Senior High 50 Embarcadero Rd.			996
QUINCY - (Plumas County)			
Greenville Junior-Senior High			146
PORTOLA - (Plumas County)			
Portola Junior-Senior High School	Q-I		176
SAN DIEGO - (San Diego County)			
La Jolla Junior-Senior High School 6945 Eads St., La Jolla, Calif.	Q-I	Q-II	450
Point Loma Junior-Senior High 2355 Chatsworth Blvd.	Q-I	Q-II	1193
SAN FRANCISCO - (San Francisco County)			
Girls Junior-Senior High School Geary & Scott Sts.	Q-I		1238
SOUTH SAN FRANCISCO - (San Mateo County)			
South San Francisco Junior-Senior High School South San Francisco, Calif.			484
VISTA - (San Diego County)			
Vista Junior-Senior High School	Q-I		300
WESTWOOD - (Lassen County)			
Westwood Junior-Senior High		Q-II	372
WILLITS - (Mendocino County)			
Willits Union Junior-Senior High		Q-II	258

APPENDIX III

QUESTIONNAIRE NUMBER I, WITH COMPLETE RETURNS; BLANK FORM, QUESTIONNAIRE NUMBER II; COMPLETE TABULATIONS, QUESTIONNAIRE NUMBER II

QUESTIONNAIRE NUMBER I

A SURVEY OF COURSE OFFERINGS IN THE INDUSTRIAL ARTS CLASSES OF THE JUNIOR HIGH SCHOOLS OF CALIFORNIA FOR THE SCHOOL YEAR OF 19__-19__

1. The following list of Industrial Arts Subjects are those listed in the California School Directory for the school year of 1936-37 as the subjects taught in the Industrial Arts Classes of the junior high schools of California. Please indicate the subjects taught in your Industrial Arts Classes by placing a check (✓) under the grade in which the subject is taught. If the subject is taught in more than one grade put a check under each grade in which the subject is taught. (NOTE: This copy of the questionnaire has been filled in as a complete tabulation of returns from all junior high schools reporting, so instead of check marks the blanks show the total number of schools reporting on each item.)

Subject:	7th	8th	9th	Any
Woodwork	105	92	110	122
Wood Turning	16	38	73	77
Art Fibre Furniture	7	6	15	18
Wood Carving	11	16	26	29
Basketry	9	14	12	15
Wood Finishing	53	58	71	76
Electricity	31	62	57	76
Radio	8	13	28	28
Cold Metal Work	25	51	48	59
Sheet Metal	42	61	65	90
Art Metal	19	44	52	62
Ornamental Iron	14	34	34	41
Metal Finishing	15	31	29	36
Foundry	3	23	22	29
Forge	11	34	38	43
Machine Shop	2	15	35	35
Brazing	1	8	20	21
Welding	1	11	22	22
Auto mobile Mechanics	1	17	35	36
Home Mechanics	14	21	20	32
Stage Craft	3	16	33	35
Mechanical Drawing	75	59	88	103
Leather Craft	3	5	6	7

1. Subject (continued).

	7th	8th	9th	Any
Shoe Repairing		1	3	3
Plumbing	2	3	6	7
Pottery	3	7	7	8
Concrete	1	6	4	8
Tile		2	3	3
Plaster	0	0	0	0
Brick		1	1	1
Printing	27	49	56	59
Jewelry		1	1	1
Airplane Models	1	1	1	2
Forge Welding		1		1
Linoleum Block Prints	1	1	1	1
Hobby Craft		1	1	1
Weaving	1 1	1	1	1
Book Binding	2	2	2	2

2. Please place a check under the "one semester" or "one year", selecting the column that would make the statement correct:

	½ Semester	One Semester	One Year
Shop work offered 7th grade	7	32	74
Shop work offered 8th grade	2	37	82
Shop work offered 9th grade	1	5	111

3. Please check "yes" or "no" in the following sentences:

	yes	no
Do you offer special or separate courses in your shops for students not well adjusted to academic work?	30	90

4. Is any kind of Industrial Arts work compulsory?

a. In your seventh grade	105	11
b. In your eighth grade	89	29
c. In your ninth grade	14	90

