A RURAL COMMUNITY HELPS TO DETERMINE INDUSTRIAL ARTS CONTENT FOR THE READING RURAL HIGH SCHOOL READING, KANSAS

A THESIS

SUBMITTED TO THE DEPARTMENT OF EDUCATION AND THE GRADUATE COUNCIL OF THE KANSAS STATE TEACHERS COLLEGE OF EMPORIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

By

Bill M. Bumgardner

April 1957

Approved for the Major Department

E. D. Barnhart

Approved for the Graduate Council

James C. Boykin

ACKNOWLEDGMENTS

The writer wishes to express his appreciation to Mr. E. L. Barnhart, Head of the Industrial Arts Department, and to Dr. J. H. Buchanan, Professor of Education, of the Kansas State Teachers College of Emporia, Kansas, for their helpful suggestions in the preparation of this thesis. Acknowledgment is also made to the graduates and parents of students of the Reading Rural High School who participated in the survey.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

The boy or girl who lives in a rural high school community certainly is entitled to every educational opportunity which exists in the field of industrial arts education.

For many youth in a rural community, high school represents the terminal point of their formal education. For this reason parents are concerned about their children's receiving fundamentals which will enable them to cope with the problems of adulthood. The success or failure of the industrial arts program in a rural community high school assumes important proportions.

What can the industrial arts instructor in a rural high school community do to insure that he is helping to fulfill the desires of his community? In order to answer the above question the author conducted research in the form of questionnaires sent to former graduates, and interviews with parents of students presently enrolled in the Reading Rural High School, Reading, Kansas.

Motivation

This study was motivated by actual teaching experience in the Reading Rural High School, Reading, Kansas. The

answers to these primary questions must be found: Has the industrial arts program in past years covered the needs and desires of its students as indicated through questionnaires? In the opinion of the parents of presently enrolled students, what experiences should be offered their children in the industrial arts program that would meet today's demands of modern living? The answer to these questions would form a basis for the organization of an industrial arts program.

Statement of the Problem

The problem centers around the question: What should the Reading, Kansas, Rural High School industrial arts program include that might fulfill the needs and desires of its community, as indicated through questionnaires sent to former graduates of that school and interviews conducted with the parents of students now presently enrolled in that school?

Analysis of the Problem

In satisfactorily resolving the above inquiry it seems necessary that the following questions must be answered:

1. Are the Reading, Kansas citizens and former graduates of that high school well informed on the subject

of industrial arts education and its place in general education?

2. What was available to the students who graduated between the years 1940 and 1950 in the way of industrial arts education courses and equipment?

3. What hand or machine work, skills, or abilities were obtained by former graduates? If not acquired in a school shop, where were they acquired?

4. In the opinions of graduates, were the learning situations which were offered to students during the period of this study successful in bringing about the desired objectives or outcomes of industrial arts education?

5. What experiences or learning situations do graduates and parents consider important for the student presently enrolled in an industrial arts program?

6. What importance do parents attach to the experiences or abilities listed as general outcomes of industrial arts education for boys and girls?

7. Do parents agree with the general objectives of industrial arts education for their children?

8. What are parents' opinions regarding industrial arts courses for girls?

9. What emphasis do parents place on the shop "project"?

Delimitations

It is not the purpose of this study to set forth an industrial arts program of study based on the results of this research. Rather, its purpose is to form a basis on which such a program could be established in part, indicating those items which parents desired students to obtain through an industrial arts program.

This study will be concerned only with the industrial arts program of the Reading Rural High School, Reading, Kansas. The questionnaires to the former graduates were limited to men who graduated from Reading Rural High School between the years 1940 and 1950. Interviews were limited to the parents of students presently enrolled in that school.

Scope of the Study

The total number of men who graduated from Reading Rural High School during the years with which this study is concerned was seventy-four. Only sixty-two questionnaires were sent, as four men of this group were deceased and the addresses of eight men could not be found. Twelve questionnaires were returned by the post office as having no such person at that address. The total potential return on the questionnaire was thus reduced to fifty, of which

number thirty-five were actually returned. This constitutes a 70 per cent return of fifty questionnaires or 47.2 per cent return on the total number of seventy-four graduates for the eleven year period.

Tabulation of questionnaires was limited to those graduates who had been enrolled for three years or more at the Reading Rural High School. One questionnaire was eliminated on this basis, and thirty-four questionnaires were tabulated. The total number and per cent of questionnaires tabulated should provide enough data to give this study reasonable validity.

Sixty-two parents, representing thirty-three families, were available for interviewing. Of this total, thirty families, totaling fifty-six parents, were interviewed. This represents 85.9 per cent of the possible sixty-four parents to be interviewed. This high percentage of information obtained will furnish a picture reasonably clear of the expressions of parents' opinions for the purpose of this research.

Methods of Procedure

Two instruments were used for the collection of data. These were: (1) a questionnaire and (2) an interview checklist.

(1) The Questionnaire. Because of the vast amount of dispersion which occurs among individuals making up groups which have graduated over a period of more than ten years, a questionnaire was developed and used for the gathering of data from the former graduates of the Reading Rural High School, Reading, Kansas. Before developing the questionnaire the investigator surveyed certain texts on industrial arts education and studies related to the present investigation.

Questions were formed for the purpose of seeking information to determine those experiences which could be included in the present day industrial arts program to better prepare for the future the presently enrolled students of the school in question. Assistance in the final development of the questionnaire was obtained from persons living in Emporia, Kansas, who completed preliminary forms of the questionnaires and commented upon parts of it which were not fully understood.

Names of the graduates to be surveyed were obtained from the records of the Reading Rural High School and checked against all existing records of their high school alumni group. Graduates were located by contacting, where possible, parents or friends of the graduate, and by questioning certain long-time residents of Reading, Kansas.

(2) The Interview Check-List. A definite plan or format of questions was used for interviewing the parents with whom this study was concerned. Helpful criticisms were given about the questionnaire by students enrolled in educational research courses at the Kansas State Teachers College, Emporia, Kansas.

A personal interview was conducted with the parents (both the father and mother, when available for such interview) of each student now presently enrolled in the Reading Rural High School, Reading, Kansas.

Definition of Terms Used

Industrial Arts. The term industrial arts is a phase of general education, intended to contribute to the general all around development of the individual. The 1949 Kansas State Bulletin on Industrial Arts Education refers to this term in this manner:

> More recently, Wilber has defined industrial arts as "those phases of general education which deal with industry--its organization, materials, occupations, processes, and products--and with the problems resulting from the industrial and technological nature of society."
>
> One may conclude that industrial arts is an "area" rather than a "subject". It is an integral part of the general education of the student at any grade level. It is nonvocational in nature. It concerns itself with providing the students with experiences, understanding, and appreciations of the changes made

by man in his existing surroundings and the problems of living projected by these changes in a world of contemporary economic activities.[1]

Shop "Project". An article which is made in the high school shop using a variety of tools and materials for such construction. This article may be made of wood, metal, leather, plastics, or any of the other various materials which are used in the making of projects in an industrial arts course.

Reading Rural High School. Located in a highly agricultural area in the northeastern part of Lyon County, Kansas. The enrollment of the high school at the time of this research consisted of twenty-four boys and nineteen girls; a total of forty-three.

---

[1] Adel F. Throckmorton, Kansas Tentative Guide to Teaching Industrial Arts, State Department of Education, Topeka, Kansas, 1950, p. 5.

CHAPTER II

REVIEW OF LITERATURE

From earliest recorded time to the present, man has been able to bring about technological advances as a result of the use of his mind, hands, and tools. When America was primarily frontier land, families were responsible for providing for themselves all of the necessary items needed for living. Frontier children grew up with first hand knowledge of the making and the using of everything that played a part in their everyday life.

Today, man's life is easier but more complex. No longer does he make all of his own goods and items needed for daily living, but he is dependent on others for those items he needs. In our modern industrialized civilization no man is entirely independent of his neighbors.

The majority of men today work at specialized jobs, earning money to buy the products that other specialists make. No longer does the modern child have much of an opportunity to watch repairmen at work or to learn the essentials of construction by working with his parents. As a result, citizens of the future need training to help them deal with mechanical breakdowns and to select and use wisely the products of industry.

Adjustment to modern conditions of living demands the same kind of knowledge that our forebears gained through their hands. It is apparent that it is the task of modern education to supply the type of instruction necessary so that the youth of today will not have his hands shackled in relation to common life situations resulting from the development of the machine age. Today general education is in the process of making these learning situations available through industrial arts programs for boys and girls at all age levels.

The place of industrial arts in general education has been defined as being those phases of general education which deal with industry--its organization, material, occupations, processes, and products--and with the problems resulting from the industrial and technological nature of society.

A committee, appointed by the Commissioner of Education, U. S. Department of Interior, Office of Education, in its report defined industrial arts in this manner:

> Industrial arts is a phase of general education that concerns itself with the materials, processes, and products of manufacture, and with the contributions of those engaged in industry. The learnings come through the pupil's experiences with tools and materials and through his study of resultant conditions of life.[2]

---

[2] United States Department of Interior, Office of Education, Industrial Arts--Its Interpretation in American Schools, Bulletin 34 (Washington: Government Printing Office, 1937).

