

Prairie View A&M University

Digital Commons @PVAMU

All Theses

8-1960

A Suggested Industrial Education Program for Liberty Training High School of Liberty, Texas

Allen Francis Melonson

Follow this and additional works at: <https://digitalcommons.pvamu.edu/pvamu-theses>

A SUGGESTED INDUSTRIAL EDUCATION PROGRAM
FOR LIBERTY TRAINING HIGH SCHOOL OF
LIBERTY, TEXAS



MELONSON

1960

R
71426
492s

12-101

A SUGGESTED INDUSTRIAL EDUCATION PROGRAM
FOR LIBERTY TRAINING HIGH SCHOOL OF
LIBERTY, TEXAS

A Thesis

Presented to the Graduate Division
of Prairie View Agricultural and Mechanical College

In Partial Fulfillment of the
Degree of
Master of Science

LC
1081
M44

by

Allen Francis Melonson

August, 1960

ACKNOWLEDGEMENTS

For aid and guidance in helping me to complete this study, I wish to thank Dr. Thomas W. Miller, my advisor, Mr. Larry McGhee, members of the committee, and Dr. Alvin I. Thomas, the Director of the Division of Industrial Education, Prairie View Agricultural and Mechanical College.

Allen Francis Melonson

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
Statement of the Problem	2
Definition of Terms	3
Scope and Procedure	4
Need for the Study	5
Related Studies	6
DEDICATION	
I dedicate this paper to my wife, Mrs. Josephine M. Melonson, for her faith in me and for being so helpful and understanding.	
Data Collecting	
Instrument	11
Administration of the Questionnaires	13
Tabulation and Summarization of Data	13
II. THE FINDINGS AND INTERPRETATIONS	15
Results of the Questionnaire to Parents and Patrons	15
Results of the Questionnaire to Pupils	26
Relationship Between Responses Given by Parents, Patrons, and Pupils	31
III. PLAN FOR INDUSTRIAL EDUCATION	36
Organization	35
Location, Size, and Shape of Shop	37

A. F. M.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
Statement of the Problem	2
Definition of Terms	3
Scope and Procedure	4
Need for the Study	5
Related Studies	6
Research Technique Used in Study	10
Method Used in Selecting Respondents	11
Preparation of Data Collecting	
Instrument	11
Administration of the Questionnaires	13
Tabulation and Summarization of Data	13
II. THE FINDINGS AND INTERPRETATIONS	15
Results of the Questionnaire to Parents	
and Patrons	15
Results of the Questionnaire to Pupils	26
Relationship Between Responses Given	
by Parents, Patrons, and Pupils	31
III. PLAN FOR INDUSTRIAL EDUCATION	34
Organization	35
Location, Size, and Shape of Shop	37

CHAPTER	PAGE
Shop Activities	39
Woodworking Area	39
Metalworking Area	43
Electrical Area	45
Student Personnel Organization	46
Text, Library, and Reference Books	46
Equipment, Power Tools, and Hand Tools	47
IV. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	69
Summary	69
Conclusions	73
Recommendations	76
BIBLIOGRAPHY	78
APPENDICES	82
VITA	85
V. Parents and Patrons and Industrial Arts and Opinion as to Children taking Shop Courses	87
VI. Pupils' Industrial Arts Training and Future Occupations	89
VII. Pupils' Experiences with Various Materials	90

CHAPTER I
INTRODUCTION
LIST OF TABLES

TABLE	We live in an industrial age. Our world, our	PAGE
I.	Total Results of Questionnaires from Fifty-five Parents and Patrons on their Industrial Arts Experience	17
II.	Results of Questionnaire from Parents and Patrons on Questions Concerning Industrial Arts in the Curriculum	21
III.	Relation Between Employment and Experience with Tools	23
IV.	Relation Between Employment and Industrial Arts Courses Taken in School	25
V.	Parents and Patrons had Industrial Arts and Opinion as to Children taking Shop Courses	27
VI.	Pupils' Industrial Arts Training and Future Occupations	29
VII.	Pupils' Experiences with Various Materials	30

Industrial Arts, Its Interpretation in American Schools (Washington, D. C.: American Vocational Association, 1918), p. 5.

T. Theodore Shrock, Foundations of Industrial Education (New York: John Wiley and Sons, Inc., 1933), p. 112.

CHAPTER I

INTRODUCTION

We live in an industrial age. Our world, once based on animal and man power, is now mechanized. Now, man has tractors to do the work of horses. Industry is not static, it is dynamic. It is a living symbol indicative of our times. All of the pursuits of our lives have been affected by this age of science and technology. The dominant element in America is industry. In order to survive we must adjust our mode of living to the development of industry.¹

Industrial Education fosters the development of a strong foundation in the skills, knowledge, and attitudes, regarding technical matters that are needed for happy and effective living in America. Public schools should give every youngster the chance to learn to work with tools and materials, and to acquire reasonable judgment and some degree of technical know-how.²

¹Industrial Arts, Its Interpretation in American Schools (Washington, D. C.: American Vocational Association, 1949), p. 3.

²F. Theodore Struck, Foundation of Industrial Education (New York: John Wiley and Sons, Inc., 1930), p. 212.

Courses in industrial education should be made available to all students in the Liberty Training School. This statement is based on the necessity for satisfying the immediate needs of all the pupils for industrial education as an asset to those pupils who drop out of high school; for those who finish high school and do not enter college; and for those who graduate and go to college. Industrial education for pupils in these areas will improve the individual and the community economic status of Liberty, Texas.

Statement of the Problem

The main purpose of this study was to propose an Industrial Education Program for Liberty Training School at Liberty, Texas.

To attain this, certain questions were kept in mind, namely:

1. What are the understandings, interests and abilities of the students with relation to industrial arts in Liberty Training High School?
2. How can industrial education aid in the improvement of the economic status of the community?
3. What should be the role of industrial education in the Liberty Training High School?
4. What should be the organization plan of such an industrial education program?

Definition of Terms

Included in this study are professional terms which are used by educators and professional people in the field of industrial education. To clarify the meaning of these terms as they are used here, the following definitions are hereby listed:

Industrial Education. A generic term which includes all educational activities concerned with modern industry and crafts, their raw materials, products, machines, personnel and problems.³ It applies to all types of education relating to industry, including general education (industrial arts education), vocational industrial education (trade and industrial education), and technical education.⁴

Industrial Arts. Instructional shop work which provides for all youth sound educational experiences that contribute to the satisfaction of their purposes, needs and wants. It is an integral part of general education. It offers those learning experiences which assist boys and girls to understand the industrial and technical aspects of life.⁵

³John F. Friese, Course Making in Industrial Education (Peoria, Illinois: Charles A. Bennett Company, Inc., 1946), p. 7.

⁴Definition of Terms in Vocational and Practical Arts Education (Washington, D. C.: American Vocational Association, 1954), p. 16.

⁵Friese, loc. cit.

Vocational Industrial Education. Preparation for entrance upon and for making progress in "trades" and industrial occupations of all kinds.⁶

Technical Education. Used to denote preparation for a group of occupations which lie between the professions and skilled trades. This category of jobs demands less technical knowledge than is needed by the trained engineer or scientist and less manipulative competency than is required of the skilled mechanic.

Scope and Procedure

This study is limited to the secondary grade level of Liberty Training School. The study will be further limited to an attempt to formulate a program for industrial arts on the secondary level at Liberty Training High School. The shop physical plant, tools, machinery, and equipment are considered as contributory factors to the study. Literature in the field of industrial education has been largely relied upon for other resource information used in this study.

At this point, the writer must acknowledge certain other limitations of the study. Firstly, the population sampled is in no sense comprehensive and no statistical technique was used in selecting the sample. Secondly,

⁶Ibid.

no statistical handling or interpretations of the data has been attempted except through comparison of raw figures and percentages. An attempt has been made, however, to be completely objective and candid in all interpretations of the data.

To collect the needed information, the survey method was used. Questionnaires were circulated to seventy parents, patrons, and community leaders and to fifty-seven students. Personal interviews were held with the principal, superintendent and school board members on the question of how to improve the economic status of the community as this question relates to the purpose of this study.

Need for the Study

The Liberty High School must assume its obligation and prepare the youth for tomorrow's job. The school intends to do no less than prepare the youth of the community in which it is located to be responsible citizens and productive consumers. Since the above statement is one of the objectives of the school, the writer believes that the entire student body of Liberty Training High School should have the opportunity to take courses in industrial education.

The writer believes that this study was necessary for the following reasons. A well-rounded

program of studies in any school should provide its students:

1. A program of activities which will make it possible for boys and girls of all socio-economic levels to participate on equal terms.
2. An industrial arts program that will provide an understanding of modern industrial processes.
3. A program of activities which will provide general information that will lay a foundation for the more specialized areas of industry.
4. A program of activities that will offer an exploratory period in industrial arts which will attract the students' interest and will assist in curtailing the number of drop-outs.
5. An industrial arts program that will offer the opportunity to investigate some of the problems in and relative to the fundamentals of wood, metal, leather and electricity.

It is the task of the school to supply a type of instruction which will help youth understand, adjust to, and participate in those common life situations resulting from development of the machine age.

Related Studies

Before proceeding with this study, it was considered advisable to review and analyze similar and related studies.

Leland B. Luchsinger,⁷ conducted a study to propose a well-rounded industrial education program for the Beaumont Independent School System based on present objectives of industrial education. A survey of literature was made to ascertain the objectives of industrial education and general education. The Beaumont Independent School System was studied for the purpose of evaluating its offerings, tools, and equipment, and the proposed program was submitted to local leaders of labor and management as well as the school board, superintendent, and principal.

Luchsinger's⁸ findings and conclusions were:

The study revealed that in the Beaumont schools there exists a need for laboratory of industry courses for the tenth grade, certain industrial arts unit courses, and some vocational trade and industrial courses.

John Milburn Waller,⁹ conducted a study to develop a course of study for Everett High School, Maryville, Tennessee. Data were secured from records of Everett High School, the county superintendent of schools, and professional literature.

⁷Leland B. Luchsinger, A Proposed Curriculum for Industrial Education in the Beaumont Independent School System (Unpublished Master's Thesis, Agriculture and Mechanical College of Texas, Arlington, Texas, 1950).

⁸Ibid.

⁹John Milburn Waller, A Proposed Course of Study for Everett High School Industrial Arts Department, Maryville, Tennessee (Unpublished Master's Thesis, University of Tennessee, Knoxville, Tennessee).

Waller's¹⁰ conclusions were as follows:

The course proposed includes objectives, informational and manipulative instruction units, necessary tools and equipment, suggested projects, suggested textbooks and references, and details as to supplies.

Robert Vernon Kiger,¹¹ conducted a study of the possibilities of including industrial arts in the Whitney Elementary School, grades three through eight, based upon the needs and desires of the parents and students in the school area. The purpose of the study was to poll opinions of the parents and students of Whitney community concerning the need for industrial arts in the school curriculum. A survey by questionnaire was completed by 225 students, grades three through eight, and 102 parents in the community. The questionnaires sought general information concerning hobbies, leisure time interest in certain courses, and the desirability of industrial arts courses. An analysis was also made of books in the field of professional magazines, and of interviews with people in the community.

Kiger¹² concluded that:

Students and parents alike are found to be interested in industrial arts. Accordingly, the following recommendations are made: The

¹⁰ Ibid.

¹¹ Robert Vernon Kiger, A Study of the Possibilities of Including Industrial Arts in the Whitney Elementary School, Grades Three Through Eight (Unpublished Master's Thesis, North Texas State College, Denton, Texas, 1950).

¹² Ibid.

