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A STUDY OF INDUSTRIAL ARTS PROGRAMS  
IN NEGRO HIGH SCHOOLS OF TEXAS

THESIS

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## CHAPTER I

### INTRODUCTION

#### Introduction to the Problem

The education of the Negro youth of Texas has received much attention within recent years. Better school buildings have been provided, better equipment furnished, and the curriculum has been broadened. In the larger schools, industrial arts is being included in the curriculum, and many educators believe that industrial arts will help to better equip the Negro for living in this society and will eventually help to raise the standards of living of the Negro race. The extent to which industrial arts is included in the school curriculum and made available to Negro students furnishes a fertile field for research with respect to determining the types of industrial arts programs, housing facilities, equipment, and qualifications of the industrial arts teachers in the Negro schools.

#### Statement of the Problem

The purpose of this study is to determine the extent to which industrial arts is taught in the Negro high schools of Texas, the number of pupils enrolled in the schools, the types of programs offered,



the amount and kind of equipment provided for teaching industrial arts, and the qualifications of the teachers.

### Limitation of the Study

This study was limited to an investigation of forty-three Negro high schools in Texas which include industrial arts in the curriculum and which have classes in this subject area.

### Sources of Data

The data for this study were obtained from the literature concerning the standards with respect to industrial arts as set forth in state bulletins,<sup>1</sup> through a questionnaire which was sent to industrial arts teachers in participating schools, and through personal interviews with various Negro teachers in the field.

### Method of Procedure

After the problem was selected, the first step, after extensive reading with reference to the problem was done, was the formulation of a questionnaire which was designed to gather information and data believed to be needed in the study. After the preliminary study, six phases of an industrial arts program believed to be pertinent to the study were selected:

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<sup>1</sup> Texas State Department of Education, Standards and Activities of Supervision, Bulletin 507, 1948-1949, pp. 128-132.

1. Types of industrial arts programs.

General shop.

Unit shop.

2. Facilities provided for the teaching of industrial arts.

Buildings.

Tools.

Materials.

3. Information concerning the student body.

Enrollment in industrial arts.

Number of students.

Number of classes.

4. Information concerning the procurement and distribution of tools and materials used in industrial arts.

Budget for finances.

Materials furnished by the school or the students.

5. Information concerning class organization and procedure used in the industrial arts programs.

5. Information concerning the types of projects made by the pupils enrolled in industrial arts.

After the questionnaire was developed, it was submitted to a graduate class in industrial arts for suggestions which would clarify and strengthen the instrument.<sup>2</sup>

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<sup>2</sup> A copy of the questionnaire is included in the Appendix.

The next step in the investigation was to secure the names and locations of the Negro high schools in the State of Texas which include industrial arts in the regular curriculum. A study was made of the list of accredited high schools in the Public School Directory for 1950-1951 which included industrial arts in their offerings.<sup>3</sup> Sixty Negro schools were listed in this directory as including industrial arts in the curriculum. Postal cards were prepared and mailed to the superintendents of each of these schools requesting the names of the industrial arts teachers in each of the Negro schools. Twenty-nine of the superintendents returned the cards with the names of the industrial arts teachers employed in these schools. A questionnaire was mailed to each of these industrial arts teachers. Only eleven of the questionnaires were returned. This number was not considered as sufficient for continuing the study. Thereafter, personal visits were made to thirty-two of the original schools selected and personal interviews were held with the superintendent, the principal, or the industrial arts teachers in each of these schools. Forty-three questionnaires were completed in this manner and furnished data for the study.

### Organization of the Study

Chapter I contains the introduction to the study, the sources of data, method of procedure, and definitions of terms. The types of

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<sup>3</sup>Texas Education Agency, Public School Directory, 1950-1951, Bulletin 512, pp. 204-275.

offerings and the types of programs offered—unit shop or general shop—and types of projects employed are discussed in Chapter II. The facilities provided for teaching industrial arts, including housing and equipment, are given attention in Chapter III. Information and data concerning the student body and enrollment in the schools are presented and discussed in Chapter IV. Chapter V is concerned with the procurement and distribution of materials used in industrial arts in the Negro schools included in the study. The various types of class organization used in the industrial arts classes are treated in Chapter VI. Chapter VII contains data and information concerning the qualifications and training of the industrial arts teachers in the Negro high schools included in the study. In Chapter VIII the types of offerings, the student enrollment, class organizations, the qualifications and professional training of the industrial arts instructors in the Negro high schools of the study are compared with data and standards concerning industrial arts programs in high schools for white students in the State of Texas. A summary, conclusions, and recommendations comprise the subject matter for Chapter IX.

#### Definition of Terms

"Industrial arts" has been defined as that phase of education which deals with industry, its organization, materials, occupations,

processes, products, and with the problems resulting from the industrial and technological nature of society.<sup>4</sup>

A "unit shop" is one equipped to teach only one phase of industrial arts, such as machine shop, welding, woodwork, crafts, or drawing. Such a program is more specialized than the general shop program.

"A general industrial arts program" is one wherein several phases of industrial arts are taught at the same time, and generally in the same room. It may include activities in any phase of shop work and drawing. For example, a general shop for woodworking is one in which a number of woodworking units are taught in the same class, such as benchwork, cabinet making, and pattern making.

"Qualifications" as employed in this study denotes the amount of training and experience of the industrial arts teacher.

"Housing facilities" denotes the type of building and amount of space and auxiliary facilities provided for instruction in the industrial arts.

"Equipment" refers to the amount and kind of tools and equipment furnished by the school for instruction in industrial arts.

"Power equipment" is that equipment which is operated through mechanical means.

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<sup>4</sup>Gordon O. Wilber, Industrial Arts in General Education, p. 2.

"Hand tools" are those tools which are used by the pupils in industrial arts which do not require the use of any outside force such as electricity.

"Projects" are the objects or problems which pupils undertake to make or solve in the industrial arts program.

#### Related Studies

The literature in the field of industrial arts was studied to determine the nature or number of related studies in this field. This investigation failed to disclose any recent or related study.

## CHAPTER II

### THE INDUSTRIAL ARTS PROGRAM IN THE NEGRO HIGH SCHOOLS OF TEXAS

One of the stated purposes of this study was to investigate the various phases of industrial arts taught in the Negro high schools of Texas. Another purpose of the investigation was to ascertain the types of industrial arts programs with reference to whether the unit industrial arts program or the general industrial arts program was predominantly used. The purpose of the present chapter is to present the information obtained from the questionnaires and the interviews with Negro instructors regarding these phases of the study.

#### Types of Industrial Arts Programs

Three types of industrial arts programs are recommended by the Texas State Department of Education. They are (1) laboratory of industries, (2) general shop, and (3) the unit shop.<sup>1</sup> "Laboratory of industries" is a term applied to that type of industrial arts program in which several phases of industrial arts are taught at the same time.

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<sup>1</sup> Texas State Department of Education, Industrial Arts Programs, Bulletin 389, 1938, p. 16.

The units of work are exploratory in nature, and the work is most generally offered to first-year students to give them a general knowledge and understanding of the industrial arts program. Usually four phases of industrial arts are taught, such as mechanical drawing, woodwork, metal work, and electricity, in which the student must spend nine weeks in each of the units taught. This type of program provides thirty-six weeks of exploratory experiences and students taking this work are usually required to take industrial arts for two full terms, or thirty-six weeks.

"General shop" is a term applied to that type of industrial arts program in which several phases of industrial arts may be in progress at the same time in the same room. It is more specialized than the laboratory of industries because the pupil may spend eighteen weeks or more in any of the phases taught in an industrial arts program, whereas in the laboratory of industries type of program the student can spend only nine weeks in any one subject. A general shop for woodworking will usually include equipment for bench woodwork, cabinet making, wood-turning, and pattern making, and classes in each of these are usually taught at the same time. A general industrial arts program can and may include several activities in any phase of shop work and drawing. The advantages of such an industrial arts program have been stated as follows:



1. Greater variety of industrial manipulative and constructive experiences for the pupils.
2. Greater economy; lower per capita costs.
3. More interest on the part of the students.
4. Guidance values, as a finding course.<sup>2</sup>

The disadvantages of the general shop industrial arts program somewhat offset its advantages. They have been summarized as follows:

1. Instructional problems are more complicated and difficult.
2. Difficult to find adequately prepared teachers.<sup>3</sup>

The unit method of teaching industrial arts usually provides instruction in only one phase of industrial arts, such as machine shop, woodwork, welding, crafts, or drawing. This type of shop is much more specialized than the general shop or the laboratory of industries, and it is recommended for high school students. In such a program, a student has the opportunity to specialize in some type of skill which may challenge his abilities and which he may desire to use later as a basis for specialized skills in some vocation or occupation. Instructional problems in the unit industrial arts shop are not so complicated as those wherein a number of courses are taken at the same time. Not all industrial arts instructors are prepared to teach in all phases of the industrial arts work included in a general program;

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<sup>2</sup>E. Davis, "Trends in Methods, Organization, and Selection of Subject Matter for the General Shop," Industrial Arts and Vocational Education, XXXIX (January, 1937), 25.

<sup>3</sup>Ibid.

teachers usually are not as difficult to obtain for unit industrial arts work as for the general industrial arts program.

In this study of the industrial arts programs in the Negro high schools of Texas, attention was also directed toward the type of programs that are used in the schools in which industrial arts is taught. Of the forty-three schools represented in the study, thirty-four of them, or 76.7 per cent, reported the use of the unit type of industrial arts program.