The objectives of general education and industrial arts are essentially the same. Newkirk states:

> . . . The majority of educators stress the fact that the child must be developed physically, emotionally, and intellectually. In order that the growth of an individual may be complete, all aspects of his nature must be cultivated and developed. A student should understand his modern industrial environment and the direct bearing it has on his economic, social, and cultural life. Elements of experiences taken from ever-changing modern industry are being used to excellent advantage in the school shop or laboratory for educational purposes. Industrial information is collected, organized, evaluated, and presented in industrial arts. Here a study is made of industry, showing its social as well as material aspects, and the student's knowledge and appreciation of industrial life is developed.[3]

Leaders in the field of industrial arts education have agreed upon industrial arts objectives. The following list contains the commonly accepted objectives of industrial arts.

1. Interest in Industry. To develop in each pupil active interest in industrial life and in the methods and problems of production and exchange.

2. Appreciation and Use. To develop in each pupil the appreciation of good design and workmanship, the ability to select, care for, and use industrial products wisely.

3. Self-discipline and Initiative. To develop in each pupil the habits of self-reliance, self-discipline, and resourcefulness in meeting practical situations.

4. Cooperative Attitudes and Democratic Ideals. To develop in each pupil a readiness to assist others,

---

[3] Louis V. Newkirk and William H. Johnson, The Industrial Arts Program (New York: Macmillan Co., 1948), p. 6.

to join happily in group undertakings, and to engage in and study democratic practices.

5. Health and Safety. To develop in each pupil desirable attitudes and practices with respect to health and safety.

6. Interest in Achievement. To develop in each pupil a feeling of pride in his ability to do useful things and to develop worthwhile leisure time interests.

7. Orderly Performance. To develop in each pupil the habit of an orderly, complete, and efficient performance of any task.

8. Drawing and Design. To develop in each pupil an understanding of drawing, and the ability to express ideas by means of drawing.

9. Shop Skills and Knowledge. To develop in each pupil a measure of skill in the use of common tools and machines, and an understanding of the problems involved in common types of construction and repair.

10. Social-Economic Understanding. To develop in each pupil a basic understanding and realization of social-economic problems brought about and inherent in our present industrialized society.[4]

Industrial arts programs in most rural high schools are organized without much thought of the needs or desires of the local community. On analyzing literature on rural education, of which industrial arts becomes a part when adopted, it was revealed that the needs and interests of the rural population as a whole are not being considered in

---

[4] Homer J. Smith, "Improving Instruction in Industrial Arts," A Revision of the AVA Bulletin on Standards of Attainment in Industrial Arts Teaching, American Vocational Association, Inc., Industrial-Arts Division (Washington, D. C., 1948), p. 51.

formulating the kind of educational program they would like their children to receive. This condition is contrary to the philosophy of education in a democracy. The following statements are illustrative of the general concern expressed by leaders and patrons of rural education:

> While rural children, rural schools, and rural teachers outnumber urban children, schools and teachers, courses of study are primarily prepared to meet urban youths needs.[5]

> Our rural education program today does not find its bases in the rural environment. It is an adaptation of the program developed in and for the distinctive conditions of city life.[6]

> The school should be a part of rather than apart from community life. It should prepare children to think thru and meet the everyday problems of life they must face. . . . The kind of school farm leaders want will be planted deeply into the present life of the community.[7]

> The rural child's development must be rooted in rural soil. His present needs and problems will be what they are because of the interrelationship of his life and those of his rural community.[8]

---

[5] Aubrey Williams, "Rural Education: Does It Adequately Meet the Needs of Rural Youth and Rural Communities? No!" Progressive Education, XXII (January, 1945), 31.

[6] Fannie W. Dunn, "The Education of Rural Children and Youth," The White House Conference on Rural Education, National Education Association of the United States (Washington, D. C.), p. 449.

[7] Frank W. Cyr and Shirley Cooper, "What Farm Leaders Want the School to Teach," Journal of National Education Association, XXXVI (September, 1947), 449.

[8] Dunn, op. cit., p. 68.

Pugh[9] has based a course of study in home mechanics to meet the needs and interests of the homes in the community of Pratt, Kansas. A check list of 190 items consisting of things done about a home was prepared and taken to 108 homes in the Pratt community. The fathers in these homes checked this list to indicate the jobs they had done about their homes and what needed to be done at the time the survey was made. The activities which were marked by 50 per cent or more of the fathers and those jobs which were in need of being done in at least 20 per cent of the homes were used as a basis for selecting the objectives of the course of study. Other items marked by at least one-third of the fathers and items which were added in at least three check lists were used as supplementary activities in the course.

Schultz[10] has based an industrial arts program for a rural high school community upon the opinions of parents, requesting them to select tools, machines, materials, and adult evening classes which could be included in an industrial arts program for a rural consolidated school district.

---

[9] Virgil Pugh, "Adapting an Industrial Arts Course to the Needs and Interests of the Home" (Unpublished Master's thesis, Kansas State Teachers College of Pittsburg, Kansas, 1936).

[10] Chester A. Schultz, "Industrial Arts Needs of a Rural Community" (Unpublished Master's thesis, Illinois State Normal University, Normal, Illinois, 1951).

On the basis of this research Schultz organized and developed an industrial arts program which consisted of a general shop with the following areas: mechanical drawing, general metalworking, woodworking, and general electricity.

Summary

It is apparent that modern education must take steps in training youth to deal with mechanical breakdowns and to select and use wisely the products of industry. Due to the specialization which now takes place in our modern living, youth no longer have opportunities to secure this training anywhere but in the school. Objectives of industrial arts in general education attempt to meet these needs.

The needs and desires of local communities have been neglected in the process of establishing industrial arts programs, especially in rural areas. These few cases in which industrial arts programs have been based on the concept of establishing a program to meet the needs and desires of local communities have been successful.

CHAPTER III

ANALYSIS OF DATA

Chapter III has nine main divisions. Each division presents an analysis of data which is pertinent to one of the questions found under the "Analysis of the Problem" in Chapter I. The order in which the questions are presented follows the order in which the questions are listed under the "Analysis of the Problem."

When a question or section of the questionnaire or interview is referred to but not presented in detail, the reader may consult a copy of the questionnaire and the interview form, both of which have been included in the Appendix.

Public Relations and Industrial Arts Education. Question one of the parent interview asked the parents if they understood what the term "industrial arts" meant. Thirty parents or 53.3 per cent responded to this question in the affirmative. Twenty-six parents felt they could not say "yes" to question one; therefore, they did not attempt to answer question two which requested the parent to define the term.

Parents and graduates were asked to define in their own words the term "industrial arts" through question two of the parent interview and question one of the graduate

questionnaire. In doing so, many variations of answers were received, thus making it necessary to place these answers within categories of similar responses. These varied responses were grouped into eight categories. Table I represents a tabulation of the categories in which the parents' and graduates' responses were placed.

Thirty parents or 53.5 per cent defined the term while twenty-six or 46.4 per cent did not. Thirteen graduates did not attempt to answer question one while twenty-one or 61.7 per cent stated their definition of "industrial arts".

Question two of the graduate questionnaire and question ten of the parent interview were so constructed that they would also help in answering question one under the "Analysis of the Problem". The questions asked the person to state whether or not he believed the primary objective of industrial arts education in our high schools today is to prepare a boy for a vocation or a full-time job.

Seventy-five per cent of forty-two parents answered "yes" to this question. Fourteen parents or 25 per cent answered "no". Twenty-four graduates or 70.5 per cent answered "yes" while nine answered "no" and one graduate did not answer. Graduates not answering "yes" constituted 29.5 per cent. Table II illustrates the response tabulations to this question.

TABLE I

RESPONSES OF NINETY PARENTS AND GRADUATES OF READING RURAL HIGH SCHOOL IN DEFINING THE TERM "INDUSTRIAL ARTS"

Concept Category	Parents	Graduates	Total	Per Cent
It is subject matter such as woodwork, metalwork, mechanical drawing etc.	12	1	13	14.4
It is training for skill in some type of work.	5	2	7	7.8
It is experiences in the field of manufacturing and production.	5	4	9	10.0
It is working with the mind, hands, and tools to construct something.	3	8	11	12.2
It is something which prepares the child for a vocation.	4	3	7	7.8
It is the making of projects.	1	3	4	4.4
Totals of responses defining the term.	30	21	51	56.6
Those who did not attempt to define the term.	26	13	39	43.3
Totals	56	34	90	99.9

Read table thus: Of the ninety responses received thirteen could be placed within the general category of the first statement which reads: "It is subject matter such as woodwork, metalwork, mechanical drawing etc." Read other categories in like manner.

TABLE II

RESPONSES OF NINETY PARENTS AND FORMER GRADUATES OF READING RURAL HIGH SCHOOL TO THE QUESTION: "IS IT THE PURPOSE OF OUR HIGH SCHOOL TO PREPARE THE CHILD FOR A VOCATION?"

	"Yes"		"No"		No Answer		Total	Total
	No.	%	No.	%	No.	%	No.	%
Parents	42	75.0	14	25.0	--	--	56	100
Graduates	24	70.5	9	26.5	1	2.9	34	99.9
Total Responding	66	73.3	23	25.5	1	1.1	90	99.9

Read table thus: Forty-two or 75 per cent of the parents replied "yes" to the question. Fourteen or 25 per cent replied "no" to the question. Read other responses in like manner.