Whitney Elementary School curriculum be enriched by the addition of craftwork in leather, wood, art metal, plastics: a more extensive course in woodwork be offered later as funds and space are available: an evening course in industrial arts be provided for adults, the material and necessary supplies to be taken care of through a reasonable tuition fee, and the course to be taught by a regular teacher; and that the citizens of the community make an effort to attract and bring industries to the community to provide work opportunities for local people.

Carnie Allen,¹³ conducted a study to propose an industrial education program for Sam Houston School, Huntsville, Texas. Data were obtained from literature, interviews, and visitation.

Allen¹⁴ concluded:

The program proposed by the writer offers several areas from which to choose a vocation and at the same time develop better trained individuals capable of adjusting themselves into society.

Cecil W. Cheney,¹⁵ conducted a study to present an industrial arts program for a combination junior-

¹³Carnie E. Allen, An Industrial Education Program for Sam Houston Elementary and Secondary School (Unpublished Master's Thesis, Prairie View A. and M. College, Prairie View, Texas, 1952), p. 3.

¹⁴Ibid., p. 45

¹⁵Cecil W. Cheney, A Proposed Industrial Arts Program for Harry P. Harding High School of Charlotte, North Carolina (Unpublished Master's Thesis, University of Tennessee, Knoxville, Tennessee, 1950).

senior high school with an enrollment of approximately 650 boys which can be used in its entirety or in part and to meet the needs of the pupils and the community.

Cheney¹⁶ findings were as follows:

The industrial arts program of Harding High School could be enlarged and thus render a valuable service to a greater number of the students. The number of skilled workers fell into five major classifications. Woodworking trades, automobile mechanics, machinists, other metal workers, and those in printing and allied fields. The largest single body of skilled workers was composed of those following the woodworking trade, numbering 1,839; the second largest group was composed of those employed as automotive mechanics, numbering 1,018; the machinists trade with 937 workers made up the third largest group. As a result of the survey, woodworking, automotive mechanics, machine shops, and metal working were chosen as a basis for the recommended industrial arts courses.

Research Technique Used

in Study

The following procedure was used by the writer as a part of his effort to organize the investigation in such a way as to insure the collection of pertinent data on the school, pupils and community. Of particular concern were data about industrial arts experiences of boys and girls of Liberty Training High School, their past and present need for handcraft, and the value of industrial arts in the curriculum.

¹⁶Ibid.

The materials assembled have been organized for presentation under four headings. They are: (1) Method used in selecting respondents, (2) Preparation of data collecting instrument, (3) Administration of the questionnaire, (4) Description of tabulation and summarization of data. In the following paragraphs, the writer will discuss each of these four items.

Method Used in Selecting Respondents. The writer selected 70 parents and patrons. The selections were made on the basis of past observation and home visits. The respondents were selected from a group of adults who possessed the following characteristics: (1) Parents having pupils enrolled in school; (2) Participation in school activities; (3) Interest displayed in the development of the school and community; (4) Desire for wholesome home and family life activities; and (5) Parents and patrons of the consolidated district of Liberty Training High School. The 57 pupils were selected at random from the school community.

Preparation of Data Collecting Instrument. As a basis for preparation of the questionnaire, the writer made a study of the needs and problems of youth and the needs of the community that have been discussed in recent literature. The Liberty Vindicator stated that "Liberty's future is indeed bright and offers unlimited opportunities

Editorial in the Liberty Vindicator, June 3, 1934.

to new businesses in the area."¹³ There are opportunities now for persons who are qualified, or have some basic training that will enable them to do the job, in the following industries: Sulfur, Chemical, Canning, Oil, and Veneer industry. Following the selection of areas needed for this study, two questionnaires were drafted-- one to be filled out by parents and patrons and one to be filled out by pupils.

The questionnaire for parents and patrons consisted of sixteen questions. In addition, there were 47 items concerning mechanical activities classified under eight categories as follows: (1) Metal work, (2) Electrical work, (3) Plumbing, (4) Finishing, (5) Woodwork, (6) Concrete work, (7) General work, and (8) Auto mechanic. The eight categories were selected on the basis of the great need for workers in those areas in the community.

The parents and patrons checked the items which they could perform in each of the eight categories. The responses to the questionnaire revealed the industrial arts training of parents and patrons, and their experiences in certain specific areas of industrial work, in addition to their opinion on the needs and desire for industrial arts in the school curriculum.

¹³ Editorial in the Liberty Vindicator, June 3, 1956.

The questionnaire for pupils consisted of twelve questions concerning industrial arts training, their future plans, and industrial areas in which pupils had worked and the kind of materials used. The questionnaire revealed data concerning the interest, experience, desire, industrial arts training and future occupational plans of the pupils.

Administration of the Questionnaires. The questionnaires were distributed to the selected parents, patrons and pupils in several communities that make up the Liberty Independent School District. Some of the questionnaires were checked in the presence of the writer and returned to him immediately. The other questionnaires were placed in self-addressed, stamped envelopes and returned by mail. Of the 127 individuals selected, 112 or 88% made returns.

Tabulation and Summarization of Data. The responses from all questionnaires were tabulated and summarized. These summaries were held for further analysis. A chart was used to check the "yes" and "no" responses of all respondents. The number of experiences listed under each of the eight categories was tabulated for all respondents. These total responses were placed in tables to be used in the study. The total responses as secured from the 112 respondents were examined in the light of experiences, interests, needs, and desires of the respondents

for industrial arts in the school. The occupational data revealed should serve as a guide in the preparation of pupils for college entrance and the selection of future occupations for terminal pupils at the secondary level.

The responses made to the questionnaires by the 118 respondents involved in this investigation are described and interpreted in this chapter. The data are organized under three headings: (1) The results of the questionnaire to parents and patrons; (2) The results of the questionnaire to pupils; (3) An interpretation of the responses given by parents and patrons by pupils.

Results of the Questionnaire to

Parents and Patrons

The responses made by fifty-five respondents are given in Tables I and II. The questionnaire was so constructed that the respondents indicated their replies to inquiries and checked areas of industrial work in which they had experience. An examination of Table I shows that the "yes" responses range from a low of four in the metal work area, to a high of forty-eight on the need for handcraft activities.

Approximately eighty-nine percent of the respondents expressed a need for handcraft activities.

CHAPTER II

FINDINGS AND INTERPRETATIONS

The responses made to the questionnaires by the 112 respondents involved in this investigation are described and interpreted in this chapter. The data are organized under three headings: (1) The results of the questionnaire to parents and patrons; (2) The results of the questionnaire to pupils; (3) An interpretation of the responses given by parents and patrons by pupils.

Results of the Questionnaire to

Parents and Patrons

The responses made by fifty-five respondents are given in Tables I and II. The questionnaire was so constructed that the respondents indicated their replies to inquiries and checked areas of industrial work in which they had experiences. An examination of Table I shows that the "yes" responses range from a low of four in the metal work area, to a high of forty-eight on the need for handcraft activities.

Approximately eighty-nine percent of the respondents expressed a need for handcraft activities.

One of the best ways to serve that need is through experiences that are commonly provided in industrial arts training. It should be noted that a majority of the respondents have had no experiences with tools and materials.

The writer believes that the fact that this group has had no industrial arts training is significant, since they express a desire for training in industrial arts, and have a need for activities which will enable them to do repairs in and around the home. It is clear that such industrial development as exists in this group is largely the consequence of opportunities for growth which their environment other than secondary school experiences provided. If we expect this group of individuals to live successfully in this highly industrial age and changing society, then it is necessary that they have some knowledge of the tools, materials, processes and products of our modern industries.

The interviews and visitations revealed that the parents and patrons regretted that they did not have an opportunity to learn to use some of the common hand tools while they were in school. Many expressed the opinion that, had they received such experiences while in school, they would now be able to effect considerable financial savings by being able to do some of the necessary repairs

TABLE I

TOTAL RESULTS OF QUESTIONNAIRES FROM
 FIFTY-FIVE PARENTS AND PATRONS
 ON THEIR INDUSTRIAL ARTS
 EXPERIENCES

Item	Yes	No
1. Have you had any experience with tools and materials?	26	29
2. Have you had any training in industrial arts?	9	46
3. Have you had, or do you have, any need for handcraft activities?	48	7
4. Did you, as a youth, have access to a home or school shop?	26	29
If the answer is yes, what type of work did you do?		
	Number	
A. Metal work		
Sheet metal	17	9
Bench metal	17	9
Machine shop	6	20
Arc welding or oxy-acetylene welding	18	8
Tooling	6	20
Foundry	4	22
Forging	8	18
B. Electrical work		
Low voltage wiring	10	16
Project making	19	7
House wiring	14	12
Radio and simple circuits	19	7
Appliance repairs	26	0

TABLE I (Continued)

Item	Yes	No
	Number	
C. Plumbing		
Gas piping	16	10
Water piping	11	15
Rough-in	5	21
Joint wiping	11	15
Sewage disposal	8	18
Others	12	14
D. Finishing		
Applying stain	25	1
Applying wood filler	21	5
Applying paint	26	0
Applying lacquer	22	4
Others	26	0
E. Wood work		
Bench or hand wood work	17	9
Machine wood work	5	21
Carpentry	25	1
Cabinet or furniture making	21	5
Wood turning	8	18
Others	14	12
F. Concrete work		
Drilling in masonry	7	19
Constructing benches	4	22
Constructing masonry walls	9	17
Pouring concrete floors	17	9
G. General work		
Braiding or weaving	15	11
General repairs	12	14
Leather craft	8	18
Home mechanics	10	16
Others	17	9

TABLE I (Continued)

Item	Yes	No
	Number	
H. Auto mechanics work		
Repairs (leak in inner tube or the like)	21	5
Ignition system	10	16
Body and fender	6	20
Overhauling and reconditioning engines	7	19
Motor tune up	9	17
Others	15	11

in and around the home, such as refinishing a piece of furniture, painting the house, and making minor repairs on the automobile. Many of the parents and patrons expressed a desire for a program of occupational guidance for secondary pupils. The backgrounds of these fifty-five parents and patrons were seemingly characterized by a lack of formal educational opportunities.

The positive responses as shown in Table II, ranged from a low of ten to a high of fifty-five on questions concerning industrial arts in the curriculum. The responses to the questionnaires, through the positive answers, revealed that, in the opinion of the respondents, the school should include in the curriculum an industrial arts program that will make a substantial contribution toward meeting the challenge of today's democratic society.

It should also be noted that the parents and patrons realized that more real activities, such as those offered through an industrial arts program, would make the curriculum more meaningful. The data revealed that of the fifty-five respondents, fifty-four believe that if industrial arts were taught in the school the student would better be able to serve the community.

According to Table II, it was revealed that ten respondents were able to make use of scrap metal found around the home and sixteen respondents were able to make useful articles for the home. The fact should not be overlooked that thirty-one realized that knowledge of home and shop mechanics is useful in making life enjoyable, economical and comfortable. It is also important to note that the children of eighteen respondents used their leisure time making useful articles for the home. The children of the respondents were able to learn how to economize by the construction of various articles, and gain experience through the use of tools and materials and by exercising their creative ability.