5. Do you teach wood turning as a distinct course? 3 14

	yes	no
6. Do you require tracing or sketching of projects in your shop courses?		
a. In your seventh grade	59	47
b. In your eighth grade	75	35
c. In your ninth grade	80	31
7. Do you require regular working drawings of projects?		
a. In your seventh grade	42	61
b. In your eighth grade	64	45
c. In your ninth grade	79	33
8. Is mechanical drawing taught as a regular course unrelated to your shop courses?		
a. In your seventh grade	54	49
b. In your eighth grade	48	43
c. In your ninth grade	67	43
9. Does your program make use of a "general shop" organization of any type?	83	38
If so, please indicate the type below:		
a. "Composite" general shop - several activities of unrelated type (wood, metal, drafting, etc.), all taught simultaneously		
(1) In your seventh grade	17	7
(2) In your eighth grade	30	2
(3) In your ninth grade	27	8
b. "Related" general shop - general woodwork or general metal work, and not a mixture as above		
(1) In your seventh grade	33	11
(2) In your eighth grade	45	8
(3) In your ninth grade	40	9
10. Is your course split up into units that rotate from one to the other, as drafting to woodwork to metal, etc.?		
a. In your seventh grade	56	38
b. In your eighth grade	57	54
c. In your ninth grade	19	78

11. If you teach a course in Automobile Mechanics in your junior high school will you please check the objective you stress most in your course:

a. Automobile Mechanics (trouble shooting and repairing)	16

b. Automobile Servicing (roadside and home service jobs) 25
c. Automobile Driving (principles and practices of safe driving) 20

12. Does your school offer a course in

	yes	no
a. Machine Drawing?	31	
b. Sheet Metal Drawing?	30	
c. Electrical Drawing?	16	
d. Geometrical Construction?	26	
e. Architectural Drawing?	37	
f. General Shop Sketching?	7	
g. Blue Print Reading?	1	

13. We would like a general concensus of opinion from the Industrial Arts teachers of California as to what, in their opinion, would constitute a most acceptable course of study for junior high schools. Will you please check the subjects below as to the grade or grades in which you think the subjects should be taught? Only check the subjects that you think should properly be taught in the junior high school and only check enough subjects to make a well rounded course of study. Disregard any subject that you feel can well be eliminated from a junior high school course of study. This is just an expression of opinion and may not be closely related to what you are required to teach.

Subject:	7th	8th	9th
Woodwork	108	99	102
Wood Turning	10	43	90
Art Fibre Furniture	14	20	22
Basketry	7	13	10
Wood Finishing	54	64	81
Electricity	40	79	86
Radio	12	45	68
Cold Metal Work	25	54	81
Sheet Metal	74	79	73
Art Metal	20	54	81
Ornamental Iron	10	33	53
Metal Finishing	12	26	37
Foundry	3	16	31
Forge	8	24	39
Machine Shop	3	13	47
Brazing	2	11	30
Welding	1	8	25
Automobile Mechanics	4	20	51

13. Subject (continued)	7th	8th	9th
Home Mechanics	28	60	66
Leather Craft	14	23	24
Shoe Repairing	2	9	9
Plumbing	1	3	12
Pottery	7	15	15
Concrete	3	10	24
Tile	1	3	4
Plaster	2	2	4
Brick	0	1	1
Printing	28	53	71
Book Binding	5	18	25
Stage Craft	7	46	47
Mechanical Drawing	83	79	94
Airplane Models	2	1	1
Jewelry		1	2
Linoleum Block Prints	1	1	1
Foods (cooking)	1	1	1

	yes	no
14. Do you approve of "Composite" general shop - several unrelated subjects or activities, (wood, metal, drafting, etc.) all taught simultaneously?	21	75
15. Do you approve of the "Related Subjects" general shop - general woodwork or general metalwork, but not a mixture as above?	80	26
16. Do you approve of an enriched shop course in which many subjects are taught as units and which rotate from one to the other during the semester or year?	83	35
17. Do you approve of making Mechanical Drawing a service course to your shop courses and requiring tracings, sketchings or regular working drawings as the ability of the student will permit?		
a. In your seventh grade	59	48
b. In your eighth grade	65	41
c. In your ninth grade	90	26

		yes	no
18.	Would you give Mechanical Drawing as a separate course, unrelated to other shop work?		
	a. In your seventh grade	44	49
	b. In your eighth grade	41	54
	c. In your ninth grade	64	40
19.	Do you approve of devising separate and special courses for students not well adjusted to academic work?	92	26
20.	Would you make Industrial Arts courses compulsory for all students?		
	a. In the seventh grade	98	16
	b. In the eighth grade	91	28
	c. In the ninth grade	38	70

QUESTIONNAIRE NUMBER II

Will you please assist this survey by indicating your shop organization by placing checks (✓) in the spaces provided that properly furnish this information. For questions not answerable by this method please answer with briefly worded statements.

I. In this item, sub-items A, B, C, D, E, F, G, H, I, J, K, L, and M are types of shops that might be found in a junior high school industrial arts department. These sub-items are separate distinct shops with notations below to indicate the inclusive type of work done, if there is a variety of work done in one shop. Please glance over item No. I to determine its content and place checks in the spaces that will indicate to us your shop organization.