Types of Units Taught in Industrial Arts  
Programs in Forty-three Schools  
That Were Included in the Study

Attention was also directed in this study to the different phases of industrial arts taught as units in the industrial arts departments of the Negro high schools. There are at least eight different phases which may be taught, and they are as follows: (1) general woodwork, (2) drawing, (3) metal work, (4) foundry, (5) carpentry, (6) automobile mechanics, (7) electricity, and (8) general crafts. Each of these phases is subdivided into divisions and possible units to be developed in the classroom. The following outline presents recommendations concerning the industrial arts classes in woodwork:

- I. General Woodwork. I, II, III, and IV.
  - A. Proposed units for Woodwork I.
    1. Rough carpentry.
    2. Bench work.
    3. Home repair at school.
    4. Home repair at home.

- B. Proposed units for Woodwork II.
  - 1. Finish carpentry.
  - 2. Cabinet bench work.
  - 3. Carving.
  - 4. Home repair at school.
- C. Proposed units for Woodwork III.
  - 1. Designing and planning.
  - 2. Basic woodworking machines.
  - 3. Woodturning.
  - 4. Home repair.
- D. Proposed units for Woodwork IV.
  - 1. Designing and planning.
  - 2. Mill room practices.
  - 3. Woodturning.
  - 4. Home repair.<sup>4</sup>

The foregoing organization of instructional units in woodwork is typical of that of the other divisions or units. General drawing usually includes units in freehand sketching, freehand, isometric, freehand perspective, cabinet, machine, electrical, architectural, topographical, etc. Metal work usually includes units in machine shop, ornamental iron, sheet metal, forging, welding, and moulding and casting. The units in electricity usually include auto electrical wiring, power and house wiring, communications, electrical machinery, and electrical appliances.<sup>5</sup> The above units indicate that the industrial arts courses are planned to provide learning experiences which are believed to be directly related to the needs and interests of the pupils.

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<sup>4</sup>Texas State Department of Education, Industrial Arts Programs, Bulletin 389, October 15, 1938, pp. 101-109.

<sup>5</sup>Ibid., pp. 70-83.

Data taken from the questionnaires answered by instructors in the industrial arts programs in Negro high schools participating in the study regarding the types of units taught are shown in Table 1.

TABLE 1  
UNITS OF INDUSTRIAL ARTS TAUGHT IN FORTY-THREE  
NEGRO HIGH SCHOOLS IN THE STATE OF TEXAS

Phase of Industrial Arts Taught	Number of Units
Woodwork . . . . .	34
Drawing . . . . .	27
Metal work . . . . .	9
Foundry . . . . .	4
Carpentry . . . . .	9
Automobile mechanics . . . . .	6
Electricity . . . . .	8
General crafts . . . . .	5

The data presented in Table 1 show that thirty-four schools, or 100 per cent of those using the unit plan instead of the general shop program included woodwork in their programs. Twenty-nine of the respondents, or 85 per cent, reported that drawing was also taught. Since a knowledge of drawing is a prerequisite for woodwork, the fact that both of these are the most in use is not surprising. Nine of the

respondents, or 21.6 per cent, reported that units in carpentry and metal work also were taught. Eight respondents, or 33.4 per cent, reported that units in electricity were taught. Six of the schools, or 17.6 per cent, had units in automobile mechanics; five, or 14.7 per cent, in general arts and crafts; and four, or 11.7 per cent, in foundry.

### Types of Projects Made by the Students

The selection of projects for the pupils enrolled in the industrial arts classes is an important phase of the instruction. One of the laws of learning is that a pupil learns faster when he is interested in his project and when it has some meaning for him.<sup>6</sup> A requirement of democratic living and teaching is that the pupil have some participation in the planning and selection of work units to be used by him.<sup>7</sup> These laws and principles of learning, if applied in the selection of the industrial arts projects to be made in the industrial arts shop, give the students a choice in the selection of a project suited to their individual needs and interests and some part in the decisions as to what to make. Mays and Casberg state that, "after all, the end of shop

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<sup>6</sup>J. Murray Lee and Dorris May Lee, The Child and His Curriculum, p. 172.

<sup>7</sup>Ibid., p. 250.

teaching is not well-made projects, but rather, well-taught pupils."<sup>8</sup> Hence, the manner in which a project is selected is an important part of the entire instructional process.

In the survey of industrial arts programs in Negro high schools included in this study, attention was directed to the manner in which shop projects were selected. Data taken from the questionnaires show that the instructors select the types of projects to be made in twenty-six, or 62.3 per cent, of the schools. In sixteen of the schools, or 37.7 per cent, the pupils are not required to follow the teachers' selection of projects altogether.

Modification of the teacher-selected project, however, is indicated by the replies to the next question: "Are students permitted to make projects selected by the students and approved by the instructor?" Forty of the respondents, or 93 per cent, reported that the students were permitted to select projects with the approval of the instructor. Only three of the schools did not follow this practice.

The respondents were asked to designate the chief sources used by the classes for securing plans and projects. Data presented in Table 2 show this information.

The data in Table 2 indicate that the students in the industrial arts classes in the Negro high schools showed little initiative in

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<sup>8</sup>Arthur B. Mays and Carl R. Casburg, School-Shop Administration, p. 132.

TABLE 2

SOURCES OF PLANS AND IDEAS FOR INDUSTRIAL ARTS  
PROJECTS IN TWENTY-ONE NEGRO HIGH  
SCHOOLS IN TEXAS\*

Source	Number of Teachers Using This Source
Catalogues . . . . .	8
Children . . . . .	2
Community . . . . .	2
Class . . . . .	2
Course of study . . . . .	1
Textbooks . . . . .	17
Bulletins . . . . .	1
Exhibits . . . . .	1
Furniture . . . . .	8
<u>Homecraft Magazine</u> . . . . .	2
Visits to homes . . . . .	1
Magazines (in general) . . . . .	13
Newspapers . . . . .	2
Original . . . . .	1
Pamphlets . . . . .	10
<u>Popular Mechanics Magazine</u> . . . . .	2
<u>Popular Science Magazine</u> . . . . .	1
Project books . . . . .	16

TABLE 2—Continued

Source	Number of Teachers Using This Source
Plans from CSD . . . . .	4
Sample drawings . . . . .	1
Surveys . . . . .	1

\*Twenty-two of the respondents did not furnish this information.

original design in selecting plans and ideas for industrial arts. Project books were mentioned by sixteen of the respondents as a source, and pamphlets were mentioned by ten of the respondents. Only one respondent reported the use of original designs. The students in the industrial arts classes, it is indicated, were, for the most part, content to follow the suggestions of the project books and the textbooks in their selection of projects.

An analysis of the data presented in this chapter indicates that a large majority of the Negro high schools in Texas have a very limited industrial arts program. Automobile mechanics and electricity, which stress subject matter used in the everyday life activities of the pupils, were offered in only a small number of the schools. Likewise, metal work is not taught to any extent; the great demand at the present time for workers in these fields indicates that the Negro schools are not fully meeting their responsibilities to their pupils and to the communities which they serve.



The findings of the phases of this study presented in this chapter may be briefly summarized as follows:

1. Two types of industrial arts were reported as used in teaching industrial arts in the forty-three Negro high schools participating in the study. They are the general industrial arts program and the unit program in industrial arts.
2. Thirty-four, or 76.7 per cent, of the Negro high schools used the unit industrial arts program.
3. Units in woodworking were taught in all of the schools; drawing units were taught in 85 per cent of the schools; units in metal work and carpentry, in 26.1 per cent; electricity, in 23.4 per cent; automobile mechanics, in 17.6 per cent; general crafts, in 14.7 per cent; and foundry was taught in 11.7 per cent of the schools.
4. In the selection of projects to be made in the majority of the schools, the practice of letting the student select the project, subject to the approval of the teacher, was followed.
5. Little originality in thought or creative ability was shown by the students in the industrial arts classes in the Negro high schools with their sources of ideas and their plans for projects; the majority of them were content to select their projects from the textbook or from project books.

### CHAPTER III

#### FACILITIES PROVIDED FOR TEACHING INDUSTRIAL ARTS IN THE NEGRO HIGH SCHOOLS OF TEXAS

Another purpose of this investigation was to study the facilities provided by the different Negro high schools for teaching industrial arts. The purpose of this chapter is to present the data and information obtained from the questionnaires concerning these facilities.

##### Types of Buildings and Space Available for Teaching Industrial Arts

There are many differences of opinion concerning the best location of an industrial arts shop in the school building. In some schools the shop has been placed in basements or on the ground floor of the building. Others have been placed in a separate building in order to avoid the noise and dust that come from the shop, especially where wood and metal classes are taught.

One factor that should be given consideration in the location of an industrial arts shop is sufficient working area for the pupils. In a laboratory of industries or in a general industrial arts shop where a number of classes are working at the same time, there is special

need for adequate space. According to Newkirk, five to six boys is the generally accepted number per instructional division.<sup>1</sup> In a class of students working in a general industrial arts shop equipped for woodwork, metal work, electrical work, and automobile mechanics, adequate space must be provided for twenty-four boys if these units are taught simultaneously. The location of the shop and the amount of space provided, therefore, are important factors to consider in the planning and organizing of an industrial arts shop.

These factors of location and space were considered in the investigation of the industrial arts program in Negro high schools participating in this study. The data taken from the questionnaires indicated that in twenty-eight of the schools the industrial arts shops were housed in a separate building from the main building. Fifteen of the respondents reported that the industrial arts shops were located in the main buildings. In the consideration of the space allotted for the industrial arts shops, attention was given to the total number of square feet per shop, the number of pupils taking industrial arts in the individual shops, and the average number of square feet per student.

The range in the number of square feet per shop was from 120 to 12,000. On the surface, these figures indicate a wide range in the sizes of the shops. A breakdown of the size of the shops in comparison to the number of pupils taking industrial arts, however,

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<sup>1</sup>Lewis O. Newkirk, Organizing and Teaching the General Shop, p. 88.

indicates no great disparities. In the school which had only 120 square feet of space, there were only ten pupils enrolled in industrial arts. The average number of square feet per student in this school was twelve, whereas the school which had 12,000 square feet of floor space and an enrollment of 435 pupils in industrial arts had an average of only 27.5 square feet per pupil. Seven of the industrial arts shops in the schools had floor space per pupil ranging from 21.0 to 28.8 square feet, and six of the industrial arts shops had from thirty to forty square feet per pupil. The average floor space was 25.5 square feet per pupil enrolled in industrial arts.