Table III shows the relationship between employment and prior experience with tools of the respondents. As shown by this table, twenty-nine percent of the fifty-five respondents have had some experience with tools and materials, twelve and five-tenths percent were refused

TABLE II

RESULTS OF QUESTIONNAIRE FROM PARENTS AND
PATRONS ON QUESTIONS CONCERNING
INDUSTRIAL ARTS IN THE
CURRICULUM

Item	Yes	No
1. Are you able to make any items that might prove useful in the home?	16	39
2. Do you make practical use of the scrap materials found in and around the home?	10	45
3. Do you believe that a student might better serve a community through practical knowledge of home and shop mechanics?	31	0
4. Do you believe that a student might better be able to serve the community if industrial arts were taught in the school?	54	0
5. Do you think modern education would be more useful if an industrial arts program were included in the total school program?	53	1
6. Do you feel that training in industrial education can promote better opportunity for workers?	41	0
7. Does your child use his leisure time making useful articles for the home?	18	37
8. Are you in favor of your son taking shop courses?	55	0
9. Are you in favor of your daughter taking shop courses?	36	20

employment because of low qualifications; eighteen and seven-tenths percent were refused employment because of their past work experience; eighteen and seven-tenths percent were refused employment because of their academic record of achievement; and fifty percent were never refused employment. Of the thirty-nine respondents who had no experience with tools and materials, fifty-one percent were refused employment because of low qualifications; twenty-eight percent were refused employment because of their past work experience; fifteen percent were refused employment because of their academic record of achievement; and five percent were never refused employment.

Of the total group of respondents, only eighteen percent were never refused employment. Further, this table shows that fourteen and six-tenths percent more of those not having experience with tools and materials were refused employment than those who did have experience with tools and materials. Fifty percent of the respondents who had experience with tools and materials were refused employment as compared with ninety-five percent of the respondents who did not have experience with tools and materials. This is an indication that the respondents who had training are in a more favorable condition to secure employment.

TABLE III
RELATION BETWEEN EMPLOYMENT AND EXPERIENCE
WITH TOOLS

Experience with tools and materials (wood, metal, electrical, plumbing, auto mechan- ic, concrete, finishing, and general work)	Reason for refusal			Total re- fused	Total never re- fused	Percentage of refusal of employ- ment
	Low Quali- fica- tion	Past work experi- ence	Academic record of achi- evement			
Had experience	2	3	3	8	8	50 %
Had no experience	20	11	6	37	2	95 %
Total	22	14	9	45	10	81.6 %

Number

16

39

55

Table IV indicates the relationship between employment and industrial arts courses taken in school. By studying this table, it will be found that out of fifty-five respondents only eighteen percent were never refused employment. Of the ten respondents who were not refused employment, eighty percent had taken industrial arts in school. There were only twelve and five-tenths percent of the nine respondents who had taken industrial arts while in school who were at one time or another refused employment. Of the forty-six respondents who took no industrial arts in school, ninety-five and six-tenths percent were refused employment. This seems to indicate that if those respondents who were refused employment had possessed training in industrial arts, the total number, who were refused employment may have been considerably smaller.

A study of Table V reveals that parents and patrons who had industrial arts training were in favor of their sons and daughters taking shop courses. The forty-six parents and patrons who did not have industrial arts training indicated that all boys should have industrial arts training. However, of this same group of respondents, only fifty-six percent were in favor of their daughters taking industrial arts courses. Of the grand total of parents and patrons who took industrial

TABLE IV
RELATION BETWEEN EMPLOYMENT AND INDUSTRIAL ARTS
COURSES TAKEN IN SCHOOL

Experience gained through industrial arts courses taken in school	No.	Refused employment	Never refused employment	Total	Percent refused employment
Took industrial arts	9	1	8	9	12.5%
Did not take industrial arts	46	44	2	46	95.6%
Total	55	45	10	55	81.6%

arts in school, one hundred percent were in favor of both their sons and daughters taking industrial arts, while of the grand total of parents and patrons who did not take industrial arts in school only seventy-eight percent were in favor of both their sons and daughters taking industrial arts courses. This seems to imply that those persons who have experienced industrial arts activities while in school are more cognizant of the values to be derived from such experiences by both boys and girls. Eighty-three and six-tenths percent of the grand total of responses from parents and patrons were favorable toward both sons and daughters taking industrial arts courses. This seems to indicate that the majority of parents and patrons want their sons and daughters to have the opportunity to take industrial arts courses.

Results of the Questionnaire
to Pupils

An observation of Table VI indicates that of the fifty-six pupils who made responses, twenty-four pupils had taken industrial arts courses and twenty-five at the time of the survey were taking at least one hour per day of shop work. Only nine of these pupils have access to home work shops, although thirty of the pupils were using their leisure time to make useful articles for

TABLE V
 PARENTS AND PATRONS HAD INDUSTRIAL ARTS AND
 OPINION AS TO CHILDREN TAKING
 SHOP COURSES

	In favor of son taking industrial arts		In favor of daughter taking industrial arts		Total favor- ing indus- trial arts for both sons and daughters		Percent of grand total favoring industrial arts for both sons and daughters	
	Yes	No	Total	Yes	No	Total		%
Parents who took industrial arts	9	0	9	9	0	9	18	100
Parents who did not take indust- rial arts	46	0	46	26	20	46	72	78
Total	55	0	55	35	20	55	90	83.6

the home. This table also shows that fifty-four pupils plan to finish high school, that nineteen plan to go to college and that twelve of these are interested in taking a trade course while in college. An observation of Table VI will also indicate that fifty-five pupils would like to have more experience with tools and materials. It seems apparent that experience in industrial arts training will meet many of the needs and desires of these pupils and improve their quality of living. The fact that a majority of these pupils do not plan to go to college nor seek training through a trade course is significant. If the school had an industrial arts program, these students would not be totally unprepared to make a successful living in this highly industrialized age and changing society.

The data in Table VII indicate that a small number of pupils have had experience in the major areas of industrial arts. Twenty-five pupils had experience with wood while twenty pupils had experience with metal projects.

The number having experiences in the six other industrial areas ranged between one and five inclusive. None of the pupils had experience with plumbing equipment. The majority of these pupils had their industrial arts training in the eighth grade. The responses show that

TABLE VI

PUPILS' INDUSTRIAL ARTS TRAINING AND FUTURE
OCCUPATIONAL INTENTIONS

	Yes	No
Have you had any training in industrial arts?	24	32
Did you, as a student, have at least one hour per day for shop work?	24	32
Do you have access to a workshop in your home?	9	47
Do you use your leisure time making useful things for the home?	30	26
Do you plan to finish high school?	54	2
Do you plan to go to college?	19	37
Are you interested in a trade course only?	12	44
Are you now considering your occupation?	14	42

the number of pupils with no experiences in the eight major areas range from a low of thirty-two in certain areas to a high of fifty-six in others. This is explained in part by the fact that the various communities from which these pupils came did not provide industrial arts experiences in the schools.

TABLE VII

PUPILS' EXPERIENCES WITH VARIOUS MATERIALS

	Experience	No Experience	Total
Wood	24	32	56
Metal	12	44	56
Book Binding	1	54	55
Leather	6	50	56
Electricity	4	52	56
Plastic	1	55	56
Pottery	0	55	55
Auto Mechanic	1	55	56
Plumbing	0	56	56

The communities of Hardin, Ames, Mosebluf, and Liberty have been consolidated into the Liberty Independent School District and there is not an industrial arts program in the Liberty Training School. Seemingly, these pupils will complete high school without any industrial arts training.

Relationship Between Responses Given by
Parents, Patrons, and Pupils

In trying to determine whether or not there is a relationship between the responses of the parents and patrons and the responses of the students, it was necessary to compare responses of identical questions asked of both groups. These questions were in regard to: experience with tools and materials; industrial arts experiences; accessibility to a home or school shop; and home mechanics.

It was found that forty-seven percent of the parents and patrons had experience with tools and materials. This leaves over one-half (fifty-three percent) having had no experiences whatsoever with tools and materials.

Of those respondents having had experience with tools and materials, the majority received this experience through the nature of their work or home-life rather than by formal training. There were nine individuals with formal training in the use of tools and materials. Five had experience with wood, three with metal and one with electricity. These facts follow the general trend and expectations. A possible explanation as to why so few parents and patrons had training in the areas mentioned above is because the majority of these individuals were trained at an earlier period, when adequate equipment and materials were at a minimum in many segregated schools.

In regard to the students experiences with various materials, it was found again that wood was the major type of material with which they had practical experience. Forty-three percent of the students had experience with wood; twenty-one percent of the students had experience using metal; eleven percent had experience using leather; seven percent had experience in electricity; and there was a small minority with experience in plastics, book-binding and auto mechanics.

It is apparent that the formal industrial arts experiences of parents and patrons have been limited. Only twenty-nine percent of the parents and patrons had any training in industrial arts in school or experience with tools and materials out of school. Eighteen percent of the responding parents and patrons did have some industrial arts training in school.

In regard to the students formal industrial arts training, it was found that forty-three percent have had industrial arts training. Thus, it is obvious more students than parents and patrons had formal training in industrial arts.

The parents and patrons were asked, "Did you, as a youth, have access to a home or school shop?" The responses revealed that forty-seven percent did have access to a home and school workshop whereas fifty-three percent did not.

The students responses to this same question revealed a smaller number of positive responses. Only twenty-nine percent of the students used a home or school workshop. Special notice should be called to these two figures, that is forty-seven percent of the parents and patrons having access to school or home workshops and twenty-nine percent of the students. Eight percent of these students had home workshops, the others received their experience in the school shop. A possible reason for the lower percentage of students than parents and patrons on the question of accessibility to a school shop is that there are situations where many schools are without industrial arts, such as Liberty Training High School at Liberty, Texas.

As was shown in Table II, twenty-nine percent of the parents and patrons responded positively to the question, "Are you able to make any items that might prove useful to the home?" Fifty-four percent of the students felt that they were capable of making useful items for the home. The school training, extensive course offerings, better equipment, better teachers, etc., contribute to greater productivity of youth in industrial arts. This explains, at least in part, why more students than parents and patrons are able to make useful items for the home.

CHAPTER III

PLAN FOR INDUSTRIAL EDUCATION

Subject matter content in industrial arts has been organized into large instructional areas based on industrial and life needs, for it has been proven impractical to teach the many hundreds of specialized industries. Metalworking, drafting, woodworking, electricity, plastics, graphic arts, auto mechanics, textiles, and ceramics represent large basic areas of modern industry, and are the nine types of industrial arts work most suited to courses in the senior high school.¹⁸

Public secondary education should provide every boy and girl the opportunity to work with the tools and materials of industry, thereby enabling them to acquire an understanding of our technological development. In the senior high school, emphasis is placed on the integration of all industrial processes, the development of technical skill and understanding, and the application of problem solving techniques in one or more of these basic areas.¹⁹

¹⁸Floyd Krubeck, "Role of Industrial Arts and Vocational Education in the School," Industrial Arts and Vocational Education, March 1957, p. 80.

¹⁹S. L. Coover, "Industrial Arts and General Education," Industrial Arts and Vocational Education, May 1960, p. 28.

In our modern industrial society every student needs to develop an understanding of the functions, technology, and occupational opportunities of industry. The industrial arts program provides the opportunity to study about industry, methods of communication through drawing and graphic arts, and the industrial and consumer uses of finished products, such as electrical devices and how power is developed. This body of knowledge is unique to industrial arts and should be included in the education of all youth.

Organization

It is recommended that the industrial arts department of the Liberty Training High School be organized on the general unit shop basis. The general unit shop is one in which the subject matter experiences are confined to a single field of industry such as woodworking, metalworking, printing, or electricity. Such shops are commonly identified as general metal, general wood, general electricity, etc. Schools which must have more than one shop to meet their industrial arts needs find this type of shop organization advantageous. With this type of organization, it is possible to rotate the students through several different shop areas, thereby securing many of the advantages of the comprehensive general shop,

and at the same time to equip each shop with adequate facilities for more advanced work. The general shop is in quite extensive use at the present.

Class Periods

State and local regulations set the length and hour of the school term at Liberty Training High School. The school year consists of thirty-six weeks and is divided into two semesters of eighteen weeks each. Each shop class is scheduled to meet five times per week. The shop class periods are fifty-five minutes in duration.