Industrial Arts Courses and Equipment Available. Industrial arts courses were offered in limited numbers between the years 1940 and 1950. Of the thirty-four questionnaires used for tabulation three men did not answer question three, which asked if industrial arts courses were offered during the time they attended Reading Rural High School. Two men stated that no shop courses were offered at the time they were attending Reading Rural High School, although vocational agriculture was taught. Twenty-nine men stated that industrial arts was offered at the time they were pupils in the institution.

Table III shows the tabulation of question four of the questionnaire, which asked the graduate to check the list of shop courses which were offered at the time of his attendance at Reading Rural High School, even though he might not have enrolled in such courses.

The author does not imply that vocational agriculture is an industrial arts course in the question which asked the graduate to check the list of shop courses which were offered during his attendance at Reading Rural High School. Vocational agriculture involves some use of common hand tools and machines similar to those used in industrial arts courses. It was listed as a shop course as it was the only course offering any type of shop work to students during some of the years with which this study was concerned.

TABLE III

SHOP COURSES OFFERED DURING THE ENROLLMENT OF MEN GRADUATING THROUGH THE YEARS 1940 AND 1950

Courses Offered	Years in Which Courses Were Offered										
	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
Woodworking	X				X	X	X	X	X	X	X
Metalwork	X					X					X
Vocational Agriculture	X	X	X	X	X	X		X	X		X
Drawing						X	X	X	X	X	X
Home Mechanics						X	X				
Farm Mechanics						X					
Leatherwork									X	X	
General Carpentry Construction								X			

Read table thus: Woodworking was offered to students during all years from 1940 through 1950 as indicated by each "X", except 1941, 1942, and 1943. Read other course offerings in like manner.

Table IV shows the comparison of the courses which were offered and the courses in which the student actually enrolled, as a result of responses to question five of the graduate questionnaire.

Table V indicates the available power tools in the school shop during the graduates' enrollment in high school. The table indicates what machines were available during the years of enrollment of the graduates as indicated by their year of graduation. These results were tabulated from responses to question six of the graduate questionnaire.

Skills or Abilities Learned. Question ten of the graduate questionnaire was constructed to obtain the answer to question three under the "Analysis of the Problem". The question asked the graduate to check the appropriate box to designate where the particular skill or ability was learned. Table VI illustrates the results of the tabulation of the question.

Effectiveness of the Industrial Arts Program During the Years 1936 and 1950. The effectiveness of the industrial arts program through the years 1936 and 1950 can be partially determined as a result of answers furnished by graduates who answered questions seven, eight, and nine of the graduate questionnaire.

These questions were constructed to resolve question four under the "Analysis of the Problem", which asks, "In

TABLE IV

COMPARISON OF COURSES OFFERED AND THOSE IN WHICH THE GRADUATE ACTUALLY ENROLLED THROUGH THE YEARS 1940 AND 1950

	Years in Which the Respondent Graduated										
	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
Number of Responses	2	3	3	3	2	3	2	4	5	3	3
Courses Offered											
Woodwork	2	1	1	1	2	2	2	4	5	3	3
Metalwork	2		1			1					1
Vocational Agriculture	2	3	1	3	2	2		2	1		1
Drawing						0	2		2		1
Home Mechanics						0	1				
Farm Mechanics						1					
Leatherwork									0	0	
General Carpentry Construction								1			

Note: Courses which were offered during the year are designated by a box (▱). The number placed within the box indicates the number of men reporting who enrolled in that course.

Read table thus: Of the two men reporting who graduated in the year 1940, two men enrolled in those courses offered during the year 1940. Read other items in like manner.

TABLE V

MACHINES AVAILABLE IN SHOP CLASSES DURING THE ENROLLMENT OF THE GRADUATES OF 1940 THROUGH 1950 CLASSES

Machines Available	Years in Which the Respondent Graduated										
	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
Circular Saw									X	X	X
Band Saw	X										
Jig Saw						X			X		
Drill Press									X	X	X
Portable Sander									X		
Jointer									X	X	X
Wood Lathe						X	X	X	X	X	X
Electric Hand Drill	X					X			X	X	X

Read table thus: During the enrollment of the respondent who graduated in 1940, the machines which were available in shop classes were the band saw and electric hand drill. Read other items in like manner.

TABLE VI

SKILLS OR ABILITIES LEARNED BY THIRTY-FOUR MALE GRADUATES OF THE READING RURAL HIGH SCHOOL AND WHERE SUCH SKILLS OR ABILITIES WERE ACQUIRED

Number and Per cent of Responses per skill	Skill Not Yet Acquired		Skill Self-taught		Acquired in a School Shop		Acquired on a Paid Job		Acquired Skill in Armed Services	
	No.	%	No.	%	No.	%	No.	%	No.	%
Learned the care and proper use of:										
Handsaws	1	3.0	6	17.7	24	70.6	2	6.0	1	3.0
Framing Square	8	23.6	5	14.7	17	50.0	3	8.9	1	3.0
Planes	0	---	5	8.8	29	85.3	1	3.0	1	3.0
Screwdriver	0	---	15	44.1	17	50.0	1	3.0	1	3.0
Learned maintenance, care, and proper use of:										
Circular Saw	11	32.4	5	14.7	16	47.1	1	3.0	1	3.0
Jig Saw	23	67.6	6	17.7	4	11.8	1	3.0	0	---
Jointer	25	73.5	2	5.9	7	20.6	0	---	0	---
Drill Press	8	23.5	10	29.4	13	38.2	3	8.8	0	---
Electric Arc Welder	23	67.6	5	14.7	3	8.8	3	8.8	0	---
Gas (Oxaceytelyne) Welder	23	67.6	3	8.8	3	8.8	5	14.7	0	---
Band Saw	24	70.6	5	14.7	2	5.9	2	5.9	1	3.0
Shaper	30	88.2	1	3.0	2	5.9	1	3.0	0	---
Electric Sander	19	55.9	12	35.3	0	---	2	5.9	1	3.0

TABLE VI (Continued)

SKILLS OR ABILITIES LEARNED BY THIRTY-FOUR MALE GRADUATES OF THE READING RURAL HIGH SCHOOL AND WHERE SUCH SKILLS OR ABILITIES WERE ACQUIRED

Number and Per cent of Responses per skill	Skill Not Yet Acquired		Skill Self-taught		Acquired in a School Shop		Acquired on a Paid Job		Acquired While in Armed Services	
	No.	%	No.	%	No.	%	No.	%	No.	%
Learned maintenance, and proper use of:										
Metalworking Lathe	23	67.6	2	5.9	0	---	5	14.7	3	8.8
Woodturning Lathe	17	50.0	3	8.8	12	35.4	2	5.9	0	---
Small Electric Motors	10	29.4	16	47.1	1	3.0	6	17.6	1	3.0
To do minor electrical jobs at home	6	17.7	23	67.6	1	3.0	4	11.8	0	---
To make minor adjustments on automobiles	4	11.8	25	73.5	0	---	5	14.7	0	---
Repair plumbing fixtures	7	20.6	25	73.5	0	---	2	5.9	0	---
Solder sheet metal	13	38.2	10	29.4	7	20.6	4	11.8	0	---
Properly mix cement	8	23.6	18	52.9	2	5.9	5	14.7	1	3.0
Repair a piece of broken machinery welding	18	52.9	10	29.4	3	8.8	3	8.8	0	---
Construct, finish a piece of furniture	6	17.7	10	29.4	17	50.0	1	3.0	0	---
To do general carpentry construction	5	14.7	23	67.6	4	11.8	1	3.0	1	3.0
Reupholster furniture	28	82.4	4	11.8	1	3.0	1	3.0	0	---
Use drawing equipment to plan a project or a needed building	21	61.8	3	8.8	7	20.6	2	5.9	1	3.0

Read table thus: Twenty-four or 70.6 per cent of the respondents indicated the method by which they learned the care and proper use of handsaws was by "Acquired in a School Shop". Read other methods and items in like manner.

the opinions of graduates, were the learning situations which were offered to students during the period of this study successful in bringing about the desired objectives or outcomes of industrial arts education?"

These three questions and their tabulated results are illustrated in Table VII. Thirty-one graduates, or 91.5 per cent, indicated that the industrial arts courses in which they were enrolled were interesting. Two graduates, or 5.9 per cent, indicated that their industrial arts courses were not interesting. One graduate declined to answer question seven.

Question eight asked the graduate if he had ever accepted a job as a result of industrial arts experiences received in high school. Of the thirty-four replies, twenty-nine or 85.3 per cent of the graduates indicated that they had not accepted a job as a direct result of past industrial arts experience in high school. Four men or 11.8 per cent replied in the affirmative to this question. One declined to answer.