A. General Shop.....( )
Including equipment for:
1. Woodwork.....( )
2. Sheet Metal.....( )
3. Art Metal.....( )
4. Ornamental Iron.....( )
5. Cold Iron.....( )
6. Forging.....( )
7. Foundry.....( )
8. Jewelry.....( )
9. Welding.....( )
10. Brazing.....( )
11. Machine Shop.....( )
12. Auto Shop.....( )
13. Printing.....( )
14. Mechanical Drawing.....( )
15. Electricity.....( )
_____( )
_____( )

B. Wood Shop.....( )
Including equipment for:
1. General woodwork.....( )
2. Wood Turning.....( )
3. Mechanical Drawing.....( )
4. Wood Finishing.....( )
5. Wood Carving.....( )
6. Home Mechanics.....( )
7. Stage Craft.....( )
8. Basketry.....( )
_____( )
_____( )

C. Separate Drafting Room.....( )

D. General Metal Shop.....( )
Including equipment for:
1. Sheet Metal.....( )
2. Art Metal.....( )
3. Ornamental Iron.....( )
4. Cold Iron.....( )
5. Electricity.....( )
6. Forge.....( )
7. Foundry.....( )
8. Welding.....( )
9. Brazing.....( )
10. Machine Shop.....( )
11. Auto Shop.....( )
12. Mechanical Drawing.....( )
_____( )
_____( )

E. Separate Sheet Metal Shop.....( )

F. Separate Art Metal Shop.....( )

G. Separate Forge Shop.....( )

H. Separate Foundry.....( )

I. Machine Shop.....( )
Including equipment for:
1. General Machine Work.....( )
2. Welding.....( )
3. Electricity.....( )
4. Forge.....( )
5. Foundry.....( )
6. Mechanical Drawing.....( )
_____( )
_____( )

J. Auto Shop.....( )
Including equipment for:
1. General Auto Mechanics.....( )
2. Welding.....( )
3. Machine Shop.....( )
4. Electricity.....( )
5. Mechanical Drawing.....( )
_____( )
_____( )

K. Electric Shop.....( )
Including equipment for:
1. General Electric Shop Work.( )
2. Radio.....( )
3. Mechanical Drawing.....( )

L. Print Shop.....( )

M. If you have a shop set-up that cannot be indicated above will you briefly state below what it is?

_____

_____

II. What is the approximate size of your student body? _____

III. How many teachers do you have in your industrial arts department? _____

IV. A. Do you consider your printing and mechanical drawing teachers separate from your industrial arts department? _____

B. If so, how many of these teachers do you have? _____

V. How long are your periods? (45 minutes, 60 minutes, or what period of time?) _____

VI. Do you teach an occupations course in your industrial arts department? (This course is sometimes referred to as vocational guidance course, orientation course, etc.) Yes ( ) No ( )

A. If you do teach such a course, will you please state what grades are taught and the general content of the course?

_____

_____

VII. Do you regularly have industrial arts exhibits in your school? Yes ( ) No ( )

VIII. Do you make it a practice to enter your shop projects in

1. City exhibits Yes ( ) No ( )

2. County Fair? Yes ( ) No ( )
3. State Fair? Yes ( ) No ( )

IX. Do you organize your shop groups by the monitor system having shop foremen, etc? Yes ( ) No ( )

X. Do you have organized safety committees in your shops? Yes ( ) No ( )

XI. Do you have shop Clubs? Yes ( ) No ( )

A. If so, would you briefly state what type of club work you are doing?

_____

_____

XII. Please indicate below what other kinds of guidance work you are doing, such as:

1. Vocational counseling.....( )
2. Mechanical aptitude testing.....( )
_____( )

XIII. A. Do you have any girls' classes in industrial arts? Yes ( ) No ( )

B. If so, will you please indicate briefly what you are doing in this work?_____

XIV. Do you have any mixed classes in industrial work? Yes ( ) No ( )

XV. If you are Junior-Senior High school, do you use your shops in common? Yes ( ) No ( )

XVI. If there are any details in the organization of your junior high school shops not covered by above questions, will you please note below?

COMPLETE TABULATIONS FOR QUESTIONNAIRE NUMBER II

Item I.

Sub-items A, B, C, D, E, F, G, H, I, J, K, and L are tabulated in Chapter IV of this thesis. The returns on sub-item M were all some modification of shop organization covered in Chapter IV. They are tabulated below:

M. Special Shop Set-Ups.

South San Francisco Junior High:

Five separate rooms and teachers: 1. Mechanical Drawing, 2. Art, 3. Sewing and Cooking, 4. Cabinet work, 5. Metal and Electricity.