Method of Instruction

Those methods of instruction that are generally considered to be best for shop classes are: demonstration, group instruction, individual instruction, lecture, and illustration. The size of the class will have some bearing on the method of instruction to be used. The method to be used at Liberty Training High School should be selected according to the type of knowledge and skills that are to be taught to the pupils.

Class Size

It has been recommended by the Southern Association of Secondary Schools and the Texas State Board of Education that the size of each shop class should be no more

than twenty-four students. The local regulations must be respected in instances where requirements demand a different maximum or minimum.

Location, Size and Shape of Shop²⁰

School shops may be placed in separate buildings or in a wing of the regular school building. Separate shop buildings offer the advantage of lower insurance rates, cheaper construction and less interference with other school activities. The size of the school shop should be determined by the general rule of allowing a minimum floor area of fifty square feet per student. This figure is exclusive of storage space, tool room, finishing room, and planning center, and is useful for shops planned to accommodate twenty-five students or more. The shape of the school shop is most important. Long narrow rooms should be avoided, as they are uneconomical of space and inconvenient for instructional purposes. School shops should be rectangular in shape and have a proportion of approximately one to one and one-half or two. The width should not be less than twenty-four feet, preferably more. In building a new structure, the following criteria are of extreme value in the planning stage.

²⁰Roy Scantlin, Industrial Arts Handbook (Jefferson City, Missouri: Bulletin 7B, 1945), p. 92.

1. The building may be a separate building or in a wing of the regular school building.
2. A one floor structure is desirable.
3. Adequate outside opening doors should be provided for material and equipment to pass through.
4. Windows should be grouped on one side, preferably the north side to take advantage of the north light. Windows should not be spared.
5. Floors should be made to accommodate the shop area to be serviced. They should be made of a material which does not become slippery with wear.
6. Ceiling heights of twelve feet or more are desirable.
7. Walls in school shops should be finished with non-glossy material of high quality and of such colors as will give harmonious and pleasing appearance. If the walls are plastered, they should be painted a light tan or brown to a height of about forty to forty-eight inches from the floor. Above that line they should be painted flat white or light cream.
8. The laboratory should be provided with a drinking fountain. Washing facilities should be provided for each ten pupils in the shop.
9. There should be one master switch controlling all power equipment. There should be a switch controlling each power machine. There should be a light at bench height on machines where precision work is done.
10. Tool cabinets or tool rooms should be centrally located. Storage and supply rooms should be placed where the space is not as valuable as that of working space.

Shop Activities

Activities in industrial arts for the pupils of the Liberty Training High School should be centered around a group of projects which will arouse interest and provide opportunities for planning and learning the essential tool and machine processes. Students in the general unit shop should have the opportunity to make projects from well-thought-out plans of their own as well as those of others. It is the teacher's responsibility to see that these pupils get the basic skills which are taught in each lesson. Those related items of information which are necessary for growth and understanding in the development of skills should be paramount in the order of instruction.

Woodworking Activities

Wood is the most common medium of expression in school shop work. It has been, and continues to be, the major activity in the industrial arts curriculum. One reason woodworking courses are extremely popular is that wood is easily formed and worked. Wood is cheap and under normal conditions it is easily obtained. Wood is used extensively in building construction and the manufacture of many types of furniture. Woodworking activities may include designing and construction of some of the following:

Bookcases:

Open front
 Open front with drawer
 With glass doors

Book ends:

Plain, no base
 With moulded base
 Veneered

Benches:

Piano
 Telephone
 Boudoir
 Cobblers
 Home workshop

Boxes:

Jewelry
 Sewing
 Silverware
 Inlaid, for stationery
 Handkerchief, etc.

Cabinets:

Victrola or Radio, portable
 Radio, open front
 Television
 Pier

Chairs:

Simple kitchen or dining room
 Living room, upholstered
 Rockers

Costumers:

Plain, straight shaft
 Turned shaft
 Kiddie type, bird hooks
 Inlaid

Cupboards and China Closets:

Dutch
 Welsh
 English
 Corner

Taborets:

Four legged types
 Glued up bases
 Inlaid

Play Production:

Simple flats
 Flats with door or mirror
 Flat, irregular outline
 Simple stairs

Desk:

One drawer, sloping top
 Five drawer, knee hole
 Double front, with book
 rack
 Weymouth
 Secretaries
 Spinet

Garden Furniture:

Arbors
 Lawn cut outs
 Trellisses
 Picnic table
 Beach chairs
 Chairs

Stools:

Kitchen
 Kitchen, ladder type
 Kitchen, four legged
 Windsor
 Upholstered, rolled
 edge
 Upholstered, open
 top, webbing
 Upholstered, spring
 seat
 Upholstered, set in
 seat

Turned Projects:

Gavels
 Table lamps
 Mallets
 Candle sticks
 Stocking darner
 Rolling pin
 Potato masher
 Towel rack
 Nut bowls
 Pin trays
 Fruit bowls

Trays:

Straight outline
 Curved outline
 Novelty form
 Sick room, bed type
 Wall rack, straight
 corner

Tables:

Tilt top
 Butterfly
 Card
 End
 Coffee
 Tavern
 Console
 Sewing, drop leaf
 Telephone
 Drop leaf
 Vanity
 Library
 Davenport
 Night
 Trestle
 Clover leaf
 Candle stand
 Snake foot
 Hingham, round
 Brockline lamp

Miscellaneous:

Cedar chests
 Portable mirrors
 Portable mirrors,
 tilting
 Magazine racks
 Clock cases
 Poster beds
 Chest of drawers
 Tea wagon

Metalwork Area

The various fields of metalwork have played an important part in the development of civilization and are the foundation of modern industry today. Many of the metals, or their alloys, lend themselves to simple hot and cold processing and can be taught at all levels of industrial arts work. The metalwork activities should include the designing and making of projects selected from the following:

Boxes:

Mail
 Soap powder
 Glass top and shelf
 Tool
 Fishing tackle
 Match-box holder

Soft Metal Castings:

Paper weight
 Wall Plaques
 Door stops
 Fishing sinkers
 Book ends
 Model boat keels

Plant and Flower Holders:

Ivy bowl wall bracket
 Jardinieres
 Ferneries, floor type
 Suspended flower pot
 containers
 Floor stand, autumn
 foliage

Fireplace Equipment:

Andirons
 Tool holder
 Shovel
 Tongs
 Poker
 Screen
 Wood basket

Lamps:

Bridge
 Desk and table
 Night
 Extension
 Porch
 Pin-up

Tables and Stands:
(Continued)

Leaf top folder
 Tray top folder
 Tray top smokers
 Three legged
 refreshment
 Two tray smoker with
 table top

Copper, Aluminum and Silver:

Bar pins
 Bracelets
 Match box holder
 Ash trays
 Card trays
 Letter openers
 Platter holders
 Stationary holders
 Cigarette case
 Candle holder
 Book ends
 Models

Forging and Machine Shop:

Cold chisels
 Wrecking bar
 Auto tire changing irons
 Center punches
 Scribers
 Hammer heads
 Screw drivers
 Marking gauge
 Depth gauge
 Paper weight
 Drill press vise
 Stock for die

Tables and Stands:

Tile top
 Porch
 Floor stand
 Coffee

Miscellaneous:

Door knockers
 Foot scrapers
 Weather vanes
 Christmas tree holders

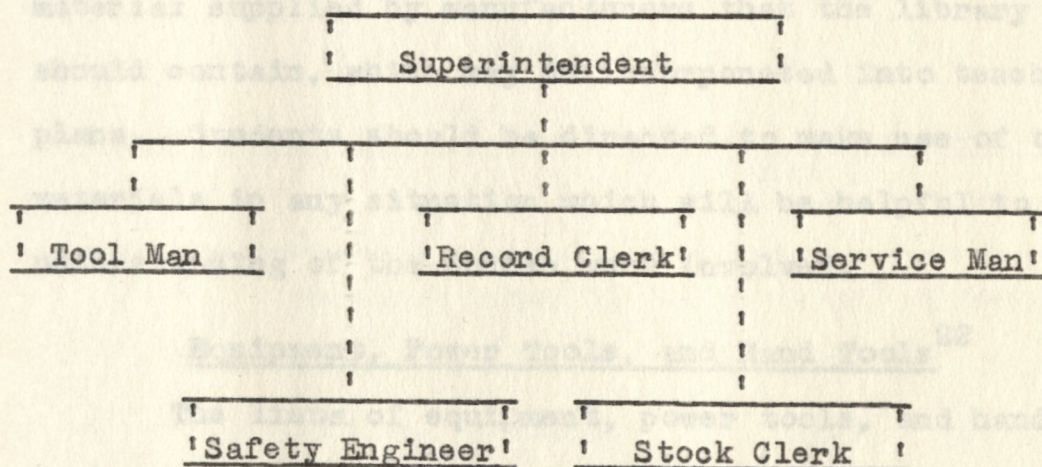
Electrical Area

No instructor should attempt to teach a course in electricity in such a way as to mislead the pupils into thinking of themselves as electricians. A general, practical outline of experiences should be organized to acquaint students with factors relating to electrical appliances of the simple kind. The electrical activities may be selected from the following:

1. Detect and replace blown fuse
2. Assemble and repair an attachment cord
3. Hook up doorbell and buzzers
4. Wire an extension for a lamp
5. Read the electric meter
6. Give first aid to the one who has received severe electrical shock
7. Install a radio set
8. Do simple house wiring
9. Test for defective radio tubes
10. Test for defective wiring
11. Test for defective television tubes
12. Install two-way switches
13. Install three-way switches
14. Repair electric irons
15. Repair electric curling irons
16. Repair hot plates
17. Make simple lamps

Student Personnel Organization

Shop control delegated to students is a useful teaching device. By delegating responsibilities to students, the teacher lessens his shop supervisory activities and, at the same time, this gives to the students a sense of importance and belonging. Duties are formulated and explained to the students so that they will know what is expected of them. They may be rotated through each of the various responsibilities. Each shop area should be organized in the following or a similar manner:²¹



Texts, Library and Reference Books

Textbooks should be provided for all pupils in each of the shop areas. The textbooks should include

²¹George Harold Silvius, Teaching Successfully the Industrial Arts and Vocational Subjects (Bloomington, Illinois: McKnight and McKnight Publishing Company, 1953), p. 79.

the essential information, tool processes, experiments, and projects which are vitally necessary to the specific course areas. The texts should be well written, well organized, and written so the students will have no difficulty in understanding the information contained therein. Each shop ought to keep a well selected supply of reference materials on hand. The modern industrial arts shop will maintain a well organized library where these reference materials will be kept. An adequate supply of books related to each area taught should be in the shop library. There is a wealth of reference material supplied by manufacturers that the library should contain, which may be incorporated into teaching plans. Students should be directed to make use of these materials in any situation which will be helpful to their understanding of the course work involved.

Equipment, Power Tools, and Hand Tools²²

The lists of equipment, power tools, and hand tools which follow have been designed for industrial arts work in a medium-sized high school. While these lists are not ideal in all respects, they have been

²²Equipment and Supplies for Industrial Arts, Vocational Education, Crafts and Fine Arts (Cleveland, Ohio: Brodhead-Garrett, 1960), p. 1-437; Roy Scantlin, Industrial Arts Handbook (Jefferson City, Missouri: Bulletin 7B, 1945), pp. 98-124; "Equipment and Supply List," Industrial Arts and Vocational Education, March 1956, pp. 30A-54A.

carefully prepared and they represent good planning practice. Those contemplating the building and equipping of a new shop, or the reorganization of an old one, may find these suggestions helpful.