Question nine asked the graduate to state "yes" or "no" to the question, "Do you feel that industrial arts education at the time of your enrollment could have done a better job in giving you experiences which would have been of more advantage to you now?" Thirty-two, or 94.1 per cent, indicated that the industrial arts education program could

TABLE VII

EFFECTIVENESS OF THE INDUSTRIAL ARTS PROGRAM IN THE OPINIONS OF THIRTY-FOUR READING RURAL HIGH SCHOOL MALE GRADUATES

Question		Yes	No	No Answer	Total
Were the industrial arts courses in which you were enrolled interesting?	Number	31	2	1	34
	Per cent	91.5	5.9	2.6	100
Have you ever accepted a job as a result of some industrial arts experience?	Number	4	29	1	34
	Per cent	11.8	85.3	2.6	99.7
Could the industrial arts courses in which you were enrolled have done a better job in giving you experiences which would have been of more advantage to you now?	Number	32	2	0	34
	Per cent	94.1	5.9	---	100

Read table thus: In answer to the first question thirty-one graduates or 91.5 per cent replied "yes". Two or 5.9 per cent replied "no" to the question. One declined to answer the question. Read other responses in like manner.

have done a better job in preparing them for their future. Two men or 5.9 per cent responded negatively to this question.

Question eleven of the graduate questionnaire listed objectives or outcomes of industrial arts education and asked the graduate to indicate whether he felt that he had or had not attained these as a result of his enrollment in industrial arts classes at Reading Rural High School.

Table VIII illustrates the results of the tabulation of question eleven which was constructed to obtain answers to question four under the "Analysis of the Problem".

Graduates and Parents Select Industrial Arts Learning Situations for High School Students. Question twelve of the graduate questionnaire and question four of the parent interview are alike, in that they requested the graduate and parent to select those items in industrial arts education which they believed to be important for boys to accomplish in the progress of their high school career. This was done for the purpose of securing responses which would aid in resolving question five under the "Analysis of the Problem", which asked the question, "What experiences or learning situations do graduates and parents consider important for the student presently enrolled in an industrial arts program?"

TABLE VIII

EFFECTIVENESS OF INDUSTRIAL ARTS COURSES AS SHOWN THROUGH INDUSTRIAL ARTS OBJECTIVES ATTAINED BY THIRTY-FOUR FORMER MALE GRADUATES

Objectives		Yes	No	Total
Developed the ability to plan and complete a project.	Number	28	6	34
	Per cent	82.4	17.7	100.1
Learned to study and understand modern industry in determining vocational interests.	Number	10	24	34
	Per cent	29.4	70.6	100
Learned to read and make working drawings.	Number	10	24	34
	Per cent	29.4	70.6	100
Recognize quality and design in industrial products.	Number	11	23	34
	Per cent	32.4	67.6	100
Learned to make safe and proper repairs on items around the home.	Number			
	Per cent			
Able to express myself through the use of other subject matter such as reading, writing, and arithmetic.	Number	25	9	34
	Per cent	73.5	26.5	100
Became interested in crafts as hobbies for leisure time.	Number	21	13	34
	Per cent	61.8	38.2	100
Being able to work as a leader and together with others as a group.	Number	15	19	34
	Per cent	44.1	55.9	100
Partially prepared myself for a vocation.	Number	18	16	34
	Per cent	52.9	47.1	100

Read table thus: Twenty-eight or 82.4 per cent of the graduates indicated that they felt they had developed the ability to plan and complete a project. Six or 17.7 per cent of these graduates felt they had not attained this objective. Read other objectives in like manner.

Table IX shows the results of the tabulation of these two questions.

Question twelve of the graduate questionnaire and question four of the parent interview, which have been tabulated in Table IX, will indicate the five items or learning situations which are considered important by graduates and parents for the student to accomplish or learn.

Table X indicates the preferences as shown by the per cent of total responses opposite those items listed in Table IX to which parents and graduates responded.

In resolving question five under the "Analysis of the Problem", question three of the parent interview was constructed to determine what machines the parents desire the boy to have experience in handling as part of a learning situation. Table XI is a tabulation of responses to this question.

Parents Rate Industrial Arts Objectives for Students. What importance do parents place on the experiences or abilities listed as general outcomes of industrial arts education for boys and girls? This is question six which is asked next under the "Analysis of the Problem". In order that this question can be resolved, questions five, six, and seven were included in the parent interview.

These questions, beginning with question five, asked the parent to rate nine objectives of industrial arts with

TABLE IX

THIRTY-FOUR GRADUATES AND FIFTY-SIX PARENTS SELECT INDUSTRIAL ARTS LEARNING SITUATIONS FOR HIGH SCHOOL BOYS

Learning Situations		Graduates	Parents	Total
Make minor repairs on an automobile.	Number	28	44	72
	Per cent	82.4	78.6	80.0
Weld a broken piece of machinery.	Number	23	39	62
	Per cent	67.6	69.6	68.8
Repair a broken chair and refinish it.	Number	11	26	37
	Per cent	32.4	46.4	41.1
Build a piece of furniture.	Number	18	28	46
	Per cent	52.9	50.0	51.4
Draw a blueprint or plan of a needed building.	Number	23	27	50
	Per cent	67.6	48.2	55.5
Make a grain scoop or a sheetmetal project.	Number	2	23	25
	Per cent	5.9	41.1	27.7
Replace worn-out faucet washers.	Number	13	21	34
	Per cent	38.2	37.5	37.7
Help print a school paper.	Number	6	17	23
	Per cent	17.7	30.4	25.5
Help others to repair or reconstruct a garage.	Number	15	13	28
	Per cent	44.1	23.2	31.1
Put in a three-way electrical switch and light receptacle.	Number	25	33	58
	Per cent	73.5	58.9	63.3
Re-upholster an easy chair.	Number	5	5	10
	Per cent	14.7	8.9	11.1

Read table thus: Twenty-eight graduates or 82.4 per cent felt that the first learning situation listed was of importance for the child to obtain. Forty-four parents or 78.6 felt that the first learning situation was of importance for the child to obtain. Of the total number of ninety responses to the first learning situation listed seventy-two or 80 per cent agreed that the item listed was important. Read other items in like manner. Note: All percentages were computed to the nearest tenth per cent.

TABLE X

NINETY PARENTS AND GRADUATES DETERMINE FIVE LEARNING SITUATIONS WHICH THEY DESIRE BOYS TO HAVE THROUGH AN INDUSTRIAL ARTS PROGRAM

Learning Situation Selected	Number	Per cent
Make minor repairs on an automobile	72	80.0
Weld a broken piece of machinery	62	68.8
Install a three-way electrical switch and light receptacle in the home	53	63.3
Draw a blueprint or plan of a needed building	50	55.5
Build a piece of furniture	46	51.4

Read table thus: Graduates and parents were asked to choose five learning situations which would be desirable for boys to receive in school shop courses. Of the ninety responses, seventy-two or 80.0 per cent indicated their desire to have the boy learn to make minor repairs on an automobile. Read other items in like manner. Note: All percentages were computed to the nearest tenth per cent.

TABLE XI

MACHINES WHICH FIFTY-SIX PARENTS DESIRE BOYS TO LEARN TO OPERATE

Machine	Number	Per cent
Circular Saw	40	71.4
Wood Lathe	37	66.0
Drill Press	36	64.2
Electric Arc Welder	35	62.4
Metalworking Lathe	33	58.9
Electric Hand Saw	32	57.1
Portable Drill	31	55.3
Grinder	30	53.5
Jig Saw	29	51.7
Electric Sander	29	51.7
Jointer	26	46.3
Oxyacetylene Welder	26	46.3
Valve Grinder	26	46.3
Band Saw	25	44.5
Shaper	24	42.7
Printing Machine	21	37.4

Read table thus: Forty parents or 71.4 per cent desired the student to learn to operate a circular saw. Read other machines in like manner. Note: All percentages were computed to the nearest tenth per cent.

respect to the importance of each objective. Question six then asked the parents to indicate whether they thought that any of the items listed in question six were important in the general education of girls. In question seven the parents were requested to rank the same industrial arts objectives for girls.

Table XII is a tabulation of the results of answers which were given to questions five and seven. Fifty-six parents or one hundred per cent indicated that the items as listed for boys in question five were also of some importance for girls to obtain.

Parents Agree with General Objectives of Industrial Arts Education for Their Children. To questions eight, nine, eleven, twelve, thirteen and fourteen, parents have generally agreed that the industrial arts objectives as expressed in these questions are important. The questions are summarized below:

Question eight asked the parents if they believed it good for the student to develop interest in crafts as a leisure-time activity. All parents responded in the affirmative to this question.