If all the pupils taking industrial arts were in the shop working at the same time, the foregoing amount of average floor space for the pupils would be far below the recommended minimum. Mays and Casberg, in discussing the size of industrial arts shops, state that "fifty square feet per pupil should always be regarded as the minimum and never the ideal size for a shop, and for classes of 20 or less pupils the minimum should not fall below 60 or 70 square feet per pupil."<sup>2</sup> Only four of the Negro high schools, however, had one class in industrial arts per day, and these taught woodwork in which only hand tools were used. The average space per pupil was insufficient even on this basis. The other schools in which more daily

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<sup>2</sup>Mays and Casberg, op. cit., p. 10.

classes in industrial arts are taught increased the amount of average floor space per pupil according to the number of classes and according to the amount of floor space available. For example, a school which had forty-five pupils taking industrial arts had an amount of average floor space per pupil of 26.6 square feet if all of the students were in the same class, but this was not true: there were four classes daily with an average of a little better than ten students per class. Obviously, these ten students had sufficient average floor space to meet minimum requirements for average floor space per pupil in industrial arts classes.

On the basis of the above figures, no great differences are apparent in the size of the industrial arts shops of the Negro high schools in proportion to the number of pupils using them.

#### Types of Equipment Provided for Industrial Arts Instruction in the Negro Schools of the Study

The type of equipment provided for industrial arts instruction was another important factor in the organization of an industrial arts program. According to Mays and Casberg, the following factors should be taken into consideration in determining the nature of industrial arts equipment: (1) the nature of the course or courses, (2) the maturity of the pupils, (3) the size and location of rooms, and (4) the

probable amount of money available, both for original purchase and for replacements and maintenance.<sup>3</sup>

Obviously, no one person can make up a list of equipment that will serve all schools. The immediate needs of the people and of the community will determine the choice of equipment, but, according to Newkirk, the equipment should be balanced between power and hand tools, with the amount depending on individual needs, and the type of program operating in each school. Newkirk states the following principles in regard to equipment for the industrial arts:

In order to achieve the purpose for which composite general shop is intended, the work must be so organized and conducted that each pupil will get experience in all activities represented. This necessitates a balanced equipment among the various activities and classroom procedures that will insure systematic use of all equipment every day and progressive movement of individual students from one area to another. No larger mistake could be made in setting up a composite general shop than to spend most of the equipment funds for machines, leaving an inadequate amount for a balanced selection of hand tools.<sup>4</sup>

The value of adequate hand tools has been discussed by Scantlin as follows:

In the introduction of industrial arts work, hand tools are generally regarded as being of more importance than power tools. This is especially true where finances do not permit an elaborate or complete layout of equipment. A given sum spent for hand tools will go much farther than

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<sup>3</sup>Ibid., p. 34.

<sup>4</sup>Newkirk, op. cit., p. 88.

if spent for power tools, and the tools thus secured will provide for a larger number of students and a wider spread of activities. Power tools, however, increase and enlarge the scope of the work that can be done, but they also increase the hazards.<sup>5</sup>

While no attempt was made in this study to compare the equipment in the industrial arts shops in the Negro high schools of Texas with recommended standards, such standards were kept in mind in the analysis of the data concerning the equipment in the industrial arts shops. The data concerning this equipment, as taken from the questionnaires, reveal that thirty-four of the industrial arts shops were equipped with power tools. Fifteen of the shops, or 35 per cent, did not have power tools for woodworking. Since all of the schools offering industrial arts had woodworking classes, it is obvious that some of the schools had inadequate equipment. This statement is substantiated by numerous comments written in by the different respondents; four respondents stated specifically that the industrial arts shops needed more power tools for woodworking courses.

An even greater shortage of power tools for metal work was indicated by the data. Nine respondents stated that the industrial arts shops were equipped with power equipment for metal work and thirty-one indicated that the shops were not equipped properly for this type of work; however, the data in Table 1 revealed that only nine schools offered unit courses in metal work and three schools offered metal

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<sup>5</sup>Roy Scantlin, Industrial Arts Handbook, Bulletin No. 7B, State Department of Education of Missouri, 1945, p. 28.

work in general shop. The small number of metal classes offered in the industrial arts programs could possibly be due to this indicated lack of power tools necessary for carrying on such work.

The opinion of the Negro instructors was asked concerning the amount of necessary hand tools required for each phase of work included in the industrial arts program. Thirty of the respondents, or 69.7 per cent, reported that the schools in which they were teaching, in their opinion, were equipped with the necessary hand tools required for each phase of the program. Twelve of the respondents, or 27.6 per cent, answered in the negative, and a number of comments written in on the questionnaires returned by the respondents emphasized the lack of necessary hand tools. Two instructors commented that they needed more hand tools for metal work, two stated that they needed more hand tools for woodworking, and one instructor commented that he needed "more tools of all kinds."

Inquiry was next directed to the necessary benches required for the different types of industrial arts shops. Each instructor was asked whether or not, in his opinion, the shop in which he taught was adequately equipped with the necessary benches for each phase of work included in the program. Twenty-seven of the instructors, or 26.7 per cent, reported that they thought the shops were adequately equipped with benches, while sixteen, or 37.3 per cent, indicated



inadequate equipment for this phase of the program. A number of the industrial arts shops, therefore, were reported to have inadequate equipment for hand tools and for benches.

Another important factor in the industrial arts program is storage space for materials used in the program, such as lumber and finishing materials.<sup>6</sup> It is more economical to buy materials in quantities than to purchase them just as needed. Every school with an industrial arts program, therefore, needs sufficient space for the storage of necessary materials in order to operate efficiently. Attention, accordingly, was directed in the questionnaires with respect to the opinions of instructors regarding the adequacy of the storage space for materials for industrial arts classes in the various schools. The data reported by the respondents show that twenty-one instructors, or 48.8 per cent, thought that the industrial arts shops in which they were teaching had adequate storage space, while twenty-two, or 51.2 per cent, believed that the schools had inadequate space for storage of necessary materials. Three teachers wrote in comments stating that they needed more space for the storage of necessary lumber.

Adequate locker space for the pupils' personal belongings and for their work projects is also a necessity in an industrial arts shop, if the administration of the industrial arts program is efficient.

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<sup>6</sup>Mays and Casberg, op. cit., p. 11.

Since the pupils in the majority of the schools are required to furnish or pay for materials used in projects, these projects are peculiarly personal property. There should be sufficient storage space provided for them in the industrial arts shop. When queried regarding the amount of storage space available for materials used in the industrial arts programs, the respondents in the study revealed that only twelve schools, or 27.6 per cent, had sufficient space. Thirty of the respondents, or 72.4 per cent, reported that the industrial arts shops had insufficient storage space. Reference to individual questionnaires indicated that the schools with the largest amount of floor space were the ones reporting adequate locker space. For example, the Booker T. Washington School in Houston, Texas, with an area of 12,000 square feet for industrial arts education, was reported as having adequate storage space for materials and also adequate locker space.

Separate finishing rooms are designed for the use of students in finishing completed projects. Twenty of the respondents, or 46.5 per cent, reported that the industrial arts shops had finishing rooms, while twenty-two, or 51.5 per cent, of the respondents stated that the schools were not equipped with finishing rooms. One respondent did not give this information. Only thirteen of the respondents, or 65 per cent, indicated finishing rooms or indicated that the rooms in which they taught were of adequate size.

The location of the shop is another important factor in the overall study of an industrial arts program.<sup>7</sup> Power equipment, hammering, sawing, and forging create noise. Most schools, because of these reasons, prefer to house the industrial arts shops in a separate building. As previously indicated in this study, twenty-eight of the participating schools were reported as having the industrial shops located in separate buildings apart from the main school building. One question was included in the questionnaires designed to gather information concerning the location of the industrial arts shops when they were included as part of the main building. In answer to this question, two respondents stated that the shops were located in the basement, and thirteen reported that the shops were located on the first floor of the building. No respondent reported that the industrial arts shop was located on the second floor of the building.

Participation in the industrial arts activities requires physical work and long hours, in many instances. The pupils soil their hands and need facilities for washing them. Toilet facilities, also, are required to keep the pupils from having to go to and from other buildings during periods of instruction or work. A query to the participating schools regarding wash basins and toilet facilities elicited the information that twenty-four of the shops, or 55.6 per cent, had such facilities located in the industrial arts shop. Eighteen of the

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<sup>7</sup>Ibid.

respondents, or 44.4 per cent, reported that they did not have these facilities in the industrial arts shop; and fifteen respondents, or 83.3 per cent, stated, however, that the facilities were located near-by. Only five respondents, or 11.1 per cent of the total number participating, reported that wash basins and toilet facilities were not located either in the industrial shops or near-by.

The nature of the work carried on in industrial arts classes makes good lighting facilities a necessity. Machine work, tedious drawing exercises, and work with power or precision tools calls for adequate lighting systems. In answer to the question, "Do you believe that the industrial arts shop has adequate lights?" thirty-six of the respondents, or 83.7 per cent, reported that they thought the shops had adequate lighting systems.

With respect to ventilation, thirty-nine of the respondents, or 90.6 per cent, stated that they thought the shops were poorly ventilated. Three schools, in the opinions of the respondents, lacked proper ventilating facilities. One respondent failed to fill in the information blanks concerning this phase of the housing facilities.

Hand tools and other small equipment were reported to be kept in closed tool panels in twenty-seven, or 62.7 per cent, of the Negro high school industrial shops. Nine of the respondents, or 20.9 per cent, reported that tools were kept in open tool panels in the industrial arts shops. Eight of the respondents did not give this information.