The school or instructor should take the responsibility of seeing that the shop has an adequate supply of tools in each area taught. A student should not have to wait for the tool that he will need for completion of his work or project. The prices given here are list prices as of May 1960.

Woodworking Area

EQUIPMENT

Quantity	Items	Unit Price	Price
9	Benches, model ML 5	\$ 92.00	\$ 828.00
1	Chair, teacher	24.00	24.00
36	Stools, 18" high	6.30	226.80
5	Tables, planning, 30"x72"x32"	72.00	360.00
1	Cabinet, record	57.80	57.80
Total			\$1495.60

HAND TOOLS
POWER TOOLS

Quantity	Items	Unit Price	Price
1	Band Saw 20"	\$ 414.00	\$ 414.00
1	Circular Saw	327.95	327.95
1	Drill Press, Floor type, (with mortiser attachment)	425.00	425.00
1	Jig Saw	210.00	210.00
1	Jointer, 6"	215.00	215.00
1	Router	59.00	59.00
1	Sander, Portable	79.95	79.95
1	Sander, Belt	49.95	49.95
1	Sander, Disc	99.75	99.75
1	Spray painting outfit	79.90	79.90
2	Turning Lathe	249.50	499.00
1	Tool Grinder	131.25	131.25
1	Planer, 12"	417.50	417.50
Total			\$3003.75

HAND TOOLS

Quantity	Items	Unit Price	Price
2	Awl, Scratch, 3"	\$ 1.00	\$ 2.00
1 set	Bits, auger, 1/4" to 1" by 16ths	14.50	14.50
2	Bits, countersink, rosehead, 5/8"	.50	1.00
1 each	Bits, dowel, 3/8" and 1/2"	1.20	2.40
1 set	Bits, drill, straight shank, 1/16" to 1/2" by 64ths	30.00	30.00
1	Bits, Expansion, 7/8ths" to 3"	3.50	3.50
1 each	Bits, forstner, 1/4", 3/8", and 1/2"	3.25	9.75
1	Bit, Screwdriver, square shank, 3/8"	.85	.85
2 each	Bits, twist drill for wood to for brace, 1/6" to 1/4" by 16ths	3.70	7.40
1	Bit brace, ratchet, 10"	11.35	11.35
4	Bit brace, non-ratchet, 8"	6.90	27.60
3	Bit gauge	1.40	4.20
10	Brushes, bench	1.50	15.00

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
1	Brush, glue, 1"	1.00	1.00
5	Brushes, paint, 2"	1.25	6.25
3	Brushes, paint, 1 1/2"	.60	1.80
1	Brush, paint, 1"	.45	.45
1	Burnisher, oval, 6"	1.30	1.30
4	Cans, safety, one quart	.25	1.00
1 each	Calipers, spring, outside, solid nut, 6" and 10"	2.90	5.80
2	Calipers, spring, inside, solid nut, 6"	2.90	5.80
1	Carving set	6.10	6.10
1	Chisel, cold, 1/2"	.45	.45
2	Chisels, wood, 1 1/2"	2.95	5.90
5	Chisels, wood, 1"	2.45	12.25
5	Chisels, wood, 3/4"	2.30	11.50
1 each	Chisels, wood, 1/2", 3/8", 1/4", 1/8"	2.20	8.80

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
4	Clamps, steel bar, 36"	5.80	23.20
8	Clamps, steel bar, 48"	6.30	50.40
4	Clamps, carriage-maker, 4"	2.05	8.20
4	Clamps, carriage-maker, 6"	3.00	12.00
4	Compasses, pencil, 6"	1.00	4.00
3	Dividers, solid nut 10"	2.85	8.55
1	Dresser, grinding wheel	1.35	1.35
3	Drill, reciprocating	2.65	7.95
2	File, auger bit	.65	1.20
3	File, flat mill, bastard cut, 10"	1.50	4.50
3	File, half round, cabinet, rasp, 12"	3.65	10.95
3	File, half round, cabinet, 12"	2.80	8.40
3 each	File, extra slim taper, 4", 6", 8"	.35	3.15
6	Guage, marking, 6"	.90	5.40
2	Glass cutter	.45	.90

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
2	Gouges, outside ground, 1/2", 3/4"	3.20	12.80
2	Hacksaw, adjustable frame	3.75	7.50
1 each	Hammer, ball pein 16oz., 12 oz.	2.45	4.90
4	Hammer, nail, 16 oz.	3.50	14.20
4	Hammer, nail 12 oz.	3.05	12.20
1	Hammer, tack 5 Oz.	3.60	3.60
1	Level, 24"	3.15	3.15
6	Hand screws, adjustable, 6"	3.15	18.90
6	Hand screws, adjustable, 10"	6.00	36.00
4	Mallets, hickory, 3 x 5"	1.55	6.20
1	Mallets, rubber, 24 oz.	1.00	1.00
1 each	Nail set, 1/32", 1/16", and 3/32"	.45	1.35
2	Oil stone, combination, size 8" x 2" x 1"	2.65	5.30
20	Plane, jack, 14" smooth bottom	8.16	163.20

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
2	Plane, rabbet	6.62	13.24
3	Pliers, combination, 7"	.75	2.25
3	Pliers, side cutting, square jaw, 5"	2.70	8.10
2	Punches, center	.55	1.10
2	Putty knife	.75	1.50
1	Rule, folding	1.75	1.75
10	Rule, wood 24" x 1"	1.65	16.50
1	Saw, compass, 12"	1.20	1.20
4	Saw, coping, for 6 1/2" pin blades	.75	3.00
6	Saw, back, 12"	5.65	33.90
4	Saw, cross cut, 24", 11 point	8.55	34.20
4	Saw, cross cut, 24", 8 point	8.55	34.20
2	Saw, rip, 26", 6 point	8.55	17.10
4	Scraper, cabinet, 3" x 5"	.40	1.60
4	Screw driver, reg. pattern, 4"	1.05	4.20

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
4	Screw driver, reg. pattern, 6"	1.30	5.20
4	Screw driver, reg. pattern, 8"	1.60	6.40
2 pr.	Snips, tinnerns, straight, 3" cut	5.60	5.60
2 pr.	Snips, tinnerns, combination 3" cut	5.70	5.70
1	Soldering iron, electric, 1/2" tip	3.95	3.95
4	Square, combination, 12" blade	3.50	14.00
1	Square, sliding T-bevel, 10"	3.00	3.00
2	Square, steel, 16" x 24"	3.75	7.50
20	Square, try, 8" blade	2.50	50.00
1 set	Steel letters 1/4" set	3.50	3.50
1 set	Steel figures 1/4" set	4.00	4.00
1	Wrecking bar, 24"	2.20	2.20
1	Wrench, crescent, 8"	2.10	2.10

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
1	Wrench, monkey 6"	1.45	1.45
1	Wrench, stillson pipe, 12"	3.50	3.50
Total for Woodworking Area			\$ 5430.74

Metalworking Area

EQUIPMENT

Quantity	Items	Unit Price	Price
3	Benches, welding	\$ 57.50	\$ 172.00
9	Benches, metal	169.00	1521.00
36	Stools, 18" high	6.30	226.80
1	Cabinet, record	57.80	57.80
Total			\$1977.60

POWER TOOLS

Quantity	Items	Unit Price	Price
1	Grinder, heavy duty floor type	\$ 163.00	\$ 163.00
1	Hacksaw complete with motor, capacity 2 1/2" stock	210.00	210.00
1	Drill Press, complete with motor, floor type	135.00	135.00
1	Drill Press, complete with motor, bench type	121.00	121.00
1	Lathe, 6" x 32 1/2" bench model, back geared, screw cutting, complete with motor, tool holder, chuck, bits and dogs	895.00	895.00
1	Lathe, 12" x 72" floor model, back geared, screw cutting, complete with motor, quick change, chuck, tool holder, bits and dogs	1270.00	1270.00
1	Shaper 1/2" to 7" complete with vise, floor stand, tool holder, bits and guards	575.00	575.00

POWER TOOLS (Continued)

Quantity	Items	Unit Price	Price
1 set	Welding outfit, including one torch, three welding tips and one cutting tip, regulators with two pressure gauges, 25' of 1/4" hoses and connectors	117.00	<u>117.00</u>
Total			<u>\$ 3486.00</u>

HAND TOOLS

Quantity	Items	Unit Price	Price
1	Anvil, 100-lb., steel face and horn	\$ 48.75	\$ 48.75
4	Awls, scratch	1.00	4.00
12	Brushes, counter	.45	1.80
1	Calipers, herma-phrodite, 4"	6.25	6.25
2	Calipers, spring, inside, solid nut, 6"	2.55	5.10
4	Cans, oil 1/2 pint	.79	3.16
1 set	Chisels, cold set, sizes 1/4, 3/8, 1/2, 5/8, 3/4 inches	2.50	2.50

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
1 set	Chisel and punch set (6 tools in all)	3.05	3.05
2	Clamps, "C", 4"	2.05	4.10
2	Dividers, solid nut, spring type, 8"	3.55	7.10
1 set	Drills, high speed steel, straight shank, set 1/16" to 1/2" by 64ths	23.30	23.30
1	Drill, high speed combination counter sink, body diameter 3/16"	1.00	1.00
1	Emery wheel dresser No. 0	1.35	1.35
6	Files, double cut flat bastard, 10"	1.10	6.60
8	Files, single cut, 10" mill	.80	6.40
6	Files, round bastard, 8"	1.15	6.90
2	Files, round second cut, 6"	1.05	2.10
6	Files, flat mill, 4"	.50	3.00
6	Files, flat mill, smooth cut, 6"	.70	4.20

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
4	Files, swiss 3 cornered, 4" No.1	.85	3.40
2	Files, triangular, second cut, 8"	1.30	2.60
18	File handles	.20	3.60
1	Gauge, tap and drill	1.95	1.95
1	Gauge, screw, sizes 4 to 42, 30 degree pitch	2.85	2.85
1	Gauge, surface	3.05	3.05
1	Goggles, face shielding, 6"	3.95	3.95
12	Hack saw blades, 10", 32 teeth	.60	7.20
5	Hack saw frames, 10" adjustable, pistol grip handle	2.55	12.75
4	Hammers, ball pein, 16 oz.	2.70	10.80
2	Hammers, ball pein, 20 oz.	2.90	5.80
2	Hammers, cross pein, 16 oz.	2.65	5.30
1	Hammers, raising, 32 oz.	3.25	3.25
2	Hammers, riveting, 12 oz.	3.40	6.80

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
2	Hammers, soft face, 16 oz.	2.90	5.80
1	Level, 6" double plumb	6.05	6.05
2	Mallet, dogwood, framing	1.65	3.30
2	Mallet, 3" x 6", hickory	1.55	2.10
1	Mallet, raw hide, 1 1/2" x 3 1/2"	1.50	1.50
1	Micrometer, 1" with ratchet stop	14.25	14.25
1	Nippers, end cutting, 10" with removable blade	4.00	4.00
1 set	Pipe taps, 1/8", 1/4", 3/8", 1/2"	15.00	15.00
1 set	Pipe stock and dies, 1/8" to 1 1/4"	27.95	27.95
2 pr.	Snips, tinnerns, combination 3" jaw, 12 1/2" long	5.70	5.70
1	Snips, curved, 2 1/2" jaw, 12 1/2" long	3.95	3.95
2	Square, framing, 16" x 24"	4.80	9.60
1	Square, combination set	3.20	3.20