Question nine refers to the industrial arts objective concerning developing social understanding and ability to work effectively with others, either as a leader or as a

TABLE XII

IMPORTANCE OF INDUSTRIAL ARTS OBJECTIVES AS RATED BY FIFTY-SIX PARENTS OF HIGH SCHOOL BOYS AND GIRLS

	Industrial Arts Objectives	Responses	Boys			Girls		
			Very Important	Important to Some Extent	Not Important	Very Important	Important to Some Extent	Not Important
A	Develop the ability to plan and complete projects.	No.	50	4	2	48	5	3
		%	89.3	6.9	3.4	85.7	8.7	5.2
B	Understanding modern industry in determining vocational interests.	No.	28	28	0	20	29	7
		%	50.0	50.0	0	35.6	51.7	12.3
C	Reading and making working drawings.	No.	36	18	2	35	4	7
		%	64.2	32.0	3.4	62.4	6.9	12.3
D	Recognizing quality and design in industrial products.	No.	40	12	4	43	10	3
		%	71.4	21.3	6.9	76.8	17.7	5.2
E	Safe and proper repair of items around the home.	No.	49	6	1	43	7	6
		%	87.5	10.5	1.8	76.8	12.3	10.5
F	Being able to express oneself through use of other subject matter such as reading, writing, and arithmetic.	No.	50	5	1	44	10	2
		%	89.3	8.7	1.8	78.5	17.7	3.4
G	Interest in crafts as hobbies for leisure time.	No.	18	35	3	30	22	4
		%	32.0	62.4	5.2	53.5	39.2	6.9
H	Being able to work as a leader and together with others in a group.	No.	45	9	2	44	9	3
		%	80.3	15.9	3.4	78.5	15.9	5.2
I	Preparing oneself for a definite vocation.	No.	43	10	3	35	11	10
		%	76.8	17.7	5.2	62.4	19.5	17.7

Read table thus: In rating the importance of the first objective for boys, fifty parents or 89.3 per cent rated this objective as being very important for the child to obtain. Four parents or 6.9 per cent rated this objective as being important to some extent. Two parents or 3.4 per cent rated this objective as not being important for the child. Read in like manner for other objectives, concerning girls. Note: All percentages were computed to the nearest tenth per cent.

member of group. All parents again agreed that this particular objective was important.

Question eleven is concerned with the objective of giving the student experiences which help to increase his understanding of modern industry in order to lay a foundation for and help determine vocational interests. Fifty-six, or 92.8 per cent, of the parents answered in the affirmative while four, or 7.2 per cent, responded negatively.

Question twelve asks, "Do you believe it is necessary for a child to develop the ability to plan and to complete projects using a variety of tools and construction materials in a workmanlike manner." To this question fifty-five, or 98.2 per cent, answered in the affirmative. One parent, or 1.8 per cent, answered in the negative.

Recognizing quality and design in industrial products is the objective which is inferred in question thirteen. To this question fifty-five parents, or 98.2 per cent, agreed that it is important for the student to learn to recognize quality and design in industrial products. One parent did not agree.

Question fourteen asked the question: "Is it important for a boy or girl to have the ability to place his ideas on paper in the form of drawings or sketches?" Fifty-five parents or 98.2 per cent of the parents agreed that it is important for the student to be able to do this.

Parents' Opinions Regarding Industrial Arts Education Courses for Girls. Four questions of the parent interview were designed to resolve question eight under the "Analysis of the Problem" which asks parents' opinions regarding shop courses for girls.

The largest group of parents, or 26.6 per cent, suggested offering industrial arts courses to girls enrolled in the ninth grade level or freshman year in high school. This was in response to question fifteen which asked the parents to select the grade in which girls should receive some industrial arts education. This is illustrated in Table XIII.

Question sixteen asked the parents to state their desire as to whether or not they would want a girl to use power machinery if so instructed in the safe and proper manipulation of machines. Thirty-three, or 58.9 per cent, of the parents answered in the affirmative, while twenty-three parents, or 41.1 per cent, responded negatively to this question.

The parents were asked to check the list of machines which they would desire a girl to have experiences in handling as a learning situation, in question seventeen. Table XIV is a tabulation of the results of that question.

Table XV illustrates a tabulation of the list of experiences in question eighteen in which the parents were

TABLE XIII

GRADE LEVEL AT WHICH GIRLS SHOULD BE GIVEN AN INDUSTRIAL ARTS COURSE AS INDICATED BY THE RESPONSES OF FIFTY-SIX PARENTS

Grades	7	8	9	10	11	12
Number	1	5	15	12	13	10
Per cent	1.8	8.9	26.6	21.4	23.2	17.9

Read table thus: Fifteen parents or 26.2 per cent of fifty-six parents agreed that industrial arts courses should be given to girls at the ninth grade level. Read other items in like manner. Note: All percentages were computed to the nearest tenth per cent.

TABLE XIV

FIFTY-SIX PARENTS RESPONSES REGARDING EXPERIENCES FOR GIRLS IN HANDLING POWER MACHINES IN AN INDUSTRIAL ARTS COURSE

Machines	Number	Per cent
Do not desire girls to have experience in handling power machines in a school shop	17	30.2
Electric Sander	30	53.5
Jig Saw	21	37.5
Printing Machine	14	24.8
Wood Lathe	14	24.8
Grinder	13	23.1
Jointer	11	19.5
Electric Hand Saw	9	15.9
Circular Saw	9	15.9
Shaper	7	12.3
Band Saw	6	10.5
Drill Press	6	10.5
Portable Drill	5	8.7
Metalworking Lathe	3	5.2
Electric Arc Welder	3	5.2
Oxyacetylene Welder	2	3.4
Valve Grinder	2	3.4

Read table thus: Thirty parents or 53.5 per cent desire girls to have experience in handling an electric sander. Seventeen or 30.2 per cent do not desire girls to have any experiences in handling power machines. Read other items in like manner. Note: All percentages were computed to the nearest tenth per cent.

TABLE XV

FIFTY-SIX PARENTS SELECT INDUSTRIAL ARTS LEARNING SITUATIONS FOR HIGH SCHOOL GIRLS

Learning Situations	Number	Per cent
Learning to paint and varnish, to refinish a piece of furniture.	52	92.8
Use of the common hand tools.	49	87.5
Learning to make minor repairs on articles around the home.	48	85.7
Making minor electrical repairs.	39	69.6
Working with leather.	35	62.4
Working with plastics.	21	37.4
Binding a book.	20	35.6
Make minor repairs on an automobile.	20	35.6
Make minor plumbing repairs.	13	23.1
Use of power machines.	10	17.7
Learning to weld.	8	14.1

Read table thus: Fifty-two or 92.8 per cent of the fifty-six parents desire girls to have experience in learning to paint and varnish to refinish a piece of furniture in the program of an industrial arts course for girls. Read other learning situations in like manner.

asked to choose those experiences which they believed to be important for a girl to learn in a school shop course.

Emphasis Placed on the Shop "Project" by Parents of High School Students. Question nine under the "Analysis of the Problem" is concerned with the emphasis which parents placed on the shop "project". Four questions on the parent interview were constructed to provide answers in resolving this question. The first of these, question nineteen, asks, "If your child takes a course in shop do you expect him to bring home a project?"

Fifty-three parents, or 94.5 per cent, replied "yes" while three, or 5.2 per cent, replied "no" to this question.

Question twenty asked the parent to indicate to what degree he would stress the importance of the shop "project" as an indication of what the student is learning or doing in a shop class.

Forty-five parents, or 80.3 per cent, indicated that the shop "project" was some indication by marking this statement as a choice of three answers to the question: "A Approximately 50 per cent indication." Eleven parents, or 19.5 per cent, indicated that they would choose answer B to the question which read: "B 100 per cent indication."

Question Twenty-one of the parent interview asked the parent if he believed that the student should pay for any damage done to tools, equipment, or student's projects

which had come as a result of carelessness on his part. To this question, fifty-three, or 94.6 per cent, of the parents replied in the affirmative. Three parents, or 4.5 per cent, replied in the negative.

Question twenty-two asked the parent: "Do you believe that the student should pay for all materials used in making projects for home and repairs on items brought into the shop?" Choose one answer on this card. (A) Student should pay for all of it. (B) Student should pay 50 per cent of it and school 50 per cent of it. (C) Student should not have to pay any but, school pay 100 per cent of it." To this question thirty-five parents, or 62.4 per cent, stated that they believed that the student should pay all of the expense involved in making a project. Twenty parents, or 35.6 per cent, believed that the school should pay 50 per cent of the cost of the project and let the student pay the other 50 per cent of the cost. One parent stated that the school should bear the entire cost of 100 per cent of the cost of the project the student makes in a school shop.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The following conclusions are made in reference to the questions as they are listed under the "Analysis of the Problem".

The term "industrial arts" has a vague, indistinct meaning for the majority of those attempting to define this term. The survey indicated that the community as a whole has not come in contact with any type of industrial arts education public relations program.

A large majority of the community think that the high school today should prepare the child for a vocation. According to the Cardinal Principles of Secondary Education as stated by the National Education Association,[11] preparing oneself for a vocation is stated as one of the seven Cardinal Aims of Education. Vocational training as an aim of education does not necessarily mean specific training for a full-time job. Bent states:

---

[11] United States Bureau of Education, Cardinal Principles of Secondary Education, Bulletin 35 (Washington: Government Printing Office, 1918), pp. 10 ff.

> The increased school population and the urbanization of the population caused a demand for high school graduates who were more specifically prepared for a vocation. This aim can be overemphasized, for too much time can be devoted to vocational work, at the neglect of the other aims. . . . The fundamentals of arithmetic and English, health, and ethical character are basic to any vocation, while courses in business education, agriculture, home economics and industrial arts have value in many fields. Because of limited time and facilities and the large task of the high school, specific vocational training to the point of a high degree of proficiency is neither possible nor desirable. It would force the selection of a vocation at an early age without sufficient time to explore aptitudes, and, furthermore, one cannot predict accurately what vocational training is most needed because of a changing economic world. The chief functioning of this aim is to help each pupil explore his own aptitudes, become acquainted with the world of work so he can make a wise vocational choice, and have sufficient background to begin pursuing it.[12]

It is apparent that the group surveyed have a misconception of the term "vocational training." In the specific question asked, it referred to actual full-time job preparation.