One question was included in the questionnaire which was designed to gather information concerning the amount of library material available for use in the industrial arts program. Twenty-six of the respondents, or 60.4 per cent, reported that the schools in which they taught had an adequate supply of books for this purpose. Seventeen schools, or 39.6 per cent, reported that they lacked sufficient books for an adequate industrial arts program. Twenty-eight, or 65.1 per cent, of the schools had the library materials available in the industrial arts shops, but fifteen, or 34.8 per cent, of the schools did not follow this practice.

The findings of this phase of the study are as follows:

1. The majority of the Negro high schools have their industrial arts shops in separate buildings apart from the main building, while the schools with industrial arts shops located in the main building either have them located on the first floor or in the basement.
2. The amount of square feet of floor space provided for the industrial arts shops in the participating Negro high schools varies in wide degree in accordance with the size of the schools. The amount of average floor space available per pupil, however, does not vary drastically in the large majority of instances.
3. Thirty-five per cent of the industrial arts shops in the Negro high schools do not have adequate power tools for woodworking.

4. All of the schools included in this study offering unit courses in metal work were equipped with power equipment for this type of instruction; the schools in which metal work is taught in general industrial arts programs do not have adequate equipment.

5. Sixty-nine per cent of the instructors reported that the schools in which they teach, in their opinion, had sufficient hand tools for each phase of industrial arts taught.

6. The number of necessary benches for each phase of industrial arts taught was believed adequate, in the main, because 62.7 per cent of the respondents answered questions concerning this phase of the study in the affirmative.

7. Only 27.6 per cent of the respondents reported that the schools had sufficient storage space for materials used in the industrial arts programs.

8. More than 50 per cent of the schools included in the study lacked finishing rooms for their industrial arts shops.

9. Wash basins and toilet facilities were available in 55.6 per cent of the industrial arts shops in the Negro high schools participating in the study.

10. Thirty-six respondents, or 83.7 per cent, expressed the opinion that the industrial arts shops had adequate light for all phases of the industrial arts program.

11. Thirty-nine, or 90.6 per cent, of the respondents stated that the industrial arts shops were adequately ventilated.

12. Hand tools and other small equipment were reported to be kept in closed tool panels in 62.7 per cent of the shops.

13. Twenty-six of the respondents, or 70.4 per cent, reported adequate library materials were available for the industrial arts program, and 65.1 per cent of the schools had the library materials located in the industrial arts shops.

# CHAPTER IV

## THE STUDENT BODY AND ENROLLMENT IN THE NEGRO SCHOOLS OF TEXAS WITH INDUSTRIAL ARTS PROGRAMS

Attention in this study was directed to the number of students enrolled in the Negro high schools which afford an industrial arts program, to the number of boys and girls taking industrial arts, and to the number of classes taught daily in this field. The purpose of the present chapter is to present data obtained from the questionnaires concerning these phases of industrial arts programs in the Negro high schools in Texas.

### Number of Pupils Enrolled in Participating Negro High Schools in Texas

Table 3 presents data obtained from the questionnaires answered by respondents from the Negro high schools. As shown in the table, data are presented for forty schools. Three of the respondents did not supply this information when they returned the questionnaires.

There was a range in enrollment from fifty pupils to 1,013 pupils. Thirty-two of the forty schools evidenced an enrollment of fewer than 500 pupils, and four schools were reported as having an



TABLE 3  
 SCHOLASTIC ENROLLMENT IN FORTY\* NEGRO  
 HIGH SCHOOLS WITH INDUSTRIAL  
 ARTS PROGRAMS

Number of School						Scholastic Enrollment
1	.	.	.	.	.	50
2	.	.	.	.	.	59
3	.	.	.	.	.	60
4	.	.	.	.	.	100
5	.	.	.	.	.	125
6	.	.	.	.	.	135
7	.	.	.	.	.	136
8	.	.	.	.	.	175
9	.	.	.	.	.	181
10	.	.	.	.	.	203
11	.	.	.	.	.	221
12	.	.	.	.	.	250
13	.	.	.	.	.	250
14	.	.	.	.	.	254
15	.	.	.	.	.	256
16	.	.	.	.	.	265
17	.	.	.	.	.	300
18	.	.	.	.	.	308

TABLE 3—Continued

Number of School						Scholastic Enrollment
19	.	.	.	.	.	328
20	.	.	.	.	.	329
21	.	.	.	.	.	329
22	.	.	.	.	.	350
23	.	.	.	.	.	350
24	.	.	.	.	.	350
25	.	.	.	.	.	350
26	.	.	.	.	.	350
27	.	.	.	.	.	375
28	.	.	.	.	.	428
29	.	.	.	.	.	480
30	.	.	.	.	.	448
31	.	.	.	.	.	455
32	.	.	.	.	.	500
33	.	.	.	.	.	576
34	.	.	.	.	.	638
35	.	.	.	.	.	700
36	.	.	.	.	.	750
37	.	.	.	.	.	750

TABLE 3—Continued

Number of School						Scholastic Enrollment
38	.	.	.	.	.	1,000
39	.	.	.	.	.	1,013
40	.	.	.	.	.	1,000

\*Information was not available  
for three of the Negro schools.

enrollment of fewer than 100 pupils. Median enrollment for all of the schools, therefore, was 328.5 pupils. Three comparatively large schools with enrollments of 1,000 pupils or more were included in the schools with industrial arts programs.

Analysis of the data in Table 3 indicates that the majority of the schools have sufficient scholastic enrollment to sustain and justify an adequate program of industrial arts.

The number of boys enrolled in the Negro high schools and the number of boys enrolled in industrial arts classes are shown in Table 4. As indicated in the table, only three of the schools had fewer than fifty boys enrolled. Eleven schools reported enrollments ranging from fifteen to ninety-nine boys, while twenty schools reported enrollments ranging from 106 to 175 boys. The number of boys enrolled in six of the schools ranged from 200 to 280, and the number ranged from 320 to 380 in three schools, and four of the schools enrolled

TABLE 4

TOTAL NUMBER OF BOYS ENROLLED IN FORTY-ONE\*  
 NEGRO HIGH SCHOOLS WHICH HAVE INDUSTRIAL  
 ARTS PROGRAMS, AND TOTAL NUMBER OF  
 BOYS ENROLLED IN SUCH PROGRAMS

Number of School	Number of Boys Enrolled	Number of Boys Enrolled in Industrial Arts
1	15	10
2	25	20
3	26	20
4	50	20
5	60	20
6	68	25
7	75	26
8	75	28
9	76	29
10	85	30
11	99	30
12	106	35
13	109	38
14	111	40
15	120	40
16	125	40

TABLE 4—Continued

Number of School	Number of Boys Enrolled	Number of Boys Enrolled in Industrial Arts
17	125	44
18	125	45
19	127	46
20	132	47
21	134	49
22	144	50
23	155	50
24	160	52
25	166	52
26	175	39
27	175	60
28	175	60
29	175	75
30	175	80
31	200	86
32	200	100
33	225	110
34	275	120
35	280	125

TABLE 4—Continued

Number of School	Number of Boys Enrolled	Number of Boys Enrolled in Industrial Arts
36	320	146
37	350	162
38	380	200
39	450	260
40	476	275
41	483	400

\*Two schools did not furnish the information on either enrollment in the school or enrollment in industrial arts.

between 450 and 483 boys. These figures concerning enrollment show that a sufficient number of boys were enrolled to justify industrial arts courses.

The extent to which the Negro high schools of the study actually provided this phase of education and the number of boys enrolled in the industrial arts classes are shown in the figures of Table 4. As shown by these data, the enrollment of boys in industrial arts classes ranged from ten boys in the smallest school to 400 in the largest school. In twenty-one of the schools the enrollment in industrial arts classes was fewer than fifty students, and it was fewer than 100 in

thirty-two of the schools. The percentages of boys enrolled in industrial arts, however, were commendable, with at least one third of the boys in the smaller schools enrolled, and a larger proportion than this enrolled in the larger schools. For example, School No. 2, which had an enrollment of twenty-five boys, reported twenty—80 per cent—boys enrolled in industrial arts courses; School No. 8, which had an enrollment of seventy-five boys, had twenty-eight enrolled in industrial arts courses; and School No. 40, with an enrollment of 470 boys, reported 275 of them as being enrolled in industrial arts courses. Two schools did not provide the information concerning either the total enrollment of boys in the school nor the number taking industrial arts.

Inquiry was also made regarding the number of classes taught daily in industrial arts in the Negro high schools. Information concerning this phase of the study is shown in Table 5.

As shown by the data in Table 5, the number of classes in industrial arts taught daily in the schools varied greatly. In four schools, only one class per day was taught; six schools taught two classes, and in eight of the schools there were three classes daily. In seven of the schools there were four classes taught daily, and in six there were five daily classes in this subject. Five of the larger schools had fifteen classes in industrial arts taught daily, and in the largest school in the survey there were eighteen classes which were taught

TABLE 5  
NUMBER OF CLASSES TAUGHT DAILY IN INDUSTRIAL  
ARTS IN FORTY-ONE\* NEGRO HIGH SCHOOLS

Number of Schools							Number of Classes Taught Daily
4	.	.	.	.	.	.	1
6	.	.	.	.	.	.	2
8	.	.	.	.	.	.	3
7	.	.	.	.	.	.	4
6	.	.	.	.	.	.	5
1	.	.	.	.	.	.	6
1	.	.	.	.	.	.	8
1	.	.	.	.	.	.	12
1	.	.	.	.	.	.	13
1	.	.	.	.	.	.	14
5	.	.	.	.	.	.	15
1	.	.	.	.	.	.	18

\*Two schools did not  
provide this information.

daily. The data indicate that a number of the schools devoted many class periods to industrial arts instruction in some of its phases.