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
3	Square, try, steel, 6"	2.20	6.60
1	Tinners circumference rule, 36"	3.40	3.40
1	Wrench, monkey, 10"	2.15	2.15
1	Wrench, crescent, 8"	2.10	2.10
1	Wrench, socket set	35.60	35.60
2	Bending jig, flexo	4.30	8.60
1	Bar folder, 30"	200.00	200.00
1	Forming machine, slip roll 30" x 2"	125.00	125.00
1	Gas furnace, 2 burner	206.00	206.00
1 set	Hand groovers, 1 each No. 1, No. 2, No. 3	7.15	7.15
1	Punches, prick, 5 1/2"	.45	.45
1	Punches, solid, 3/8"	.70	.70
1	Rotary machine, combination with four sets of rollers for turning, burring, and bench stand	70.00	70.00

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
2	Pliers, combination, 8" with slip joint	1.05	2.10
1	Pliers, 6" round nose	3.50	3.50
2	Pliers, 6" slip joint	.75	1.50
2	Pliers, 7" side cutting	4.25	8.50
2	Punches 4" x 5/16" center	.55	1.10
1 set	Punches, hollow, 1/2", 5/8", 3/4", 1"	12.96	12.96
1 each	Punches, solid, 3/32, 1/8, 5/32"	.70	2.10
1 set	Rivet set, No. 4, 5, 6, 8	4.90	14.70
2	Rule, 12" steel	2.00	4.00
1	Rule, 24" steel	5.00	5.00
2	Screwdriver, regular pattern, 4"	.85	1.70
1	Screwdriver, regular pattern, 6"	.95	.95
1	Screwdriver, regular pattern, 8"	1.20	1.20

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
1	Screw plate, set, with taps, and dies, sizes 1/4", 5/16", 3/8", 7/16", 1/2", and 5/8", two stocks and one tap wrench, U. S. thread, set, complete with box container	32.95	32.95
1	Soldering coppers, No. 2 with handles, in pairs	2.70	2.70
1	Soldering iron, electric, 7/8" tip, 110 volt, AC current	5.15	5.15
1	Stake, blow horn	35.00	35.00
1	Stake, beak horn	62.00	62.00
1	Stake, candle mold	32.00	32.00
1	Stake, hollow mandrel, 40"	41.00	41.00
1	Stake, raising	20.00	20.00
1	Stake, holder plate	30.00	30.00
Total			\$1402.68
Total for Metal Area			6866.28

Electrical Working Area

EQUIPMENT

Quantity	Items	Unit Price	Price
6	Work bench with outlets, model ET 10, 6 ft. wide	\$ 354.00	\$ 1924.00
1	Chair, teacher	24.00	24.00
1	Desk, teacher	69.00	69.00
1	Bookcase	57.00	57.00
Total			\$ 2074.00

POWER TOOLS

Quantity	Items	Unit Price	Price
1	Lathe, engine 10" or 12" swing, 2 speed	\$ 895.00	\$ 895.00
1	Drill, table model	159.00	159.00
1	Coil, winder	20.00	20.00
1	Coil, spreader	12.95	12.95
1	Coil, taper	15.00	15.00
Total			\$1101.95

HAND TOOLS

Quantity	Items	Unit Price	Price
1 set	Bits, auger, 1/4" to 1" by 16ths	\$ 14.50	\$ 14.50
1	Bit, auger, 1 1/16", 18" long	2.30	2.30
1	Bit, expansion	2.55	2.55
1	Blowtorch, 1 qt. size	9.00	9.00
1	Compass saw	1.20	1.20
1	Drill, portable, electric	29.95	29.95
1	Drill, hand	9.20	9.20
24	Files	1.50	36.00
10	Hack saw frames, adjustable	2.55	25.50
6	Hammers, claw, 12 oz.	3.05	18.30
6	Hammers, machinist's ball pein	2.70	16.20
5	Pliers, gas, 6 1/2"	2.40	12.00
5	Pliers, side cutting, 6 in.	3.75	18.75
1 set	Punch, center, 1/4, 3/8, 1/3, and 5/8 in.	2.20	2.20

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
1	Reamer, burring 1/4 to 1 in.	3.55	3.55
12	Rules, zigzag 72"	1.60	19.20
1	Rule, tape 12 ft.	2.00	2.00
8	Screw drivers, 3"	1.05	8.40
8	Screw drivers, 5"	1.15	9.20
8	Screw driver, 8"	1.60	12.80
5	Snips, tinner's, combination, 3" jaw, 12" long	5.70	28.50
1	Solder dipper	1.55	1.55
1	Stock and dies, pipe threads, 1/2" to 1"	30.00	30.00
8	Vises, machinist's, 4"	30.60	244.80
2	Vises, pipe	13.60	27.20
1	Wrenches, ad- justable, 6"	2.12	2.12
1	Wrenches, ad- justable, 8"	2.55	2.55
1	Wrenches, pipe 10"	3.05	3.05
1 set	Wrenches, socket	19.64	19.64
1 set	Wrenches, combination	9.17	9.17

HAND TOOLS (Continued)

Quantity	Items	Unit Price	Price
6	Voltmeters	12.00	72.00
6	Ammeters	88.00	528.00
6	Electric motors	20.95	125.40
36	Doorbells	2.15	87.40
25	Buzzers	1.05	26.25
36	Pushbuttons	.25	9.00
6	Entrance switches	2.95	17.70
25	Snap switches, single pole	.25	6.25
25	Snap switches, three pole	.30	7.50
6	Angle braces	2.45	14.70
25	Mallets	1.00	25.00
6	Claw bars	2.20	13.20
1	Tube tester	125.00	125.00
1	Push-pull oscilloscope	129.50	129.50
1	R F signal generator	39.95	39.95
Total			\$ 1847.12
Total for Electrical Area			\$ 5023.07
Total for All Areas			\$17320.09

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to propose an industrial education program for Liberty Training High School at Liberty, Texas.

To attain this, certain questions were kept in mind, namely:

1. What are the understandings, interests and abilities of the students with relation to industrial arts in Liberty Training School?
2. How can industrial education aid in the improvement of the economic status of the community?
3. What should be the role of industrial education in the Liberty Training High School?
4. What should be the organization plan of such an industrial education program?

Summary

The basic data utilized in this study were collected through the survey method. Two questionnaires were prepared, one to be filled out by parents and patrons of students in Liberty Training High School--the other to be filled out by students in this school.

The questionnaire for parents and patrons consisted of sixteen questions and forty-seven items concerning mechanical activities classified under eight categories. They were: metal work, electrical work, plumbing, finishing, woodwork, concrete work, general work, and auto mechanic. Occupations engaged in by the adult respondents were fairly representative of the occupations in the Liberty area. However, the majority were employed in farming. Some of the respondents are employed on jobs which pay relatively high salaries, and many attributed this, at least in part, to industrial arts training.

The questionnaire for pupils consisted of twelve questions concerning industrial arts training, their future plans, and industrial areas in which pupils had worked and the kinds of materials used. Of the one-hundred-twenty-seven individuals selected, one-hundred-twelve, or eighty-eight percent, made returns.

Seven tables were prepared to reveal the findings and interpretations of the responses given by the one-hundred-twelve respondents. Approximately eighty-nine percent of the parents and patrons expressed the feeling that they have a need for handcraft activities, yet the majority of them have had no experience with tools and materials. In the opinion of the responding parents and

patrons as to adding industrial arts to the curriculum, the majority believe Liberty Training High School should include in its curriculum an industrial arts program. It was also revealed that a larger percentage of the parents and patrons were refused employment because of this lack of experience than were those who had experiences with tools and materials.

Approximately ninety-five percent of the respondents who had not taken industrial arts courses in school were refused employment and only fifty percent of those respondents who had taken industrial arts in school were refused employment. The opinions as to boys and girls taking shop courses expressed by parents and patrons were: all of the parents and patrons who had taken industrial arts were in favor of the boys and girls taking industrial arts courses; those who had not taken industrial arts wanted all the boys to take industrial arts but only fifty-six percent wanted their girls to take industrial arts courses.

Only twenty-four of the pupils responding had some training in industrial arts and a small percentage had access to a home workshop. The majority of the pupils plan to finish high school but only about thirty percent plan to go to college. There are only a small number of pupils having had experiences in the major

areas of industrial arts. As far as experiences with materials is concerned, it was found that most of the students have had experiences with wood and the fewest have had experiences with book-binding, plastics, and auto mechanic and none had experiences in plumbing and pottery.

It was suggested that the industrial arts department of the Liberty Training High School be organized on the general unit shop basis. A suggested list of equipment, power tools, hand tools, and projects are listed for three industrial areas. The areas are wood working, metal working, and electricity. It was also suggested that the three shop areas be equipped with adequate facilities for more advanced work. A floor plan for the three areas and an office was prepared and has been placed in the appendix. This should serve as a guide in planning the shop layout for the three areas. Also listed are some criteria which are of value in the planning stage of the building of a new structure.

Each shop ought to keep a well selected supply of reference materials on hand and these should be kept in the shop library. An adequate supply of books related to each area taught should be kept in the shop library.

Conclusions

To the extent that the sampling involved in this study is representative of the whole and the opinions expressed and facts collected are accurate, the following conclusions may be drawn from the study.

In view of the fact that the majority of the respondents have had no experience with tools and materials, it may be assumed that the parents and patrons did not have the opportunity or were not exposed to situations where those experiences with tools and materials were made available.

Learning takes place most effectively in response to the questions and problems identified by the individuals concerned; a situation in which the prospective learner has in mind his own welfare, interests and needs. Thus, it is apparent that the findings of this study suggest revision of the Liberty Training High School curriculum to include industrial education which will help youth to adjust to their vocational future and emerging adult status. These immediate concerns, as well as factors in determining the content of the curriculum, should comprise the major contributing source of the learning enterprises which make up the curriculum.

The findings of this study also suggest a shift in the character and content of the prevailing secondary curriculum. If one accepts the philosophy that the school is to train for vocational competence and meet personal needs and adjustment problems of youth so far as is practical, some consideration of vocational choice and placement is desirable during the secondary years. The findings show that the participating youth want more training in industrial arts. Surely, if the school is an agency to train youth and prepare them for life, the curriculum makers cannot overlook the desires and needs of these youth for vocational guidance.

Since the majority of the responding parents and patrons who were refused employment had no formal industrial arts training, and since over half of the responding parents and patrons who did have formal industrial arts training were not refused employment, it may be assumed that if more parents and patrons had been exposed to industrial arts training there would have been fewer who were refused employment.

It may be concluded that the inclusion of an industrial arts program in the school program as has been suggested by pupils, parents and patrons will not only enrich the school experiences of the pupils, but

the community as well. The findings of this study seem to suggest that a school program should be organized and developed which will provide youth with those guiding experiences which will enable them to adapt themselves to their present experiences so that they may be prepared for living in a changing democratic society. The members of the consolidated communities of Liberty High School desire that industrial education be included in the school program.

The general unit shop was suggested as the type of shop which the industrial arts department of Liberty Training High School should be based. With this type of shop organization, it is possible to rotate the students through several different shop areas, thereby securing many advantages of the comprehensive general shop, and at the same time provide adequate facilities for more advanced work. It would seem, however, if industrial arts is to be taught in any school, there should be certain minimum standards for equipment, power tools, hand tools and adequate facilities to house those areas.

4. That any future program of vocational preparation be based upon the kinds of jobs available in the consolidated school communities as well as other surrounding communities.