La Cumbre Junior High, Santa Barbara:

7B	10 weeks Mechanical Drawing.
	10 weeks Sheet Metal.
7A	10 weeks Woodshop.
	10 weeks Print Shop.
8B	10 weeks Electricity.
8A	10 weeks Gardening.
9B-A	20 weeks Woodshop or Print Shop.

Roosevelt Junior High, Richmond:

Class in Electricity and Radio, in General Metal Shop.
Mixed class, Arts and Crafts.
Shop Science course - three periods per week in each shop - taught by shop instructors.

Martinez Junior High:

Two general shop courses - overlapping in subjects.

Mt. Vernon Junior High, Los Angeles:

Shop cycle includes agriculture 7B and cooking for limited number 9th grade boys (demand far exceeds capacity.)

Woodrow Wilson Junior High, San Jose:

Leatherwork - Cobbling - Horticulture

Herbert Hoover Junior High, Oakland:

> Home Mechanics Shop course - covers electricity, plumbing, forging, a little machine work, cement work (rough and cut).

Item II.

The one hundred and eleven schools reporting gave a total enrollment of 104,011 children. This is an average enrollment of about 937.

Item III.

These same schools reported 385 industrial arts teachers. Using these figures and the total enrollment reported, there would be approximately 270 pupils per industrial arts teacher.

Item IV.

Nine of the one hundred and eleven junior high schools reported that their printing and mechanical drawing teachers were not included as teachers in their industrial arts departments. None of these schools reported more than one teacher in these classifications.

Item V.

The average length of the school period reported by these schools was 53 minutes.

Item VI.

Eight schools reported that they taught an occupations course. Comments on the type of course taught were as follows:

"Occupational information, trips, movies, literature and discussion." "Each shop teacher takes up occupations related to his shop." "Lecture course and work covers woodshop, general repairs, etc." "Mechanical drawing as a vocation, and occupational work in type of shop work done." "Material given when pertinent to course." "Given in Social Science department." "Part of our regular guidance instruction and counseling which has a period a day allowed for it."

Item VII.

Seventy-eight schools reported that they held industrial arts exhibits in their schools.

Item VIII.

1. Forty-eight schools reported entering shop projects in city exhibits.

2. Twenty-five schools reported entering shop projects in county fair exhibits.

3. Nine schools reported entering shop projects in State Fair exhibits.

Item IX.

Seventy-two shops reported that shop classes were organized by the monitor system (shop foremen, etc.)

Item X.

Thirty-four schools reported that they had organized safety committees in their shops.

Item XI.

Thirty-seven schools reported shop clubs. Schools reporting club work and the types of clubs are as follows:

Branciforte Junior High, Santa Cruz:

Model Airplane Club.

La Cumbre Junior High, Santa Barbara:

Printing Club, Metal Club, Model Airplane Club.

Highlands Junior High, San Bernardino:

Model Building Club.

Fremont Junior High, Pomona:

Two Woodworking Clubs for girls, two Metal Clubs for boys and girls.

Chula Vista Junior High, National City:

Model Boats, and regular projects.

South West Junior High, National City:

General work projects, stagecraft.

Martinez Junior High, Martinez:

Art Metal, Plastics, or any craft or hobby club.
Two Model Airplane Clubs.

Compton Junior High, Compton:

Girls' woodwork, leathercraft.

San Dieguito Junior High, Cardiff:

New department, intend to have club work.

Roosevelt Junior High, San Jose:

Carving, Archery Equipment, Art Metal, Jewelry, Leather Tooling.

Hoover Junior High, San Jose:

Home Mechanics Club.

Barnett Junior High, San Jose:

Boys Leader Club for shop foremen.

Audubon Junior High, Los Angeles:

Yacht Club, Radio Club.

Bancroft Junior High, Los Angeles:

Handicraft, Radio, Model Airplane.

John Burroughs Junior High, Los Angeles:

Radio Club.

Emerson Junior High, Los Angeles:

Home Work Shop, Radio W6OMM.

Joseph Le Conte Junior High, Los Angeles:

Code Practice Club.

Banning Junior High, Los Angeles:

Airplane Club, Radio Club.

Venice Junior-Senior High, Los Angeles:

Radio Club, Chess Club, Photography, Junior Aviation.

Westlake Junior High, Oakland:

Stagecraft, Art Metal.

Willard Junior High, Berkeley:

Model Airplanes, Photography, Radio.

Chemawa Junior High, Riverside:

Woodcraft, Home Mechanics, Model Building.