Twenty of the Negro high schools permitted the girls to take industrial arts, while nineteen of them did not schedule such instruction for the girls. Three of the respondents, in three separate schools,



did not furnish this information. Data in Table 6 show the number of girls taking industrial arts in comparison with the number of boys. Girls were enrolled in only fourteen of the schools in classes in industrial arts, the data in Table 6 reveal, although twenty of the respondents indicated that girls could enroll in this subject in their schools. School No. 7, as shown in Table 6, had ten girls; School 12,

TABLE 6  
NUMBER OF BOYS AND GIRLS ENROLLED IN INDUSTRIAL  
ARTS COURSES IN THE NEGRO HIGH SCHOOLS  
PARTICIPATING IN THIS STUDY\*

School Number	Number of Boys	Number of Girls
1	15	5
2	25	0
3	26	0
4	50	0
5	60	0
6	68	0
7	75	10
8	76	2
9	85	0
10	99	0

TABLE 6—Continued

School Number	Number of Boys	Number of Girls
11	106	0
12	109	15
13	111	1
14	120	0
15	125	0
16	125	2
17	125	0
18	127	0
19	132	0
20	134	0
21	144	4
22	155	4
23	160	0
24	166	5
25	175	0
26	175	0
27	175	0
28	175	0
29	175	0

TABLE 6—Continued

School Number	Number of Boys	Number of Girls
30	175	0
31	200	3
32	200	0
33	225	0
34	275	0
35	280	2
36	320	0
37	350	0
38	380	0
39	450	1
40	470	20
41	483	50

\*Two of the respondents failed to give this information.

fifteen girls; and the large schools, Nos. 39 and 40, had twenty and fifty girls enrolled in industrial arts, respectively. In the other schools reporting enrollment of girls in industrial arts, the enrollment in each instance was very small, ranging from one to five students.

A number of comments were written in by the respondents concerning the enrollment in industrial arts classes. In School No. 16, which had a total enrollment of 265 pupils and an enrollment in industrial arts of forty boys and two girls, the respondent made the comment that there was a need for greater participation in industrial arts on the part of the pupils. In School No. 17, where the enrollment in industrial arts corresponded to the enrollment in School No. 16, the respondent stated that there was a need for industrial arts teachers to "sell" the industrial arts program to the community. In School No. 28 the respondent stated that the pupils were not interested in industrial arts. These comments indicate a weakness on the part of the teachers in not making the work sufficiently interesting to attract the students and in not selling the industrial arts program to the community.

The findings from this phase of the study may be summarized as follows:

1. The schools varied in size from very small schools to the large schools with several hundred pupils.
2. The enrollment in industrial arts on the part of the boys varied considerably, with perhaps the larger proportions occurring in the smaller schools.
3. The number of classes taught daily varied widely from school to school, with larger schools having as many as eighteen classes per day.

4. The proportion of girls taking industrial arts in the small schools was very low; the two largest schools had large classes of girls in this subject.

5. A number of comments mentioned the lack of interest on the part of the students toward the industrial arts program.

CHAPTER V

PROCUREMENT AND DISTRIBUTION OF TOOLS  
AND MATERIALS USED IN INDUSTRIAL ARTS  
INSTRUCTION IN FORTY-THREE  
NEGRO HIGH SCHOOLS

The procurement and distribution of tools and materials used in the industrial arts program is a vital part of the instructional program. Efficient, economical procurement and wise distribution are necessary. The purpose of this chapter is to present information concerning the practices used in the procurement and distribution of tools and materials used in the industrial arts program in the Negro high schools included in this study.

Purchase of Materials

Accepted business practice requires that any school activity for which materials are purchased have a definite budget showing the amount of money needed for purchases of materials and the amount of money available for such purchases. This is true in the industrial arts program as well as in other phases of school activities. Mays and Casberg emphasize the importance of the budget for the industrial

arts program. A pertinent excerpt from their discussion of this matter is presented here:

A complete budget includes estimates of income as well as estimates of necessary expenditures, but since the shop budget becomes merely a part of the superintendent's complete budget, it need include only estimates of expenditures. However, the shop administrator should know before making up his budget, at least approximately, how much will be available from the total school budget for his use.<sup>1</sup>

A further statement was made by Mays and Casberg, that "to operate a shop without an annual budget is the poorest conceivable business procedure."<sup>2</sup> This is true even when the school is very small and there is only a single shop.

In the survey made of the industrial arts programs of the Negro high schools participating in this study, an inquiry was made concerning a definite budget of the amount of money to be used for the purchase of materials for student use. Twenty-three, or 53.4 per cent, of the respondents stated that their schools did have a definite budget for the purchase of materials; twenty respondents, or 46.5 per cent, reported that their schools did not have a budget for purchase of materials for pupils in the industrial arts classes. One respondent did not supply this information. Almost one half of the Negro high schools, the data indicate, used poor business procedures with respect to the purchase of materials for the school shops.

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<sup>1</sup> Arthur B. Mays and Carl H. Casberg, School-Shop Administration, p. 84.

<sup>2</sup> Ibid., p. 86.

The problem of the school's furnishing the needed materials for construction work in the industrial arts program is one that is receiving much attention at the present time. The traditional view has been that each student should pay for materials used in the construction of articles and that the finished product should belong individually to the pupils paying for the materials. Democratic viewpoints wherein each pupil has equal opportunities, however, conflict with this practice. The pupils whose need, perhaps, is greatest may lack the necessary funds for the purchase of materials. This is especially true in the Negro schools, where the income of many of the parents of school children is on a mere subsistence level. Theoretically, these are the groups who need adequate educational training, especially industrial arts education that may be used to form the foundation of skills which will help raise the standards of living for the Negro race. The policy followed by the schools, therefore, in supplying materials for the industrial arts instruction is significant from a social standpoint.

A question designed to gather information regarding the practices of the schools in paying for materials used in student projects was asked in the survey of the industrial arts programs of the Negro high schools. Thirty-four, or 76.7 per cent, of the respondents reported that the pupils are required to pay for the materials used in projects in the industrial arts program and three of the respondents qualified their answers with the comment, "If kept by the pupil." Five of the



respondents, or 11.6 per cent, reported that their schools paid for all materials used by the pupils. In one instance, one of these respondents stated that all pupils were charged a regular fee of \$3.00 per term; another stated that the school paid for one third of the materials. Four respondents did not give this information.

Reference to the individual questionnaires shows that the schools furnishing materials for use in the industrial arts programs varied in size, with school populations of 169, 218, 500, 718, and 900, respectively. One of the schools was located in North Texas, one of the schools was located in the East Texas pine-woods area, and three of the schools were located along the Gulf Coast of Texas. The data indicated that a number of schools, both large and small, are beginning a policy which will eventually provide opportunities for more pupils to participate in the program; those pupils, who by their economic status, have a much greater need for information and skills to aid in raising their standards of living will thereby be afforded opportunities for participation in the industrial arts programs of the schools.

Where the pupils were required to pay for materials, inquiry was directed to determine the person to whom the bills were paid—the shop teacher, the principal, the business manager, or others. Of the thirty-four schools requiring payment for the materials used, all of them reported that the shop teacher was the person collecting the money for the materials. In this practice of having the shop

teacher collect money for materials, the schools are in conflict with recommendations such as the following for such procedures. Mays and Casberg state:

Another vexing problem of shop administration is the handling of money paid by pupils for supplies used in shop projects. It is never desirable for teachers to handle school money. It is unfair to require teachers to assume such responsibility and it is annoying for shop administrators in large departments to be burdened with this function. A far sounder procedure is to issue requisition forms to pupils which are signed by the one in charge of supplies when the issue is made to a pupil. The pupil should take this signed form to a competent official designated by the school board to receive the money paid by the student.<sup>3</sup>

An adequate amount of money is required each year for the administration of an industrial arts program. No department can operate to secure the best results if it is unduly short of money for maintenance or for purchase of needed supplies. The Negro industrial arts instructors participating in the study were asked to state their opinions as to whether an adequate amount of money was provided each year for the maintenance and operation of the industrial arts programs. Eighteen of them, or 41.6 per cent, reported that the school in which they taught provided sufficient funds, while twenty-five respondents, or 58.4 per cent, stated that there were insufficient funds provided, in their estimation, for the organization and maintenance of the industrial arts program in the schools in which they were teachers.

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<sup>3</sup>Ibid., p. 87.

Specific needs listed by individual shop teachers on the questionnaires were numerous, and nearly all indicated a need for more funds or for authority to purchase equipment and supplies, requiring more money than was made available. Some representative comments were as follows:

1. Four respondents stated that they needed more money for the operation and maintenance of the department.
2. Three respondents stated that their shops needed more room.
3. Four respondents reported that their shops needed more hand tools for woodwork.
4. One respondent stated that his school needed more supplies.
5. One respondent "needed everything."

The purchase, maintenance, and distribution of supplies and equipment necessitates an efficient system of record-keeping. Tools and equipment cost money. Large stationary equipment must be kept in repair and small tools must be kept in their places and checked regularly to prevent their misuse or misplacement. It is the responsibility of the industrial arts instructor, as head of this phase of work, to see that accurate records are kept of the equipment and supplies for the shop.

In a survey of the practices of the industrial arts instructors in the Negro high schools participating in this study, it was found that forty-one, or 95.3 per cent, reported that they were required to make

an annual inventory of all tools, equipment, and materials; only two instructors reported that they were not required to make such an inventory. While this annual inventory is in accord with established business practices, it is probably not sufficient for inventory of equipment in an industrial arts shop, especially in regard to small hand tools. An inventory should be made frequently to prevent misplacement or other unwise use of the tools.

Support of the local merchants in the area through purchase of materials for use in the industrial arts program is one way of enlisting local interest in the department. Since the school derives its support from the community, each department should do everything possible to further the interests of the business men in the area. Data from the questionnaires revealed that the Negro high schools included in the study followed this policy of co-operation with community business firms. One respondent did not supply the information, but all of the forty-two respondents replying, or 100 per cent, stated that all supplies were purchased in local communities.