Recommendations

The principal, teachers and other school workers should have the insight and desire to achieve for the pupils in their care the best possible educational program, facilities and opportunities for the future. In order that this might be accomplished in the Liberty Training High School the following recommendations are made:

1. That some provisions be made for industrial education in the Liberty High School curriculum.
2. That adequate physical facilities including housing, equipment and supplies, be provided in order to offer a first class program of industrial arts at Liberty Training School.
3. That any industrial arts course offerings at this school include the following areas:
 - A. Woodwork
 - B. Metal work
 - C. Electrical work
 - D. Leathercraft
4. That there be set up in Liberty Training School a continuous and adequate system of guidance throughout the secondary years.
5. That any future program of vocational preparation be based upon the kinds of jobs available in the consolidated school communities as well as other surrounding communities.

6. That an industrial education program for adults, similar in nature to the day classes, be set up for those who are employed and desire further training in the industrial area.
7. That boys and girls in grades seven through twelve have at least one hour per day in shopwork for at least two years.

BIBLIOGRAPHY

BIBLIOGRAPHY

Books

- Bennett, Charles A. History of Manual and Industrial Education in the U. S. 1820-1920. Illustrated. The Manual Arts Press, 1926.
- Bennett, Charles A. History of Manual and Industrial Education, 1870 to 1917. Peoria, Illinois: The Manual Arts Press, 1917.
- Boellinger, Miray V. and Livingston, Helen. Methods of Teaching Industrial Subjects. New York: Industrial Teacher Training Section, New York State Department of Education, 1925.
- Bryan, Harold W. and Herrick, Ralph C. Vocational Education and Practical Arts in the Community School. New York: The McGraw-Hill Company, 1926.
- Douglas, J. H. and White in Ford Handwork.
Wichita, Kans. Wichita-Herrick Publishing Company, 1933.
- Ericson, Emanuel. Teaching Problems in Industrial Arts. Peoria, Illinois: The Manual Arts Press, 1927.
- Ericson, Emanuel. Teaching the Industrial Arts. Peoria, Illinois: The Manual Arts Press, 1928.
- Price, John F. Course Making in Industrial Education. Peoria, Illinois: Charles A. Bennett Company, 1919.
- Giachino, Joseph William. Course Construction in Industrial Arts and Vocational Education. Chicago: American Technical Society, 1926.
- Ross, Kenneth A. and Swin, Claude H. Tested Training Technicians. New York: Practice-Hall, Inc., 1931.
- Jackey, David Frederick. The Craftman Prepares to Teach. New York: The MacMillan Company, 1924.
- Karch, Randolph B. and Kestrovick, Edward S. Two-hundred-fifty Teaching Techniques. Milwaukee, Wisconsin: The Bruce Publishing Company, 1943.

BIBLIOGRAPHY

Books

- Bennett, Charles A. History of Manual and Industrial Education Up to 1870. Peoria, Illinois: The Manual Arts Press, 1925.
- Bennett, Charles A. History of Manual and Industrial Education, 1870 to 1917. Peoria, Illinois: The Manual Arts Press, 1937.
- Baellinger, Elroy N. and Livingston, Helen. Methods of Teaching Industrial Subjects. New York: Industrial Teacher Training Section, New York State Department of Education, 1951.
- Bryan, Harold M. and Wenrich, Ralph C. Vocational Education and Practical Arts in the Community School. New York: The MacMillan Company, 1956.
- Douglas, J. H. and Roberts, R. H. Units in Hand Woodwork. Wichita, Kansas: The McCormick-Mathers Publishing Company, 1955.
- Ericson, Emanuel. Teaching Problems in Industrial Arts. Peoria, Illinois: The Manual Arts Press, 1940.
- Ericson, Emanuel. Teaching the Industrial Arts. Peoria, Illinois: The Manual Arts Press, 1940.
- Friese, John F. Course Making in Industrial Education. Peoria, Illinois; Charles A. Bennett Company, 1940.
- Giachino, Joseph William. Course Construction in Industrial Arts and Vocational Education. Chicago: American Technical Society, 1954.
- Haas, Kenneth B. and Ewing, Claude H. Tested Training Techniques. New York: Prentice-Hall, Inc., 1950.
- Jackey, David Frederick. The Craftsman Prepares to Teach. New York: The MacMillan Company, 1944.
- Karch, Randolph R. and Estabrooke, Edward C. Two-hundred-fifty Teaching Techniques. Milwaukee, Wisconsin: The Bruce Publishing Company, 1943.

- Leighbody, Gerald B. Methods of Teaching Industrial Subjects. New York: Delmar Publishers, Inc., 1946.
- Mays, Arthur B. Principles and Practices of Vocational Education. New York: McGraw-Hill Book Company, Inc., 1948.
- McCarty, John A. Vocational Education: America's Greatest Resource. Chicago: American Technical Society, 1952.
- Newkirk, Louis V. Tests and Measurements in Industrial Education. New York: John Wiley and Sons, 1935.
- Newkirk, Louis V. The General Shop. Peoria, Illinois: The Manual Arts Press, 1927.
- Selvidge, Robert W. How to Teach a Trade. Peoria, Illinois: The Manual Arts Press, 1923.
- Silvius, George Harold. Teaching Successfully the Industrial Arts and Vocational Subjects. Bloomington, Illinois: McKnight and McKnight Publishing Company, 1953.
- Smith, Homer John. One Thousand Problems in Industrial Education. Minneapolis, Minnesota: University of Minnesota Press, 1931.
- Struck, Ferdinand Theodore. Creative Teaching. New York: John Wiley and Sons, Inc., 1938.
- Struck, Ferdinand Theodore. Foundations of Industrial Education. New York: John Wiley and Sons, Inc., 1930.
- Struck, Ferdinand Theodore. Methods and Teaching Problems in Industrial Education. New York: John Wiley and Sons, Inc., 1929.
- Wilber, Gordon Owens. Industrial Arts in General Education. New York: International Textbook Company, 1951.

Periodicals and Pamphlets

- American Vocational Journal. Washington, D. C.: American Vocational Association, 1956--1960.

- Definitions of Terms in Vocational and Practical Arts Education. Washington, D. C.: American Vocational Association, 1954.
- Democracy in School Administration. Washington, D. C.: National Education Association, 1949.
- Equipment and Supplies for Industrial Arts, Vocational Education, Crafts and Fine Arts. Cleveland, Ohio: Brodhead-Garrett, 1960.
- Industrial Arts and Vocational Education. Milwaukee, Wisconsin: The Bruce Publishing Company, 1954-1960.
- Industrial Arts in Education. Washington, D. C.: American Vocational Association Publication, 1955.
- Practical Arts Bulletin 7B, The Industrial Arts Handbook. Jefferson City: Missouri State Department of Education, 1945.
- School Shop. Ann Arbor, Michigan: Prakken Publication, 1954-1960.
- School Shop Lumber. Ashville, North Carolina: Hardwood Corporation of America, 1957.
- The Industrial Arts Teacher. American Industrial Arts Association, 1956-1960.
- Welder's Vest Pocket Guides. Troy, Ohio: Hobert Brothers Company, 1957.

Unpublished Material

- Allen, Carnie E., "An Industrial Education Program for Sam Houston Elementary and Secondary School." Unpublished Master's Thesis, Prairie View Agriculture and Mechanical College, Prairie View, Texas, 1952.
- Cheney, Cecil W., "A Proposed Industrial Arts Program for Harry P. Harding High School of Charlotte, North Carolina." Unpublished Master's Thesis, University of Tennessee, Knoxville, Tennessee, 1950.
- Kiger, Robert Vernon, "A Study of the Possibilities of Including Industrial Arts in the Whitney Elementary School, Grades Three Through Eight." Unpublished Master's Thesis, North Texas State College, Denton, Texas, 1950.

Luchsinger, Leland B. "A Proposed Curriculum for Industrial Education in the Beaumont Independent School System." Unpublished Master's Thesis, Agriculture and Mechanical College of Texas, Arlington, Texas, 1950.

Waller, John M. "A Proposed Course of Study for Everett High School Industrial Arts Department, Maryville, Tennessee." Unpublished Master's Thesis, University of Tennessee, Knoxville, Tennessee, 1951.

VISA

Allen Francis Salomon

Born: June 3, 1930, Liberty, Texas

Education: Our Mother of Mercy Elementary School, Liberty, Texas, 1937-1940; Liberty Training High School, Liberty, Texas, 1940-1943; Prairie View A. & M. College, 1943-1944; Texas Southern University, Houston, Texas, Summer 1944; Prairie View A. & M. College, summers of 1949, 1950, 1949, 1950.

Experience: Mechanization and Industrial Arts Teacher, Dunbar Junior High School, San Antonio, Texas, 1948 to present. Industrial Maintenance Teacher, Evening Classes St. Philip Junior College, San Antonio, Texas, 1937 to present.

APPENDICES

APPENDIX A. Questionnaire 84

APPENDIX B. Flight Plan 80

VITA

Allen Francis Melonson

Born: June 3, 1930, Liberty, Texas

Education: Our Mother of Mercy Elementary School, Liberty, Texas, 1937-1945; Liberty Training High School, Liberty, Texas, 1945-1949; Prairie View A & M College, 1950-1954; Texas Southern University, Houston, Texas, Summer 1956; Prairie View A & M College, summers of 1957, 1958, 1959, 1960.

Experience: Mathematics and Industrial Arts Teacher, Dunbar Junior High School, San Antonio, Texas, 1956 to present. Industrial Education Teacher, Evening Classes St. Philip Junior College, San Antonio, Texas, 1957 to present.

A SUGGESTED PROGRAM OF VERTICAL EDUCATION

FOR LIBERTY TRAINING SCHOOL

APPENDIX A. Questions 84

APPENDIX B. Floor Plan 90

For Parents and Patrons

Name _____ Occupation _____

Address _____ Date _____

Directions: Indicate your selection by placing a check (x) mark in the parentheses. Check Yes or No.

- | Yes | No | |
|-----|-----|---|
| () | () | 1. Have you at any time in the past been refused employment? |
| () | () | 2. In applying for employment, what was the reason for rejection or refusal? |
| () | () | a. Low qualification |
| () | () | b. Past work experience |
| () | () | c. Academic record of achievement |
| () | () | 3. In what area or for what type of work were you applying? |
| () | () | a. Metal work |
| () | () | b. Electrical work |
| () | () | c. Plumbing |
| () | () | d. Concrete work |
| () | () | e. Carpentry |
| () | () | f. Auto mechanics |
| () | () | g. Others |
| () | () | 4. Have you had any experience with tools and materials such as (except those which apply)? |
| () | () | a. Wood |
| () | () | b. Metal |
| () | () | c. Plastic |
| () | () | d. Leather |
| () | () | e. Cement mixtures |
| () | () | f. None of these |

A SUGGESTED PROGRAM FOR INDUSTRIAL EDUCATION

FOR LIBERTY TRAINING SCHOOL

QUESTIONNAIRE

For Parents and Patrons

Name _____ Occupation _____

Address _____ Date _____

Directions: Indicate your selection by placing a check (x) mark in the parenthesis. Check Yes or No.