Elliot Junior High, Pasadena:

Stage Club and stagecraft.

Washington Junior High, Pasadena:

Archery and Stagecraft.

Marshall Junior High, Pasadena:

Airplane, Wood, T-Square and Metal Crafts.

Roosevelt Junior High, San Diego:

Radio, Model Boat.

Lowell Junior High, Long Beach:

Mechanical Drawing, and Code Clubs.

Avalon Junior-Senior High, Long Beach:

Any small project that is not a class project.

Aptos Junior High, San Francisco:

Woodwork for Teachers, Art Metal.

Presidio Junior High, San Francisco:

Graphic Arts, Art Metal, Cabinet Work, Radio, Mechanical Drawing. (All after school hours, students developing own projects and paying for materials.)

Woodrow Wilson Junior High, San Jose:

Electricity, Printing, Stagecraft.

Petaluma Junior High, Petaluma:

Archery and Model Airplane Clubs.

National City Junior High, National City:

Radio and Woodshop Clubs:

Herbert Hoover Junior High, Oakland:

Girls only, small projects.

Item XII.

Other guidance work reported:

Thirty-eight schools reported giving vocational counseling.

Eleven schools reported giving mechanical aptitude tests.

One school reported home room guidance.

Two schools reported safety counseling.

One school reported safety testing.

Item XIII.

Twenty-eight schools reported giving industrial arts classes for girls. The schools offering this type of work and the courses given are as follows:

Stanford Junior High, Sacramento:

General Handicraft.

Portola Junior-Senior High, Portola:

Art Metal, some Woodwork, some Wood Turning.

Richard H. Dana Junior High, San Pedro:

General Home Mechanics.

South San Francisco Junior High:

Copper Work.

Corcoran Junior-Senior High, Corcoran:

Girls sometimes use shop, but do not take courses.

Santa Rosa Junior High, Santa Rosa:

Girls are allowed to take woodworking with boys.

Lincoln Junior High, Santa Monica:

Girls and boys take architectural drawing and Printing.

Sturges Junior High, San Bernardino:

Household Mechanics.

Roosevelt Junior High, Richmond:

Boys and girls in Arts and Crafts, three mixed classes in cooking.

Fremont Junior High, Pomona:

Two classes or clubs in Woodworking.

Chula Vista Junior High, National City:

Mixed classes (elective) in General Shop, making Copper Trays, Dishes, etc., Architectural Drawing.

South West Junior High, National City:

Two weeks course at the end of 8A semester to learn the use of a few tools.

Martinez Junior High, Martinez:

Crafts Clubs, mixed boys and girls.

Compton Junior High, Compton:

Girls Woodworking Club.

San Dieguito Junior High, Cardiff:

Girls do wood turning and jig saw work.

Longfellow Junior High, Fresno:

Some years girls have classes in woodwork, home mechanics and art metal.

La Crescenta Junior High, Glendale:

Experimental exchange courses, 8B boys to cooking, girls to home mechanics.

Roosevelt Junior High, San Jose:

Woodwork, Art Metal, Jewelry.

Central Junior High, Los Angeles:

Thin Woodworking and Finishing, Stagecraft.

Emerson Junior High, Los Angeles:

General Shop.

Lockwood Junior High, Oakland:

Homemaking, mixed classes in Foods.

Willard Junior High, Berkeley:

Art Metal, mixed classes.

Elliot Junior High School, Pasadena:

Girls in Art Metal Club (included with boys).

Washington Junior High, Pasadena:

Homecraft, Woodwork, Wood Finishing, Electricity, Concrete.

Marshall Junior High, Pasadena:

Planning a Homecraft course for boys and girls, 10 weeks shop, 10 weeks Domestic Science.

McKinley Junior High, Pasadena:

Homecraft.

Roosevelt Junior High, San Diego:

Printing and Mechanical Drawing.

Horace Mann Junior High, San Diego:

Household Electrics, mixed Mechanical Drawing.

Washington Junior High, Long Beach:

Elementary Woodshop Problems.

Westwood Junior-Senior High, Westwood:

Small Woodworking projects and use of tools, advanced work on furniture.

Lynwood Junior High, Compton:

Home Mechanics.

Item XIV.

Twelve junior high schools reported mixed boys and girls classes in industrial arts. Most of these were in school clubs rather than scheduled courses.

Item XV.

Twenty-three junior-senior high schools reported using shops in common for both departments.

Item XVI.

Three schools reported details not covered by other items of questionnaire, as follows:

Compton Junior High, Compton:

1. No tool room, tool cabinet found more satisfactory.
2. Mechanical drawing taught from blocks instead of copied from the book. The students know why each line is made instead of merely copying a line shown in the book.
3. Regular stage crew, one period a day assigned to stagecraft.