In regard to the practice of paying for the supplies used by the pupils, twenty-five of the respondents, or 51.8 per cent, reported that the pupils were required to pay for materials prior to use. Eighteen, or 49.2 per cent, of the respondents stated that the schools in which they taught required payment after the materials had been used.

The findings related to this phase of the industrial arts programs of the Negro high schools of the study may be stated briefly as follows:

1. Budgetary procedures in almost half of the industrial arts shops were unsatisfactory in that no definite amount of funds was provided for organizing and maintaining the industrial arts program.
2. The majority of the schools require the pupils to buy the materials used in projects in industrial arts shops.
3. A high percentage of the Negro schools follow accepted business practices in requiring an inventory of tools and equipment.
4. Support of the local merchants in the school communities was indicated through development of data from the Negro high schools of the study.
5. Slightly over one half of the Negro high schools required industrial arts pupils to pay for materials after projects had been completed rather than upon issuance of the materials.

CHAPTER VI

TYPES OF CLASS ORGANIZATION USED IN  
THE INDUSTRIAL ARTS CLASSES IN  
FORTY-THREE NEGRO  
HIGH SCHOOLS

The organization of the industrial arts department presents a number of problems and opportunities in the use of student personnel. The particular type of student-personnel organization used will depend on such factors as the number of pupils, available space, amount of equipment, and the type of program; but opportunities are provided in any program for the development of a student-personnel organization that aids in more effective industrial arts instruction and in the development of responsibilities and initiative on the part of the students. The purpose of this chapter is to present information concerning the types of personnel organization used by the industrial arts shops in the Negro high schools of the study.

Number of Schools Using Student Personnel  
in Organization of Industrial Arts  
Classes

Student-personnel organizations have a definite purpose, or they should have. In fact, any activity engaged in in the school should be

purposive in nature and in line with the objectives of education. Wilber emphasizes this fact when he states that any organization worthy of the name should have at least three major objectives. These objectives are as follows:

1. To train students in leadership and followership. This means that all students must be given an opportunity to exert leadership and to act as co-operative followers. Many student officers need to be guided and encouraged by the instructor, who should insist that they assume the responsibility assigned to them.

2. To provide an exploratory situation in the class which to some extent parallels the personnel system of industry. This cannot be accomplished if the school organization is concerned only with keeping the laboratory in order.

3. To relieve the instructor from certain routine tasks, such as giving out supplies, keeping certain types of records, and to give him more time for demonstrations and other types of instruction.<sup>1</sup>

Gammon has set up the following principles as basic to the success or value of any student-personnel organization:

1. It must be democratic in principle and function.

2. It must relieve the instructor of the myriad of managerial duties which do not allow him time to teach effectively.

3. It must evolve out of and meet the needs of specific situations.

4. It must be tried out and altered until it functions effectively in the given situation.

5. It must be of educational value to the students to justify its existence.<sup>2</sup>

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<sup>1</sup>Gordon O. Wilber, Industrial Arts in General Education, pp. 200-201.

<sup>2</sup>Bruce G. Gammon, "Shop Personnel Organization," Industrial Arts and Vocational Education, XXXVIII (September, 1949), 273-274.

In other words, the student-personnel organization of an industrial arts shop should be something more than a clean-up program; it must be a functional part of the program itself.

In making the survey of the industrial arts programs in the Negro high schools included in this study, attention was directed to the number and kind of student-personnel organizations used in the different shops. The first question on this phase of the industrial arts program was, "Do you use a student-personnel organization in your classes?" In response to this question, thirty-two, or 74.4 per cent, of the respondents stated that they used some form of student-personnel organization. Reference to the questionnaires showed that the eleven schools that did not have this type of organization were those with small enrollments in industrial arts classes.

Some indication of the way in which the industrial arts classes in the Negro high schools of the study used student personnel is found in a study of the ways in which tools were distributed to the pupils. In twenty-five, or 58.1 per cent, of the schools tools were issued to the pupils by tool foremen, in twelve schools the tools were taken from open panels by the students, and in five schools the tools were given out by the teachers. The latter practice adds undue work on the industrial arts teacher, and complete freedom of the pupils to select their own tools from an open panel is not good business procedure from the standpoint of taking care of the equipment.



Groneman states that from the largest industrial plant to the smallest home workshop, wherever tools are used, the problem of storing them is important.<sup>3</sup> Tools are expected to become dull and possibly broken as they are used, but it is poor policy to have them damaged and broken by improper storage and handling. The responsibility of properly checking out tools, handling, and caring for them may properly be delegated to the tool-room foreman, whose duties, according to Groneman, are as follows:

1. Check the tool storage to see that all the tools are in their proper places at the beginning of the class period.
2. Assist students in securing the proper tools when they need them. It will be necessary to have each student fill out a slip for a tool, or bring in a token number which will be hung in the place of the tool which has been checked out. The method of checking out tools will depend on the method of tool storage used by the instructor.
3. Check the tool-room at the close of the period to make certain that all tools have been returned and placed in their proper places.
4. Report to the shop foreman any tools which have been damaged during the class period, or which are not returned at the close of the class period.
5. Make minor repairs and adjustments on tools during the class period when called upon.
6. Assist the instructor in checking out or handling of special tools which are not stored in the tool-room or on the tool panels. These might be special tools for machines, tools and jigs, or forms used for special purposes.
7. Sharpen and keep tools in efficient working condition. This applies especially to one who is assigned to a tool-room, and is not permitted to work on his project during the time he serves as a tool-room foreman.

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<sup>3</sup>Chris H. Groneman, Modern Shop Organization for Industrial Arts Classes, p. 17.

8. Report to the shop foreman when all tools have been returned and placed in their proper place at the ending of the class period.

9. Return to assigned work station or bench for dismissal from class.<sup>4</sup>

The tool-room foreman, when his duties are identified and properly performed, has a responsible place in the personnel organization of an industrial arts shop. The fact that seventeen of the participating Negro high schools included in the study did not use this type of student personnel indicates that they failed to avail themselves of all the opportunities present in their situations.

The industrial arts instructors participating in the study were also asked to list the responsibilities assigned to the students in industrial arts instruction. Table 7 shows the data reported by the respondents on this phase of the questionnaire.

Data shown in this table indicate that the duty of the shop foreman was the one most often assigned, with twenty-two schools reporting this duty as being delegated to students in the shop classes. Ten of the schools used students as tool checkers, and eight used them for clean-up duties. Three schools used the students as assistants, maintenance men, sergeants-at-arms, and as superintendent. Other duties were varied, with few schools using any one of them.

The fact that only eight of the respondents listed "clean-up" duties as responsibilities of the pupils indicates that this phase of the program

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<sup>4</sup>Ibid., p. 18.

TABLE 7

**RESPONSIBILITIES ASSIGNED TO STUDENTS BY THE  
DIFFERENT NEGRO HIGH SCHOOL TEACHERS  
IN INDUSTRIAL ARTS PROGRAMS\***

Type of Respon- sibility	Number of Schools Assigning This Responsibility
Assistant . . . . .	3
Brick foreman. . . . .	1
Carpenter foreman. . . . .	1
Contractor . . . . .	1
Roll checker . . . . .	1
Clean-up duties . . . . .	8
Electrician . . . . .	1
Person to issue supplies . . . . .	1
Librarian . . . . .	1
Plumber . . . . .	1
Shop foreman . . . . .	22
Light and ventilator man . . . . .	1
Maintenance man . . . . .	3
Project checker . . . . .	1
Plumber . . . . .	1
Supervisor of auto mechanics . . . . .	2
Safety engineer . . . . .	4
Sergeant-at-arms . . . . .	3

TABLE 7—Continued

Type of Respon- sibility	Number of Schools Assigning This Responsibility
Superintendent. . . . .	3
Time keeper . . . . .	1
Tool checker . . . . .	10
Yardman . . . . .	1

\*Some teachers did not assign any duties in the shop.

was not stressed at the expense of the delegation of other and more worth-while responsibilities. A shop foreman, if he performs his duties efficiently, can render valuable service to his class and to his instructor. Groneman lists the duties and responsibilities of the shop foreman as follows:

1. General supervisor over other officers, and other members of the class.
2. Change the assignment responsibility clean-up chart at the beginning of each designated period of time which the instructor selects.
3. Report weekly grades for all officers on the foreman record card.
4. Confer with the instructor on matters pertaining to the welfare of the class.
5. Act as a receptionist to greet visitors to the shop and show them around.
6. Explain the duties from the task wheel to all students so that all will understand the clean-up assignments and the duties and responsibilities of each.
7. Have the recording clerk to check the roll and make the record of attendance according to the school policy.

8. Assist the instructor by having tools and materials easily accessible for a demonstration, shop talk, or test.
9. Unlock project storage cabinets, bench drawers, and project storage room. The key must be obtained from the instructor and returned immediately after the job is completed.
10. Assist other officers who may need help at the beginning of the class period.
11. Work on own project until the designated time for clean up.
12. Notify the class that it is five minutes before time for class dismissal by signaling with a whistle or bell.
13. Check the various officers to see that they are on the job, so that the class will be able to clean up the shop in the time assigned by the instructor.
14. Make out such reports that are required by the instructor.
15. Check on the final general clean-up of the shop by a brief observation, and call the class to attention for any possible last-minute announcements.
16. Dismiss the class in accordance with the policy of the instructor.<sup>5</sup>

These listed responsibilities indicate that the industrial arts student-personnel organizations need a shop foreman. The fact that twenty of the forty-two participating schools did not have this type of student personnel officer shows that they did not take advantage of a practice that increases the instructional time of the class by relieving the teacher of many of his routine duties.