- | Yes | No | |
|-----|-----|--|
| () | () | 1. Have you at any time in the past been refused employment? |
| () | () | 2. In applying for employment, what was the common cause for rejection or refusal? |
| () | () | a. Low qualification |
| () | () | b. Past work experiences |
| () | () | c. Academic record of achievement |
| () | () | 3. In what area or for what type of work were you applying? |
| () | () | a. Metal work |
| () | () | b. Electrical work |
| () | () | c. Plumbing |
| () | () | d. Concrete work |
| () | () | e. Carpentry |
| () | () | f. Auto mechanics |
| () | () | g. Others |
| () | () | 4. Have you had any experience with tools and materials such as? (check those which apply) |
| () | () | a. Wood |
| () | () | b. Metal |
| () | () | c. Plastics |
| () | () | d. Leather |
| () | () | e. Cement mixtures |
| () | () | f. None of these |

5. Have you had any courses in school in industrial arts (manual training or manual arts) such as,
- () () a. Wood work
 - () () b. Metal work
 - () () c. Auto mechanics
 - () () d. Electrical work
 - () () e. Plumbing
 - () () f. Mechanical drawing
 - () () g. Others
6. Did you, as a youth, have access to a home workshop?
- () ()
7. If your answer is yes to either of the above two questions, what type of work did you do?
- A. Metal
- () () a. Sheet metal
 - () () b. Bench metal
 - () () c. Machine shop
 - () () d. Arc welding or oxyacetylene welding
 - () () e. Tooling
 - () () f. Foundry
 - () () g. Forging
- B. Electrical work
- () () a. Low voltage wiring
 - () () b. Project making
 - () () c. House wiring
 - () () d. Radio and simple circuits
 - () () e. Appliance repairs
 - () () f. Others
- C. Plumbing
- () () a. Gas Piping
 - () () b. Water piping
 - () () c. Rough in
 - () () d. Joint wiping
 - () () e. Sewage disposal
 - () () f. Others
- D. Finishing
- () () a. Applying stain
 - () () b. Applying wood filler
 - () () c. Applying paint
 - () () d. Applying lacquer
 - () () e. Others

- () () E. Wood work
 - () () a. Bench or hand woodwork
 - () () b. Machine woodwork
 - () () c. Carpentry
 - () () d. Cabinet or furniture making
 - () () e. Wood turning
 - () () f. Others

- () () F. Concrete work
 - () () a. Drilling in masonry
 - () () b. Constructing masonry wally
 - () () c. Pouring concrete floors
 - () () d. Others

- () () G. General work
 - () () a. Braiding or weaving
 - () () b. General repairs
 - () () c. Leather craft
 - () () d. Home mechanics
 - () () e. Others

- () () H. Auto mechanics work
 - () () a. Repair (leak in inner tube or assemble tire)
 - () () b. Ignition system
 - () () c. Body and fender
 - () () d. Overhauling and reconditioning engines
 - () () c. Motor tune up

- () () 8. Do you believe that a student might better serve a community through practical knowledge of home and shop mechanics?

- () () 9. Do you believe that a student might better be able to serve the community if industrial arts were taught in the school?

- () () 10. Are you in favor of your son taking shop courses?

- () () 11. Are you in favor of your daughter taking shop courses?

- () () 12. Do you think modern education would be more useful if an industrial arts program were included in the total school program?

- () () 13. Do you feel that training in industrial education can promote better opportunity for workers?
- () () 14. Have you, or do you have any need for handicrafts?
- () () 15. Are you able to make any items that might prove useful in the home?
- () () 16. Do you make practical use of the scrap materials found in and around the home?

Name _____

Grade _____

Address _____

Directions: Read each question carefully, then make a check (x) in the parenthesis of your choice.

- | Yes | No | |
|-----|-----|---|
| () | () | 1. Are you a high school student? |
| () | () | 2. Have you had any training in industrial arts? |
| () | () | 3. Did you, as a student, have at least one hour per day for shop work? |
| () | () | 4. If the answer is yes, check below the materials you worked with: |
| () | () | Wood |
| () | () | Metals |
| () | () | Plumbing |
| () | () | Auto mechanics |
| () | () | Leather |
| () | () | Plastics |
| () | () | Electricity |
| () | () | Book binding |
| () | () | 5. Would you like to know more about tools and how to use them? |
| () | () | 6. Do you have access to a work shop in your home? |
| () | () | 7. Do you, as a student, use your leisure time making useful things for the home? |

A SUGGESTED PROGRAM FOR INDUSTRIAL EDUCATION
FOR LIBERTY TRAINING SCHOOL

QUESTIONNAIRE

For Students

Name _____ Sex _____ Date _____

Grade _____ Address _____

Directions: Read each question carefully, then make a check (x) in the parenthesis of your choice.

- | Yes | No | |
|-----|-----|---|
| () | () | 1. Are you a high school student? |
| () | () | 2. Have you had any training in industrial arts? |
| () | () | 3. Did you, as a student, have at least one hour per day for shop work? |
| | | 4. If the answer is yes, check below the materials you worked with? |
| () | () | Wood |
| () | () | Metal |
| () | () | Plumbing |
| () | () | Auto mechanics |
| () | () | Leather |
| () | () | Plastic |
| () | () | Electricity |
| () | () | Book binding |
| () | () | 5. Would you like to know more about tools and how to use them? |
| () | () | 6. Do you have access to a work shop in your home? |
| () | () | 7. Do you, as a student, use your leisure time making useful things for the home? |

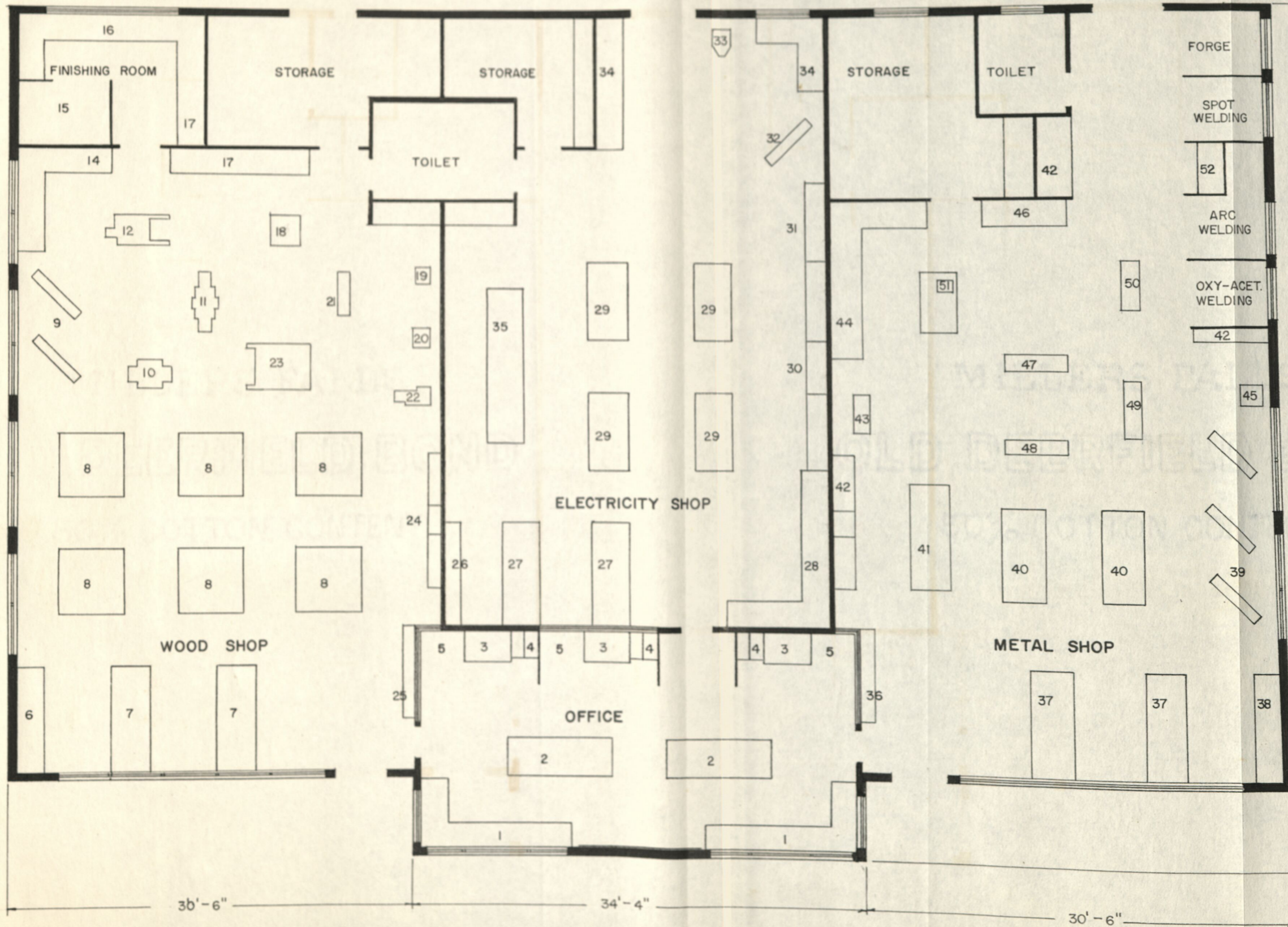
- () () 8. Do you plan to finish high school?
- () () 9. Do you plan to go to college?
- () () 10. If the answer is yes, are you interested in a trade only?
- () () 11. Are you now considering your future occupation?
- 12. If the answer is yes, which of the following areas would you prefer?

- () () Wood work
- () () Electricity
- () () Plumbing
- () () Metal work
- () () Auto mechanics
- () () Plastics
- () () Book Binding

22. TOOL CASE
 23. TOOL STORAGE
 24. WORKBENCH
 ELECTRICITY SHOP
 25. TOOL CASE
 26. PLANNING TABLE
 27. PROJECT STORAGE
 28. WORKBENCH
 29. TOOL STORAGE
 30. TYPING TABLE
 31. LAMP
 32. WALL SHELF
 33. WORKBENCH - LOCKERS BELOW
 34. WORKING TABLE
 METAL SHOP
 35. TOOL CASE
 36. PLANNING TABLE
 37. PROJECT STORAGE
 38. STAIRS, METAL
 39. WORKBENCH
 40. TOOL STORAGE
 41. WORKBENCH
 42. WORKBENCH - LOCKERS BELOW
 43. WALL SHELF - FLOOR TYPE
 44. WORKING BENCH
 45. STAIRS, METAL
 46. TOOL CASE
 47. WORKBENCH
 48. WORKBENCH - LOCKERS BELOW
 49. WALL SHELF - FLOOR TYPE
 50. WORKING BENCH
 51. STAIRS, METAL
 52. TOOL CASE
 53. WORKBENCH
 54. WORKBENCH - LOCKERS BELOW

FLOOR PLAN

SCALE 1/8" = 1'-0"



OFFICE

1. STORAGE CABINETS
2. WORK TABLES
3. TEACHER'S DESKS
4. FILE CABINETS
5. CHAIRS

WOOD SHOP

6. PROJECT STORAGE
7. PLANNING TABLES
8. WORKBENCHES
9. LATHE
10. PLANER, 12"
11. JOINTER, 6"
12. BAND SAW, 20"
13. WORKBENCH - LOCKERS BELOW
14. GLUEING TABLE
15. SPRAYING BOOTH
16. DRYING TABLE
17. PROJECT STORAGE
18. MITRE BOX
19. DRILL PRESS
20. SANDER, DISC
21. SANDER, BELT
22. JIG SAW
23. CIRCULAR SAW
24. TOOL STORAGE
25. BOOK CASE

ELECTRICITY SHOP

26. BOOK CASE
27. PLANNING TABLES
28. PROJECT STORAGE
29. WORKBENCHES
30. TOOL STORAGE
31. TESTING TABLE
32. LATHE
33. DRILL PRESS
34. WORKBENCH - LOCKERS BELOW
35. DEMONSTRATION TABLE

METAL SHOP

36. BOOK CASE
37. PLANNING TABLES
38. PROJECT STORAGE
39. LATHES, METAL
40. WORKBENCHES
41. STAKE BENCH
42. TOOL STORAGE
43. GRINDER
44. WORKBENCH - LOCKERS BELOW
45. DRILL PRESS - FLOOR TYPE
46. SOLDERING BENCH
47. SHAPER, METAL
48. METAL BRAKE
49. SQUARING SHEARS
50. POWER HACK SAW
51. DRILL PRESS - BENCH TYPE
52. COOLING TANK