Hamilton Junior High, Fresno:

The Fresno State College shops used, 3 classes for junior high.

Edison Junior High, Los Angeles:

Some boys take charge of tool room instead of going to study hall.

APPENDIX IV

COMMUNICATIONS FROM CITY SUPERVISORS OF INDUSTRIAL ARTS AND HEADS OF INDUSTRIAL ARTS DEPARTMENTS OF STATE COLLEGES

(Copy)

BOARD OF EDUCATION
of the
CITY OF LOS ANGELES

March 14, 1938

* * * * * * *. In the Los Angeles junior high schools a boy is routed through a series of six exploratory courses, each of ten weeks duration, as follows:

B7 - Mechanical Drafting and Agriculture
A7 - Woodwork and Electricity
B8 - General Metal and Printing

During the A8, B9, and A9 grades the boy may elect for further training one or more of the above courses.

Each of these courses represents a large occupational field. For example, the general metal course includes sheet metal, art metal, metal casting, welding, elementary machine shop practice, and forging.

* * * * * * *.

Very truly yours,

(Signed) C. E. Nihart, Supervisor
Vocational and Practical Arts

(Copy)

BOARD OF EDUCATION
of the
City of Los Angeles

March 31, 1938

Your letter of March 28 regarding terminal courses in junior high school industrial arts has just been received. We offer no terminal courses in our junior high schools. Retarded students are seldom capable of entering Smith-Hughes vocational classes in our trade school or our senior high schools. The most we can hope to do for this group in the junior high schools is to make them vocationally competent by giving training in a great variety of skills. These boys will generally go into semi-skilled work where a high degree of skill is not required. I understand in some of the eastern cities low grade vocational classes are organized for boys not going into the skilled trades. As yet we have done nothing of this kind in Los Angeles.

* * * * * .

Very truly yours,

(Signed) C. E. Nihart

Supervisor,
Vocational and Practical Arts

(Copy)

ENTERPRISE JUNIOR HIGH SCHOOL
Compton, California

1-27-38

* * * * *.

For further explanation of some of the items therein, (Questionnaire No. I) I offer the following:

#2. Our semester's work in grades 7 & 8 is, in three schools of the five J.H.S's in this district, broken into two days and three days per week, and thus a teacher has his same groups the entire year. In contrast, two of the five have, or meet their classes five consecutive days per week, and change to other groups at the end of the semester.

In the first instance, a teacher meets nine or ten groups per week, throughout the year. In the other case, the teacher meets six groups per week, if he teaches six classes per day, * * * .

* * * we prefer the latter. The work is more steady, the information given to students carries over from day to day instead of there being intervals of from four to five days between instruction.

#9. Where (2) is marked both yes and no, some of the five shops run strictly one subject per period, but because of * * * insufficient class room accomodation, * * * others are forced to carry two or more classes at the same time, in the same class room.

#12. Our Mech. Drawing is a beginners course, with the regular unit of credit, and is reserved for the ninth grade or such tenth grade students as desire it. Only one year given at present due to lack of accommodations for more classes.

#14. None of our men favor the composite shop. It is considered an almost impossible situation.

#15. We prefer to carry sheet metal as a separate single subject, then electricity * * * then to cold metal as a a single subject, rather than carry three or even two or more subjects at a time. * * * *.

#19. Students not well adapted to academic subjects are, we find, mostly unadapted to shop courses. Our best

students in shop are usually very good academically, and we feel that a student who cannot get to functioning with his brain alone in one or other academic subjects, usually cannot get to functioning when it becomes a matter of co-ordinating the brain and hands simultaneously.

* * * * * * .

Cordially yours,

(Signed) F. H. Wilde,

Chairman,
Compton District J.H.S.
Shopmen.

(Copy)

JOHN BURROUGHS JUNIOR HIGH SCHOOL
Burbank, California

April 7, 1938

* * * * *. Following is our present shop sequence of courses:

7B - Mechanical Drawing, 10 weeks
Elementary Woodwork, 10 weeks

7A - Junior metal work, 10 weeks
Sheet metal work, 10 weeks

8B - Advanced wood shop, 20 weeks

8A - Advanced metal shop, art metal and ornamental iron, 20 weeks

These courses are required of all boys regularly enrolled in John Burroughs Junior High School. In ninth grade boys may elect advanced wood shop, advanced metal shop, advanced mechanical drawing, forge and foundry, or individual combination projects in any of these fields. We require two years of fundamental skills on the theory that the ground work obtained is necessary to and will make much more productive activity.