According to Wilber, the efficiency of a student-personnel organization will largely depend upon the officers used in the industrial arts program. In a successful, large-scale program the following

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<sup>5</sup>Ibid., pp. 13-15.

student officers are needed: shop foreman, recording clerk, tool checker or tool-room foreman, maintenance foreman, safety foreman, stock-room foreman, finishing-room foreman, and a librarian for the shop library.<sup>6</sup> In checking responsibilities assigned to student officers as shown in Table 7, it is found that twenty-two of the schools, as previously reported, had shop foremen, ten had tool checkers, and four had safety engineers. The other necessary student officers, as listed by Wilber, were not used in the personnel organizations of any of the schools except one school that had a librarian.

Inquiry was also made concerning the use of progress charts by the industrial arts students in the Negro high schools of the study. Such charts are recommended by the Texas State Department of Education. Uses of such a chart are described as follows:

The progress chart lists for each division:

1. The basic skills or type jobs that the pupils shall be able to do before they complete the course.
2. The suggested list of technical knowledge they shall know.
3. The occupational information assignments.<sup>7</sup>

An illustration of a progress chart as shown in Figure 1 shows the possibilities of the use of a progress chart and the advantages it has for a teacher. As shown in the illustration, twelve basic skills or type jobs are set up for the student to accomplish during the term.

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<sup>6</sup>Wilber, op. cit., p. 200.

<sup>7</sup>Texas State Department of Education, Industrial Arts Programs, Bulletin 389, 1938, p. 26.

## PROGRESS CHART

[illegible]

Fig. 1. — Illustration of a progress chart that may be used in an industrial arts class.

After the student has satisfactorily completed the assignment, the instructor checks said accomplishment on the progress chart. Also, when the student has mastered a skill or completed a type job, he is given credit on the progress chart. Thus the members of the class can see at any time how they are progressing.

In the survey of the industrial arts programs of the Negro high schools included in this study, it was found that twenty-seven of the schools, or 62.8 per cent, used progress charts in industrial arts instruction, while sixteen of the schools, or 37.2 per cent, did not use this type of chart in instruction.

The findings in this chapter may be summarized as follows:

1. The majority of the Negro high schools of the study have some type of student-personnel organization; the schools without an organization of this type were the smaller schools with a very limited program.
2. In 41.9 per cent of the schools, no students were used as tool checkers; these schools failed to avail themselves of an opportunity to participate in worth-while personnel activities.
3. The responsibility of shop foreman was the most-assigned responsibility listed by the respondents in the study; that of tool checker was second in extent of use, and clean-up duties were third.
4. Other responsibilities listed were limited to a very few schools; the data indicate that a very large majority of the schools



did not take advantage of many opportunities for developing a more efficient shop-personnel organization.

5. A significant number of the schools, over 60 per cent, used progress charts in assigning and evaluating industrial arts projects; but the number not using such charts was also significant for its lack of utilization of these recommended procedures.

CHAPTER VII

PREPARATION AND QUALIFICATIONS OF THE  
INDUSTRIAL ARTS TEACHERS IN THE  
NEGRO HIGH SCHOOLS OF THE  
STUDY

The last phase of the questionnaire sent to the industrial arts teachers in the Negro high schools was concerned with the preparation and qualifications of the teachers for their respective positions. The purpose of the present chapter is to present the data obtained from the questionnaires on this phase of the industrial arts program.

Education

Information was more difficult to obtain on the college attendance of the instructor than on any other phase of the investigation. A number of instructors did not list the necessary information. Table 8 presents data on the college attended by the instructors as obtained from answers to the questionnaires and from the personal interviews. In some instances, there was more than one instructor in the school; this accounts for a larger number of instructors than there were schools.

TABLE 8

COLLEGES ATTENDED BY INSTRUCTORS IN INDUSTRIAL  
ARTS IN FORTY-THREE NEGRO HIGH SCHOOLS

College	Number of Instructors Attending
Ames . . . . .	2
Arkansas State . . . . .	1
Bishop . . . . .	2
Iowa State . . . . .	1
Kansas State . . . . .	1
Langston University . . . . .	1
Oklahoma A. and M. . . . .	1
Pittsburg . . . . .	1
Prairie View Teachers College . . . . .	49
Sam Houston . . . . .	3
Syracuse . . . . .	1
Texas Southern . . . . .	2
Tillotson . . . . .	1
Tuskegee Institute . . . . .	7
University of Wisconsin . . . . .	1
Wayland . . . . .	1

The data in Table 8 show that a large majority of the industrial arts teachers have attended the Prairie View Teachers College in

Texas, the state institution for preparing Negro teachers. Only twenty-five had attended universities or colleges other than Prairie View Teachers College, and seven of these were or had been students at Tuskegee Institute, an advanced college for Negroes in Alabama.

Forty-three instructors reported that they had majored in industrial arts while in college, but nine instructors had majored in other subjects. Thirty-four instructors held the Bachelor of Science degree, six held the Bachelor of Arts degree, nine held the Master of Science degree, eight held the Master of Arts degree, and two instructors had not completed a four-year college course.

The amount of training in the field of industrial arts was also the subject of inquiry. Such information was not available for all of the instructors teaching in the Negro high school industrial arts classes; but the data obtained for fifty instructors are shown in Table 9. According to the data as presented in this tabulation, the number of semester hours of training in industrial arts of the instructors ranged from two to seventy-six hours, with a median of thirty hours. Only four of the instructors had less than twenty-five hours, while twelve instructors had over fifty hours of training in the industrial arts field.

The extent to which the industrial arts instructors met specific qualifications for teachers in this field as set up by the Texas State Department of Education may be indicated by a comparison with standards recommended by this agency. The bulletin on standards states:

TABLE 9  
 NUMBER OF SEMESTER HOURS COMPLETED IN  
 COLLEGE BY THE INDUSTRIAL ARTS  
 INSTRUCTORS IN THE NEGRO  
 HIGH SCHOOLS

Number of Instructors	Number of Semes- ter Hours
1 . . . . .	2
1 . . . . .	11
1 . . . . .	12
1 . . . . .	18
2 . . . . .	24
13 . . . . .	27
1 . . . . .	28
9 . . . . .	30
6 . . . . .	35
3 . . . . .	48
3 . . . . .	55
1 . . . . .	56
2 . . . . .	60
1 . . . . .	61
2 . . . . .	65
1 . . . . .	75
2 . . . . .	76

An industrial arts teacher shall have at least twenty-four semester hours of college credit in industrial arts. These credits shall include only the practice laboratory and drawing courses. In addition, the teacher must have at least one course in methods of teaching industrial arts. Such industrial arts courses must be taken in an approved industrial arts teacher-training institution of college rank.<sup>1</sup>

The data in Table 9 indicate that six of the instructors did not possess or barely met the minimum qualifications for teaching industrial arts. Thirteen teachers with twenty-seven hours of credit, one with twenty-eight hours, and nine with thirty semester hours of training were barely above the minimum requirements. Thirty of the instructors out of fifty for whom data were tabulated, therefore, were on the fringe, or below, of minimum requirements.

### Experience

Inquiry also was made concerning the number of years of experience in teaching possessed by the industrial arts instructors. Data obtained from the questionnaires in this respect are presented in Table 10.

Six of the industrial arts instructors, the data in Table 10 show, had one year of experience in teaching, while nineteen had five years of experience, or less. Twenty-nine of the teachers had taught less than ten years. The majority of the teachers, therefore, were relatively

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<sup>1</sup> Texas State Department of Education, Standards and Activities of the Department of Supervision, Bulletin 438, 1942.

TABLE 10  
 NUMBER OF YEARS OF TEACHING EXPERIENCE  
 REPORTED BY FORTY-EIGHT INDUSTRIAL  
 ARTS TEACHERS IN THE NEGRO  
 HIGH SCHOOLS

Number of Teachers	Number of Years of Experience
6 . . . . .	1
1 . . . . .	2
7 . . . . .	3
2 . . . . .	4
3 . . . . .	5
2 . . . . .	6
1 . . . . .	7
4 . . . . .	8
3 . . . . .	10
1 . . . . .	12
1 . . . . .	14
2 . . . . .	15
1 . . . . .	16
2 . . . . .	20
1 . . . . .	21
1 . . . . .	23
1 . . . . .	24

TABLE 10—Continued

Number of Teachers							Number of Years of Experience	
3	.	.	.	.	.	.	25	
1	.	.	.	.	.	.	26	
1	.	.	.	.	.	.	28	
3	.	.	.	.	.	.	30	
1	.	.	.	.	.	.	32	

young men from the standpoint of teaching experience; however, fourteen of the teachers had been teaching over twenty years, with three teaching thirty years each and one, thirty-two years.

#### Tenure

Table 11 presents the tenure of the industrial arts instructors in their present teaching positions. As indicated by this tabulation, eight of the industrial arts teachers had one year or less of tenure in their present positions, while twenty-six had less than five years of tenure in their present positions. Ten had tenure ranging between five and ten years, and five teachers had over twenty years' tenure, with three of these having been in their present positions for thirty years. Thus, for most of these instructors, tenure was somewhat unstable, although their youth might account largely for this apparent instability of tenure. For a few teachers, tenure was comparatively permanent.



TABLE 11

NUMBER OF YEARS OF TENURE OF THE INDUSTRIAL  
ARTS TEACHERS IN THEIR PRESENT POSITIONS  
IN THE NEGRO HIGH SCHOOLS\*

Number of Teachers						Number of Years of Tenure in Position
1	.	.	.	.	.	1/2
7	.	.	.	.	.	1
2	.	.	.	.	.	2
9	.	.	.	.	.	3
4	.	.	.	.	.	4
3	.	.	.	.	.	5
3	.	.	.	.	.	6
1	.	.	.	.	.	7
3	.	.	.	.	.	8
3	.	.	.	.	.	10
1	.	.	.	.	.	13
2	.	.	.	.	.	15
1	.	.	.	.	.	16
1	.	.	.	.	.	17
1	.	.	.	.	.	20
1	.	.	.	.	.	28
3	.	.	.	.	.	30

\*Information was not available for all  
instructors.