As stated above by Bent, the school cannot train the child vocationally unless specifically designed to do so. The high school can only train the student vocationally so far as to give a broad variety of experiences which would be helpful in assisting the student to choose an area of work.

Woodworking and drawing were the industrial arts courses offered during the majority of years in which the

---

[12] Rudyard K. Bent and Henry H. Kronenburg, Principles of Secondary Education (New York: McGraw-Hill Inc., 1941), p. 61.

graduates were enrolled (1940 through 1950). The number of returned questionnaires from the graduates was not large enough to give a clear indication of which courses being offered were enrolled in by students. Table IV does show a tabulation of the ones who responded and the courses in which they enrolled.

The power machinery available to students of shop classes during the period with which this study is concerned was very limited. Table V indicates that little machinery was used until the year 1945. Possibly some of the machines which were available during the years 1940 through 1950 were furnished by the instructor or the administration, as the machines were not available every year for the students' use as indicated by the responses of the graduates. Also, it must be recognized that there is a possibility of error in reporting on the part of the graduates responding.

In 1945 a wood lathe was made available and is still in use. A circular saw, drill press and 6" jointer were made available in 1948 and are still in use.

The survey indicated that the majority of the graduates felt they had not yet acquired the skills or abilities listed in Table VI. As far as hand skills are concerned, the school shop was listed as being the place in which the majority of graduates learned to use hand tools. The skills in using machine tools were not acquired by most graduates

because of non-availability of the machines in the school shop. The skills of learning to repair, build, or make minor adjustments were not acquired in the school shop. The major emphasis was placed on woodworking with approximately 50 per cent of the graduates learning to build a piece of furniture for the home through the school shop.

Certainly not all of the skills or abilities listed in Table VI could be acquired in a school with limited facilities; however, many of these items could be learned if the shop courses had included various other areas of industry rather than being limited to the woodworking industry and vocational agriculture.

The effectiveness of the industrial arts program of years past is partially indicated by answers given on the graduates' questionnaire. Graduates felt they did not receive experiences which helped them to acquire a job any more readily than if they had not had an industrial arts shop course.

Industrial arts courses were interesting to the majority of students enrolled in such courses during the period with which this study was concerned. Graduates felt that the industrial arts courses in which they were enrolled could have done a better job of preparing them for their future than they did.

Objectives of industrial arts could have been more fully attained if the industrial arts program had been oriented toward these objectives. One-half of these objectives were reached, according to approximately 60 per cent of the graduates. The majority of graduates did not feel that they had learned to study and understand modern industry in determining vocational interests. They did not feel they had learned to recognize quality and design in industrial products or had learned to make working drawings; nor did they feel they were able to work as leaders, or together with others as a group, as a result of industrial arts classes in which they enrolled.

A very limited offering of industrial arts subject matter, tools, equipment, and learning situations is indicated for the period of enrollment of men who graduated between the years 1940 and 1950. The emphasis which was placed on vocational agriculture during this period contributes to the apparent ineffectiveness of industrial arts between 1940 and 1950.

Parents and former graduates selected five learning experiences which they felt boys presently enrolled in high school should receive in a shop course or courses. This survey indicated that parents and graduates felt that making minor repairs on an automobile should be of first importance.

Being residents of a basically agricultural area, Reading parents and former graduates indicated that learning to weld a broken piece of machinery was of second importance.

Learning to install a three-way lighting circuit in the home was the third choice of the ninety parents and former graduates in the selection of learning situations for boys presently enrolled in the high school. Learning to make minor electrical repairs not only on lighting systems in the home but also on items used around the home might be implied here.

To be able to draw a blueprint or a plan for a needed building was considered fourth in importance as indicated by the survey.

A student's learning to build a piece of furniture was considered fifth in importance by parents and graduates.

The preceding five learning situations selected by parents and former graduates through this survey are indicative of the desires of the community for high school boys presently enrolled in the high school. Of the five learning situations, three are being partially integrated into the present industrial arts program.

Woodworking, in which the students learn to use the common hand tools and materials in building a project is one

of the above subjects offered at the present time in the Reading Rural High School industrial arts program.

Another course offered is mechanical drawing, which provides for experiences in drafting plans for projects, properly using drawing instruments, and materials in planning a project.

Electric arc welding is the other one of the three courses out of the five learning situations selected by parents and former graduates which is now being offered.

This survey indicated a slight difference in the emphasis parents placed on each of the industrial arts objectives for boys as compared with the emphasis placed on these same objectives for girls.

Parents feel that developing the ability to plan and complete projects is a very important objective for both boys and girls to attain. Parents do not consider the objective of understanding modern industry in determining vocational interests as important for the girl to attain as it is for the boy.

Considered of nearly equal importance for boys and girls as indicated by the survey are the following industrial arts objectives:

To read and make working drawings.

To recognize quality and design in industrial products.

To prepare oneself for a vocation.

To be able to work as a leader and together with others as a member of a group.

To make safe and proper repairs of items in the home.

To express oneself through the use of other subject matter such as reading, writing, and arithmetic.

The last industrial arts objective which parents rated of unequal importance for boys and girls was developing interest in crafts as hobbies for leisure time. Parents considered this objective more important for girls to attain than for boys.

This indicated that emphasis is placed on the girls' learning those things which could be used as partial leisure-time activities whereas boys need to attain objectives more important to producing a living.

The survey shows a trend toward agreement between parents' ideas of industrial arts objectives and those of industrial arts educators.

Parents have definite ideas concerning shop courses for girls. The majority of parents believed an industrial arts course should be offered to girls during their freshman or ninth grade year. Approximately 50 per cent of the parents would not object to having girls learn to use power machinery.

Parents desire girls to learn the following items as indicated by the survey:

Learning to paint and varnish, to refinish a piece of furniture.

Use of the common hand tools.

Learning to make minor repairs on articles around the home.

Making minor electrical repairs.

Working with leather.

The above would indicate that parents desire girls to obtain those experiences which they feel would be important for them to learn for their future role as a homemaker.

Parents want their child to bring a project home if he takes a course in industrial arts. This is clearly indicated by the tabulation of responses of parents.

Parents believe that a project brought home by the student is an approximate 50 per cent indication of what the child is accomplishing in the school shop. The "project" serves only as a partial indication of what the student is accomplishing in an industrial arts course.

Students should have a sense of responsibility for other students' projects and the school shop property. Parents clearly indicated that students should be held responsible for tools, projects, or machinery which have been broken as a result of carelessness on their part.

Recommendations

Recommendations made in the succeeding paragraphs are based upon the findings of this survey.

Parents and the community at large should be informed about the educational program of industrial arts and its purpose in the general education of the high school student.

The learning situations which former graduates and parents desire high school boys to receive may be used as a partial basis on which to form an industrial arts program. Those learning situations which the community desires the boy to attain are those learning situations which the community feels would be of benefit for the boy to learn for his future. Therefore, not only would these learning situations be meeting the needs and desires of the community but, also some of the needs of the pupils concerned.

On the basis of this survey it is recommended that the industrial arts program of the Reading Rural High School include as a part of its industrial arts program, a shop course or series of shop courses which would provide the following learning situations for boys:

Woodworking, with an emphasis on learning to use the basic hand tools and power machines available, construction and repair instruction, and vocational information on the various woodworking industries involved in the every day items used.

Mechanical drawing, with an emphasis on learning to use the proper instruments, procedures in planning projects and vocational information concerning drafting.

Electric arc welding, with an emphasis on learning the proper use of the alternating current electric welding machine, its limitation, and the various types of welds to which this particular type of machine is adapted.

General automotive mechanics, with an emphasis on minor adjustments and repairs which may be made on an automobile together with informational units on the construction of various types of automobiles and the automobile industry.

General electricity, with an emphasis on the general principle of electricity involved in the everyday use of common items found in the home and the proper and safe repair of such items.

Parents want girls to become acquainted with industrial arts materials and tools. Therefore, they have recommended through their responses, that girls should receive some specific types of instruction. On the basis of this research and parents' desires it is recommended that the following learning situations be included in an industrial arts course for high school girls to be given at the ninth grade or freshman level:

Learning to paint and varnish furniture, floors, and to refinish wood products.

Learning to use the common hand tools. For those whose parents desire that they have some experience in handling power machinery, they would be given an opportunity to learn the proper manipulation of these machines.

Learning to make minor repairs on articles used in the home, with an emphasis on consumer education.

Learning to make minor electrical repairs, with an emphasis on a general knowledge of electricity and its proper and safe use around the home.

Learning to work with leather in order that a craft might be learned as a leisure-time activity, with an emphasis on learning about the leather industry and consumer knowledge of leather products.

CHAPTER V

SUMMARY

As a summarization of the industrial arts survey conducted, the following is respectfully submitted to the patrons of the Reading Rural High School and dedicated to the better education of the youth of that community.

It is apparent that modern education must take steps in training youth to deal with mechanical breakdowns and to select and use wisely the products of industry. Due to the specialization which now takes place in our modern living, youth no longer have opportunities to secure this training anywhere but in the school. Objectives of industrial arts in general education attempt to meet these needs.

The needs and desires of local communities have been neglected in the process of establishing industrial arts programs, especially in rural areas. These few cases in which industrial arts programs have been based on the concept of establishing a program to meet the needs and desires of local communities have been successful.