* * * * * * .

Sincerely,

(Signed) A. G. Ogborn

Principal.

(Copy)

LONG BEACH CITY SCHOOLS
Long Beach, California

March 29, 1938

The following industrial arts courses are provided in the Long Beach Junior High Schools:

1. Mechanical Drawing
2. Woodworking
3. Electricity
4. Printing
5. General Metal

We advise that students take the mechanical drawing course in the first semester of the junior high school because it has interpretive value in most of the other courses. We do not believe, however, that there is any psychological or logical reason for arranging the above-mentioned courses into chronological order; that is, there is no reason why they should take one course before another, with the exception of mechanical drawing. We therefore assign every student in the junior high school to four of the above shops according to his preference in the first four semesters. In the ninth year he is permitted to take advanced work in the form of electives or start courses which he has not already taken. It is much easier to program students when courses are not arranged in a chronological order as you will readily see.

* * * * * .

Sincerely yours,

(Signed) F. Horridge,

Coordinator
Dept. Vocational Education.

(Copy)

LONG BEACH PUBLIC SCHOOLS
Avalon Junior-Senior High School
Avalon, California

Feb. 21, 1938

Although our school is a part of the Long Beach School System it is very small by reason of its location; * * * *.

Our junior and senior high schools have an enrollment of one hundred and sixty pupils; they are housed in the same building, and taught by the same teachers. There is an industrial arts building where grades seven to twelve are taught.

The seventh grade rotates through four units in the year. One quarter of elementary drawing; one quarter of Wood Work, one quarter of Sheetmetal, and one quarter of Home Mechanics. Three of these units are going on at the same time.

The eighth grade rotates twice in the year; one semester General Metal, and one semester Wood Work.

The ninth grade is entirely elective; they may choose Mechanical Drawing, General Metal, Wood Work, or Sheetmetal.

* * * * * I have checked Wood Finishing, and Metal Finishing; these are not taught separate classes and do not include color charts and such as would be taught in a regular finishing class; but, rather, the fundamentals of applying paints, stains, fillers, shellacs and varnishes, and these only when the need arises.

* * * * * .

Very truly yours,

(Signed) Robert O. Thompson

Industrial Arts Teacher.

(Copy)

PASADENA CITY SCHOOLS
Pasadena, California

March 29, 1938

* * * * * our Industrial Arts set up for the Junior High Schools, ** is as follows:

The work in the seventh grade is compulsory for all students and comprises one semesters work in wood working for the low seventh grade and ten weeks each of printing and mechanical drafting for the boys in the high seventh grade.

In the eight, ninth and tenth grades the work is elective. Eighth grade students electing the work are limited to our courses in sheet metal work and electricity, ten weeks each, and general metal working, one semester. The ninth and tenth grade students may elect any subject of the foregoing.

I personally, am not sure but that we might obtain better results if we moved the compulsory period from the seventh to the ninth grade, wherein we would be dealing with the older students who have more maturity and greater judgment, and we would therefore probably be better able to get over to them the importance of not only our own program, but of the entire secondary schools insofar as preparation for institutions of higher learning, or vocational preparation is concerned.

* * * * * .

Very truly yours,

(Signed) Geo. D. Henck

Director of Vocational Education.

(Copy)

BOARD OF EDUCATION
of the
City of Glendale

Glendale, California,
April 1, 1938.

* * * * * * * * , the requirements for the Eleanor J. Toll Junior High School which fairly well represents our program. Due to differences in facilities and equipment, the programs in the various junior high schools are not identical.

B-7 - Mechanical Drawing required.

A-7 - Wood Shop required.

B-8 - No industrial arts required and none offered, except to special students.

A-8 - Wood Shop or Sheet Metal, elective.

B-9 and A-9 - Engineering Drawing, Wood Shop or Sheet Metal, elective.

All of the courses listed are full semester courses meeting regularly one hour per day.

Very truly yours,

(Signed) A. L. Ferguson

Deputy Superintendent.

(Copy)

SAN JOSE PUBLIC SCHOOLS
San Jose, Calif.

June 2, 1937

* * * * * * * .

We don't have what we would call a strict course of study. We believe our junior high school youngsters should have as much leeway as possible. They can make what they want to make, deterred by their ability.

For this reason we have developed operations and operation sheets and ask the pupil to make anything he wants to under the direction of the teacher, but suggest that he learn operations first. We have developed some 25 different operations, and hope to have as many as 50 in the three fields, sheet metal, electricity and woodwork.

* * * * * * * .

Very truly yours,

(Signed) A. R. Nichols

Director Vocational
Education.