What can the industrial arts instructor in a rural high school community do to insure that he is helping to fulfill the desires of his community? In order to answer the above question the author conducted research in the form of questionnaires sent to former graduates, and interviews

with parents of students presently enrolled in the Reading Rural High School, Reading, Kansas.

The major purpose of this research was to form a basis on which an industrial arts program could be established in part, indicating those items which parents and graduates desired students to obtain through such a program. For this basis the answers to these questions needed to be found:

1. Are the Reading, Kansas residents and former graduates of that high school well informed on the subject of industrial arts education and its place in general education?
2. What was available to the students who graduated between the years 1940 and 1950 in the way of industrial arts education courses and equipment?
3. What hand or machine work, skills, or abilities were obtained by former graduates? If not acquired in a school shop, where were they acquired?
4. In the opinions of graduates, were the learning situations which were offered to students during the period of this study successful in bringing about the desired objectives or outcomes of industrial arts program?
5. What experiences or learning situations do graduates and parents consider important for the student presently enrolled in an industrial arts program?

6. What importance do parents attach to the experiences or abilities listed as general outcomes of industrial arts education for boys and girls?

7. Do parents agree with the general objectives of industrial arts education for their children?

8. What are parents' opinions regarding industrial arts courses for girls?

9. What emphasis do parents place on the shop "project"?

The questionnaires to the graduates were limited to men who graduated from Reading Rural High School between the years 1940 and 1950. Interviews with parents were limited to those with children presently enrolled in that high school.

This survey indicated that parents and former graduates are concerned about giving the present students of the Reading Rural High School experiences which will help them to cope more successfully with our modern way of life.

Parents want to know about the educative process and the part it plays in the lives of their children. They do not fully understand many of the professional terms which educators often use. This would indicate that a public relations program is needed to inform the parent of what is taking place in their children's daily routine of education at school. The parent must be shown where the school can

help the student and where the school is limited in its scope of educating the student of high school age.

Undoubtedly, the limited offerings in industrial arts education during the years 1940 and 1950 were affected by a limited budget as well as by the world situation during the years of World War II.

Naturally, the effectiveness of the industrial arts program would be greatly influenced by the above factors which in part help to explain the not too effective industrial arts program during these years as indicated by this survey.

The survey indicated that the majority of the graduates felt they had not yet acquired the skills or abilities listed on the questionnaire. As far as hand skills are concerned, the school shop was listed as being the place in which the majority of graduates learned to use hand tools. The skills in using machine tools were not acquired by most graduates because of non-availability of the machines in the school shop. The skills of learning to repair, build, or make minor adjustments were not acquired in the school shop. The major emphasis was placed on woodworking with approximately 50 per cent of the graduates learning to build a piece of furniture for the home in the school shop.

Parents and graduates selected five learning situations which they felt boys presently enrolled in the high

school should receive in a shop course or courses. The following is a list of those learning situations which were selected in relation to their importance for the student to obtain.

1. Make minor repairs on an automobile.

2. Learn to weld a broken piece of machinery.

3. Learn to make minor electrical repairs around the home.

4. Learn to draw a plan or blueprint for a project or a needed building.

5. Learn to build a piece of furniture.

The preceding five learning situations selected by parents and graduates through this survey are indicative of the desires of the people of the Reading, Kansas, community for high school boys presently enrolled in that school.

The survey indicated a slight difference in the emphasis parents placed on each of the industrial arts objectives for boys as compared with the emphasis placed on these same objectives for girls. This indicated that emphasis was placed on the girls' learning those things which could be used as partial leisure-time activities, whereas, boys need to attain objectives more related to producing a living.

The survey indicated a trend toward agreement between parents' ideas of industrial arts objectives and those of industrial arts educators.

Parents had definite ideas concerning shop courses for girls. The majority of parents believe an industrial arts course should be offered to girls in high school at the freshman or ninth grade level. Approximately 50 per cent of the parents would not object to having girls learn to use power machinery.

Parents desired girls to learn the following items as indicated by the survey:

1. Learn to paint and varnish, to refinish a piece of furniture.
2. Use common hand tools.
3. Learn to make minor repairs on articles around the home.
4. Make minor electrical repairs.
5. Work with leather.

The above would indicate that parents desire girls to obtain those experiences which they feel would be important for them to learn for their future role as a homemaker.

Parents want their child to bring a project home if he takes a course in industrial arts. Parents believe that a project brought home is an approximate 50 per cent indication of what the student is accomplishing in a school shop.

Students should have a sense of responsibility for other students' projects and school shop property. Parents clearly indicated that students should be held responsible

for tools, projects, or machinery which have been broken as a result of carelessness on their part.

The results of this survey have become invaluable to the writer as they will be used in part to develop a program of industrial arts education for boys and girls which will meet the desires of the school's patrons as shown through this survey.

It must be concluded that this research is in no way a complete analysis of or a complete solution for solving problems in establishing an industrial arts program for the school in question. Other factors which could serve as a basis for research are listed below in the following questions.

What are the other rural high schools in the state of Kansas doing in attempting to establish an industrial arts program which will meet the desires of their local communities?

What kind of public relations program should follow this survey and how should it be conducted?

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

Bent, Rudyard K., and Henry H. Kronenburg, Principles of Secondary Education. New York: McGraw-Hill Book Company Inc., 1941.

Newkirk, Louis V., and William H. Johnson, The Industrial Arts Program. New York: Macmillan Company, 1948.

B. PUBLICATIONS OF LEARNED ORGANIZATIONS

Dunn, Fannie W., "The Education of Rural Children and Youth," The White House Conference on Rural Education, National Education Association of the United States, Washington, D. C.

Smith, Homer J., "Improving Instruction in Industrial Arts," A Revision of the AVA Bulletin on Standards of Attainment in Industrial Arts Teaching, American Vocational Association, Inc., Industrial Arts Division, Washington, D. C., 1948.

Throckmorton, Adel F., Kansas Tentative Guide to Teaching Industrial Arts, Kansas State Department of Education, Topeka, Kansas, 1950.

United States Bureau of Education, Cardinal Principles of Secondary Education, Bulletin 35, Washington, D. C., Government Printing Office, 1918.

United States Department of Interior, Office of Education, Industrial Arts--Its Interpretation in American Schools, Bulletin 34. Washington: Government Printing Office, 1937.

C. PERIODICALS

Cyr, Frank W., and Shirley Cooper, "What Farm Leaders Want the School to Teach," Journal of National Education Association, XXXVI (September, 1947).

Williams, Aubrey, "Rural Education: Does It Adequately Meet the Needs of Rural Youth and Rural Communities? No!" Progressive Education, XXII (January, 1945).

G. UNPUBLISHED MATERIALS

Pugh, Virgil. "Adapting an Industrial Arts Course to the Needs and Interests of the Home," Unpublished Master's thesis, Kansas State Teachers College of Pittsburg, Kansas, 1936.

Schultz, Chester A. "Industrial Arts Needs of a Rural Community," Unpublished Master's thesis, Illinois State Normal University, Normal, Illinois, 1951.

APPENDIX

APPENDIX A

Post Office Box 27
Reading, Kansas
June 2, 1956

Alumnus
Reading Rural High School
Reading, Kansas

Dear Sir:

You, as a former student of our high school have an opportunity to give answers to these very important questions pertaining to our industrial arts program. How effective has our industrial arts program been in the past? Has it been of any benefit to you now in your adult life? What could be taught that might better fill the needs of students after graduation?

As a result of answers given on this questionnaire and other surveys being conducted I hope to determine in part, what items can be offered which might best fit the needs and wants of our community and thus, establish a course of study accordingly for our industrial arts department.

You are not only helping your school in the few minutes that it will take to complete this questionnaire, but, also you will have been helpful in assisting me to fulfill requirements for a Master's Degree in Education through this research.

Enclosed is an addressed envelope into which you may place the completed questionnaire and mail. Thank you for your considerate attention to this matter.

Bill M. Bumgardner
Instructor of Industrial Arts
Reading Rural High School
Reading, Kansas

INDUSTRIAL ARTS QUESTIONNAIRE

For ease in answering and tabulation the answers are so placed to the left of the page whenever it has been convenient to do so. On all "yes" and "no" questions encircle the desired answer at the left of the page opposite the question. For example:

Yes No A. Are you a high school graduate?

Please answer all questions if possible. All information which will be taken from this questionnaire will be in statistical form with no names involved.

Former student's name _____
(First) (Initial) (Last)

___ Number of years you were enrolled at Reading High School.

___ Year in which you graduated.

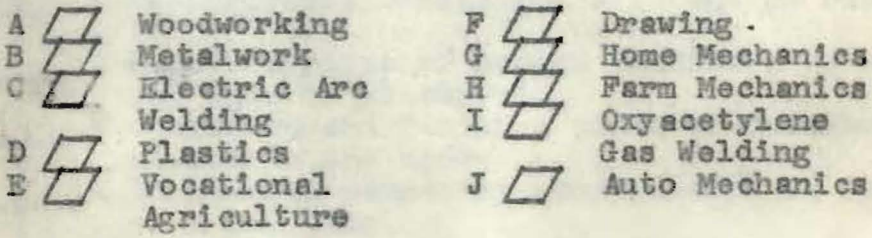
1. State in as few words as possible what you think the term "industrial arts" means. This term is also known as "manual training". _____

_____

Yes No 2. Do you believe the primary objective of industrial arts education in our high schools today is to prepare a boy for a vocation; that is, to have the boy trained and able to take on a full time adult job?

Yes No 3. Was industrial arts or manual training offered at the time of your enrollment?

4. If any types of shop courses were offered at the time of your enrollment, place an "X" in the box opposite the courses which were offered even though you might not have taken any or all of them.



K ▱ Electricity
L ▱ Leatherwork

M ▱ General Carpentry Construction

5. Of the shop courses listed above encircle the capital letter opposite the courses which you did take. For example if you had Drawing and Woodworking you would encircle the "P" and the "A" on the above list.

6. Check the list of power equipment that was available for your use at the time of your enrollment in Reading Rural High School.

A ▱ Circular Saw
B ▱ Band Saw
C ▱ Jig Saw
D ▱ Drill Press
E ▱ Portable Sander
F ▱ Jointer
G ▱ Wood Lathe
H ▱ Metal Lathe
I ▱ Power Hand Drill
J ▱ Electric Welder
K ▱ Gas Welding
L ▱ Valve Grinder

Yes No 7. If you were enrolled in industrial arts courses did you find them interesting?

Yes No 8. Would you say that you have ever accepted a job as a result of industrial arts experiences received in high school?

Yes No 9. Do you feel that industrial arts education at the time of your enrollment could have done a better job in giving you experiences which would have been of more advantage to you now?

10. The following skills and knowledge may be acquired through various ways. Indicate by what means you acquired these skills by placing an "X" in the appropriate box opposite each item. For example: if the first item was acquired in a school shop place an "X" in the column designated "acquired in a school shop" opposite that item.

Learned care and proper use of: or to:	Not yet acquired	Self taught	Acquired in a school shop	Acquired on a paid job	Acquired in armed services
A Handsaws					
B Framing Square					
C Planes					
D Screwdriver					
E Circular Saw					
F Jig Saw					
G Jointer					
H Drill Press					
I Electric Arc Welder					
J Gas (Oxacetylene) Welder					
K Band Saw					
L Shaper					
M Electric Sander					
N Machine Lathe					
O Woodturning Lathe					
P Electric motors ranging in size from ½ to 1 H.P.					
Q Make minor electrical jobs around the home.					
R Make minor adjustments and repairs on the automobile.					
S Repair a plumbing fixture.					
T Solder sheet metal.					
U Properly mix cement for a garage or barn floor					
V Repair a piece of broken machinery by welding (gas or electric)					
W Construct and finish a piece of furniture needed in the home.					
X Do general carpentry construction in repair of a building.					
Y Re-upholster a piece of furniture.					
Z Use drawing equipment to plan and draw a working drawing for a needed project such as a piece of furniture or a small building.					

11. Do you feel that you acquired any of the following experiences or abilities as a result of industrial arts courses taken? Indicate "yes" or "no" for each item listed by encircling the answer you choose.

Yes No A. Developed the ability to plan and complete a project.

Yes No B. Learned to study and understand modern industry in determining vocational interests.

Yes No C. Learned to read and make working drawings.

Yes No D. Recognize quality and design in industrial products.

Yes No E. Learned to make safe and proper repairs on items around the home.

Yes No F. Able to express myself through the use of other subject matter such as reading, writing and arithmetic.

Yes No G. Became interested in crafts as hobbies for leisure time.

Yes No H. Being able to work as a leader and together with others as a group.

Yes No I. Partially prepared myself for a vocation.

12. Assuming that all of the following jobs done by the students are worthwhile and are of some value, select five from the list of jobs below that you believe would be beneficial for a boy to be able to accomplish for his future use. Encircle the capital letter opposite the job listed. Make only <u>five</u> choices.

A Make minor repairs on the automobile.
B Weld a broken piece of machinery.
C Repair a broken chair and refinish it.
D Build a piece of furniture for the home.
E Draw a working drawing or plan of a needed building.
F Make a leather handbag or leather project.
G Make a grain scoop or a sheetmetal project.
H Replace worn-out faucet washers.

I Help print a school paper.
J Help others to repair or reconstruct a garage.
K Put in a three-way electrical switch and light receptacle in the home.
L Re-upholster an easy chair.

PARENT INTERVIEW

Name of parent interviewed_____

Yes No 1. Do you understand what the term "industrial arts" means?

2. State what this term means to you. _____

_____

3. Upon being instructed in proper manipulation and safe operation of power tools, boys will realize the importance of safety in the use of other power machinery. Assuming that your boy would receive such instruction, which of the machines listed on this card that I hand you, would you desire him to have experience in handling?

A Circular Saw	I Oxyacetylene Welder
B Wood Lathe	J Band Saw
C Jointer	K Valve Grinder
D Drill Press	L Jig Saw
E "Skill" Saw	M Shaper
F Printing Machine	N Electric Sander
G Grinder	O Portable Drill
H Electric Arc Welder	P Machine Lathe

4. Assuming that all of the following jobs done by the student are worthwhile and are of some value select five jobs from the list of jobs on this card that you would want your boy to accomplish in the progress of a school year.

A Make minor repairs on an automobile.
B Weld a broken piece of machinery.
C Repair a broken chair and refinish it.
D Build a piece of furniture.
E Draw a blueprint or plan of a needed building.
F Make a leather handbag or leather project.
G Make a grain scoop or a sheetmetal project.
H Replace worn-out faucet washers.
I Help print a school paper.
J Help others to repair or reconstruct a garage.
K Put in a three-way electrical switch and light receptacle in the home.
L Re-upholster an easy chair.

5. Listed on this card are several experiences which might be offered to boys in industrial arts laboratory classes. Would you indicate the importance of each item by encircling the number one, for very important; the two for important to some extent or the three for not important. Encircle only one number by each experience listed.

A 1 2 3 Develop the ability to plan and complete projects.
B 1 2 3 Understanding modern industry in determining vocational interests.
C 1 2 3 Reading and making working drawings.
D 1 2 3 Recognizing quality and design in industrial products.
E 1 2 3 Safe and proper repair of items around the home.
F 1 2 3 Being able to express oneself through use of other subject matter such as reading, writing, and arithmetic.
G 1 2 3 Interest in crafts as hobbies for leisure time.
H 1 2 3 Being able to work as a leader and together with others in a group.
I 1 2 3 Preparing oneself for a definite vocation.

Yes No 6. Of the items listed on this same card do you believe any of them are necessary to the general education of girls?

Yes No 7. If you have agreed to this last question asked would you rate the items on this same card in the same manner as you rated them for boys? These experiences should be rated for girls. Use the same rating card which you used to answer question five.

Yes No 8. Hobbies are termed as being a valuable medium for creative expression in leisure time. Do you believe it is a good idea for a boy to develop interests in crafts for this purpose?

Yes No 9. Do you believe it is important for a child to develop social understanding and ability to work effectively with others, either as a leader or as a member of a group?

Yes No 10. Do you believe it is the purpose of the school to prepare your child vocationally? That is, should he be prepared for a job upon his graduation from high school?

Yes No 11. Do you believe experiences which help to increase a child's understanding of modern industry will lay a foundation for and help to determine vocational interests?

Yes No 12. Do you believe it is necessary for a child to develop the ability to plan and to complete projects using a variety of tools and construction materials in a workmanlike manner?

Yes No 13. Do you consider the ability to recognize quality and design in products of industry as important?

Yes No 14. Is it important for a student to have the ability to place his ideas on paper in the form of drawings or sketches?

15. If you have agreed that girls should receive experiences in some of these items, as you indicated on this card for question seven, at what age level in school would you suggest a girl take a course in industrial arts?

Grades 7 8 9 10 11 12

Yes No 16. Assuming proper manipulation and safety instruction in the operation of power tools would be given to girls also, would you want your daughter to use power machinery?

Yes No 17. Of the machines listed on this card place a check mark beside those that you would desire your daughter to have experience in handling.

A Circular Saw
B Wood Lathe
C Jointer
D Drill Press
E "Skill" Saw
F Printing Machine
G Grinder
H Electric Arc Welder
I Oxyacetylene Welder
J Band Saw
K Valve Grinder
L Jig Saw
M Shaper
N Electric Sander
O Portable Drill
P Machine Lathe

18. In any industrial arts course for girls, they could acquire many experiences some of which are listed below. Check the ones which you believe to be of the most importance for your child to learn.

A Use of the common hand tools.
B Use of power machines.
C Learning to make minor repairs on articles around the home.
D Learning to weld.
E Working with leather.
F Working with plastics.
G Learning to paint and varnish, to refinish furniture.
H Making minor electrical repairs.
I Make minor plumbing repairs.
J Binding a book.
K Make minor repairs on an automobile.

Yes No 19. If your child takes a course in shop do you expect him to bring home a project?

20. Do you believe that a project brought home is any indication of what the child is doing or learning in his shop course: Indicate which of these three you would choose: A Approximately 50 per cent indication; B 100 per cent indication; or C No indication whatsoever.

Yes No 21. Do you believe that your child should pay for any damage done to tools, equipment, or student's projects which has been done through carelessness on his part?