(Copy)

WOODROW WILSON JUNIOR HIGH SCHOOL
San Jose, California

March 30, 1938

* * * * * * * .

In our school all of our boys have 10 weeks each term in 7th and 8th grades in the shops. Those boys in the two slower sections of each class, who are older and lack much scholastic ability have 20 weeks in each term from High 7th up.

Low 7th - Woodwork

High 7th - Electricity or Mechanical Drawing

Low 8th - Mechanical Drawing or Sheetmetal

High 8th - Printing or Woodwork

Low and High 9th - Electives in any shop--
every day for 2 terms.

Sincerely yours,

(Signed) N. O'Brien

Principal.

(Copy)

BERKELEY PUBLIC SCHOOLS
Berkeley, California

March 30, 1938

* * * * * our program of Industrial Arts in our Junior High Schools is as follows:

All boys are required to take Industrial Arts one period a day in the high seventh grade and high eighth grade. A few years ago boys took the Industrial Arts in the low seventh grade instead of the high eighth, and we may go back to that arrangement in the near future.

In the high seventh grade the boys rotate between wood shop, shop drawing, and metal shop, being in each shop between six and seven weeks, or one report period. In the high eighth grade the boys take woodwork, electricity and shop drawing, rotating as in the high seventh grade. Once in a while printing is substituted in the high eighth grade for wood shop. In one Junior High School our set-up is slightly different. In this school the boys take woodworking during the high seventh grade, and general metal shop during the eighth grade.

* * * * * * * .

We have three Junior High Schools which differ considerably in enrollment, personnel of the students, and the physical plant, and our courses were selected to meet these conditions.

In the low and high ninth grades the Industrial Arts courses are all elective. The courses given are woodwork, general metal, printing and mechanical drawing. In one Junior High School we also teach auto mechanics.

* * * * * . The Superintendent of Schools issued a bulletin to the effect that no (print) shop work should be done unless it fits in with the educational program, and has high educational value, so we are in a position to do a real piece of educational work in this course. * * *

* * * * * .

Yours very truly,

(Signed) Dwayne G. Young

Supervisor Industrial Educ.

(Copy)

SACRAMENTO CITY SCHOOL DEPARTMENT
Sacramento, California

March 31, 1938

* * * * * * * .

Sacramento is committed to the four shop set up for our five junior high schools and the new McClatchy Senior High School, namely: graphic arts, including mechanical drawing and printing, general metal shop, hand craft shop, and wood shop.

We program as follows: Low Seventh, mechanical drawing, including elementary drafting, free hand drafting, and blue print reading. High Seventh, elementary wood work. Low Eighth, metal work including elementary sheet metal and bench metal. High Eighth, hand craft includinga brief exploration of the five crafts: wood carving, pottery, basketry, jewelry and leather craft. Either Low or High Eighth graders are privileged to elect printing instead of other shop activities if they so desire. In the Ninth grades pupils may choose work in any of the shops pursuing the work for a full year on a more advanced basis.

In the McClatchy High School shop work is elective and the students may choose work in any of the above named shops, pursuing the same type of work on a senior high level. Shop work is required in the seventh grades and elective in the eighth and ninth and all of the years of the senior high school. * * * * * .

* * * * * * * .

Very sincerely yours,

(Signed) W. P. Dayton

Supervisor, Industrial Arts.

(Copy)

SAN DIEGO SENIOR HIGH SCHOOL
San Diego, California

March 30, 1938

* * * * * * * .

In the junior high schools, woodwork, electricity, printing and general shop are offered. In the seventh grade, six weeks of exploratory courses are offered in some junior high schools and in others ten weeks.

Yours truly,

(Signed) P. H. Heron

Head of the Technical Dept.
San Diego High School.

(Copy)

SAN JOSE STATE COLLEGE
San Jose, California

Dec. 8, 1938

Under separate cover I am forwarding you a pamphlet in which you will find my views relative to Industrial Arts.

In my humble opinion the junior high school has never done what it proposed to do. Many educators have spoken glibly about exploration, guidance, etc. but done little in actual practice.

We need expansion in the Industrial Arts in many fields and in numerous media. I believe this will be the trend during the next ten years. As your recent survey showed, woodwork and mechanical drawing continue to be the most frequently taught industrial subjects.

Training for the Industrial Arts teacher should be at least four years and we are now thinking in terms of five, which should consist of a broad basic academic training, plus a specialty in the major fields of Wood, Metal, Electricity, Ceramic Arts, Automotive and Transportation, the Graphic Arts, Agricultural Arts, etc.

* * * * * * * .

Very truly yours,

(Signed) H. A. Sotzin

Director,
Division of Industrial Arts.