The findings of this phase of the study may be summarized as follows:

1. The majority of the industrial arts instructors had attended the Prairie View Teachers College, the Texas institution for preparing colored teachers for the Negro schools.
2. All of the instructors except two had completed a four-year college course, and seventeen had completed graduate work for the master's degree.
3. The majority of the instructors in industrial arts in the Negro schools met minimum standards for certification; four instructors did not meet such standards, and approximately one third of the instructors had a high degree of training for their teaching positions.
4. The majority of the industrial arts teachers in the Negro high schools had been teaching for less than ten years. Nineteen out of fifty teachers had been teaching longer than ten years, with fifteen of these having over twenty years of experience.
5. The majority of the industrial arts teachers had been employed for less than ten years in their present positions, but in five instances teachers had over twenty years of tenure.

## CHAPTER VIII

### COMPARISON OF THE INDUSTRIAL ARTS PROGRAM IN FORTY-THREE NEGRO HIGH SCHOOLS WITH CERTAIN PHASES OF THE PROGRAM IN HIGH SCHOOLS FOR WHITE STUDENTS

Some idea of the extent of the industrial arts program in Negro high schools of Texas may be gained by a comparison of data developed in this study with data from two other studies dealing with industrial arts programs in high schools for white students in Texas. Matthews made a study in 1949 of the growth of industrial arts programs in Texas high schools for white pupils over a period of two decades,<sup>1</sup> and in 1952 Strickland made a study of housing facilities for industrial arts classes in the high schools.<sup>2</sup> The purpose of this chapter is to present a comparison of some phases of the industrial arts program of the Negro high schools with data from the two studies made of the program in high schools for white pupils.

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<sup>1</sup>Wayne Matthews, "Industrial Arts in Texas, 1927-1948," Unpublished Master's Thesis, Department of Industrial Arts, North Texas State College, Denton, Texas, 1949.

<sup>2</sup>R. G. Strickland, "Housing Facilities for Industrial Arts Programs," Unpublished Master's Thesis, Department of Industrial Arts, North Texas State College, Denton, Texas, 1952.

### Comparison of Offerings

Matthews showed the offerings in the industrial arts programs of high schools for white pupils over a period of years, 1927 through 1949, inclusive. In 1927, approximately eighty-eight schools offered affiliated units in shopwork and mechanical drawing. Of the 166 affiliated units offered, there were 70.5 in woodwork, 84.5 in drawing, four in metal work, five in auto mechanics, and three in printing. The increase in these units up to 1949 is shown in Table 12, which also shows the number of affiliated units in the Negro high schools in 1951-1952.

In the first place, woodwork and drawing were the predominating favorites in the offerings in both the white and Negro schools. The proportion of those offering both woodwork and drawing was greater, however, in the white schools than in the Negro schools. The metal offerings, it was stated in Chapter II, were meager in the Negro high schools; the same might be said of the white schools, only more so. Only seventy-four units were offered in metal in all of the high schools for the white pupils, while twelve units were offered in the forty-three Negro schools. Eight units of electricity were offered in the high schools for white pupils, while twelve were offered in the Negro high schools. A decided increase in offerings is thus indicated for the Negro high schools in this respect. The number of offerings in automobile mechanics for the white schools totaled eighteen, while those for the Negro high schools were six, a larger percentage of

TABLE 12

COMPARISON OF THE OFFERINGS IN THE INDUSTRIAL ARTS  
PROGRAMS OF WHITE AND NEGRO HIGH SCHOOLS IN  
TEXAS IN 1949 AND 1951, RESPECTIVELY

Type of Unit	Number of Units Offered by White Schools in 1949	Number of Units Offered by Negro Schools in 1951
Woodwork	474	69
Drawing	349	38
Metal	74	12
Electricity	8	12
Automobile mechanics	18	6
Printing	29	0
Foundry	0	4
General crafts	9	7

offerings in proportion to the number of schools represented. Twenty-nine of the white schools offered printing, but none of the Negro high schools offered this course. Four of the Negro high schools reported courses in foundry, but none of the white schools reported this offering. In general crafts, the offerings were nine in number in the white schools and seven in the Negro schools, another decided increase in favor of the Negro schools, in proportion to the number of schools.

On the basis of the data shown in Table 12, it appears that the offerings in the industrial arts programs of the Negro schools compare favorably with the offerings in this department in the high schools for white students. However, no certain comparison can be made between the number of offerings according to the number of schools represented because Matthews did not designate the number of schools used in his 1949 survey. His study in 1927 comprised data from eighty-eight schools, but in the interval between that time and 1948, a number of schools had added industrial arts programs to their curriculums, and these may or may not have been included in his survey.

Matthews also presented data on experience and training of the industrial arts instructors in high schools for white students. He broke up the data in such a way as to consider instructors in woodwork, drawing, metal work, and electricity, auto mechanics, printing, and laboratories of industries separately, while the present study made no such breakdown. The data, therefore, are more difficult to compare in this aspect. One phase of the industrial arts program in the white schools was, therefore, selected for a basis of comparison. This phase was the teaching experience of 198 teachers in electricity, auto mechanics, printing, and laboratory of industries. Data concerning this experience in comparison with that of the industrial arts instructors in the Negro high schools of the present study are presented in Table 13.

TABLE 13  
COMPARISON OF THE TEACHING EXPERIENCE OF  
INSTRUCTORS IN CERTAIN PHASES OF INDUSTRIAL  
ARTS IN THE NEGRO AND WHITE HIGH  
SCHOOLS OF TEXAS

Experience	White Schools*	Negro Schools
0-5 years	10	16
6-10 years	9	13
11-15 years	9	8
16 or more years	17	15

\*Data are for the year 1949 and are taken from Matthews, op. cit., p. 59.

Analysis of the data in Table 13 indicates that a greater proportion of teachers in the Negro high schools had experience in teaching ranging from 0-5 years, while the greater proportion of instructors in the white schools had teacher's experience comprising sixteen years or more. No significant differences, however, are indicated between the teaching experiences of the two groups of instructors.

The professional training of this same group of instructors teaching crafts, electricity, auto mechanics, printing, and laboratory of industries was used as a basis for comparison with the professional training of the group of Negro instructors. Data in Table 14 show this comparison.

TABLE 14

COMPARISON OF PROFESSIONAL TRAINING OF INDUSTRIAL  
ARTS INSTRUCTORS IN WHITE AND NEGRO  
HIGH SCHOOLS

Professional Training	White Schools*	Negro Schools
Number with master's degree teaching in major field	3	8
Number with bachelor's degree teaching in major field	24	32
Number with degree teaching out of major field	9	10
Number with no degree	14	2

\*Data are for the year 1949 and are taken from Matthews, op. cit., p. 57.

Represented in Table 14 are fifty white instructors and fifty-two Negro instructors. A higher degree of professional training is indicated for the Negro instructors. Eight of the latter had master's degrees as compared with three degrees of this type held by white instructors. More of the Negro instructors also held bachelor's degrees than was true of the white instructors. There were fourteen instructors without any degrees among the white group, and only two in the Negro group.



The general conclusion reached from a study of these data is that no significant differences exist between the professional training of the white instructors in the industrial arts programs and that of the Negro instructors in the same category.

Strickland's study of housing facilities covered some of the points developed in the current study; namely, the location of industrial arts shops and the amount of floor space available for use in the industrial arts programs. However, his study was not state-wide in nature, covering only the junior high schools in the Panhandle area of Texas.

The data developed by Strickland showed that in eleven junior high schools in the Panhandle area, the industrial arts shops were located in the main building in seven instances, or 63.6 per cent, and in separate buildings in four instances.<sup>3</sup> Data compiled in the present study show that the industrial arts shops in the Negro schools were located in separate buildings in twenty-eight schools, or 65.1 per cent. No significant differences, therefore, are indicated in the location of the shops in the two groups of schools.

In regard to the amount of floor space in industrial arts shops, Strickland found that the square feet of floor space in ten industrial arts shops ranged from 240 to 1,500 square feet, with the average being 738.8 square feet.<sup>4</sup> The average number of square feet in the

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<sup>3</sup>Strickland, op. cit., pp. 19-20.

<sup>4</sup>Ibid., pp. 22-23.

Negro school shops, as indicated in the present study, was 2,086. Only nine of the Negro schools had less than 800 square feet in their industrial arts shops. It should be noted in these comparisons, however, that Strickland's study dealt altogether with junior high schools. The data, nevertheless, indicate that the Negro schools do not lack facilities in the amount of space when compared with the industrial arts shop areas in the white schools.

The findings of this chapter may be summarized as follows:

1. The offerings in the white schools and the Negro schools industrial arts departments are similar in that woodworking and drawing are stressed, with lesser emphasis placed on metal work and other courses.
2. No significant differences in the amount of teaching experience between white and Negro instructors in industrial arts were found.
3. No significant differences were found in professional training of the industrial arts instructors of the white and Negro schools, but indicated advantages were in favor of the Negro instructors.
4. A slightly higher percentage of the industrial arts shops in the white schools were located in separate buildings.
5. The Negro high school industrial arts shops had a higher average amount of square feet in their shop floor-space areas than was true of the junior high school industrial arts shops in the Panhandle area of Texas.

## CHAPTER IX

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Summary

The problem of this study was to determine the extent to which industrial arts is taught in the Negro high schools of Texas, the number of pupils enrolled in the schools, the types of programs offered, the amount and kind of equipment provided for teaching industrial arts, and the qualifications of the teaching staff. The study was limited to an investigation of forty-three Negro high schools in Texas which include industrial arts in the curriculum. Data were obtained through reading in the field of industrial arts and through a questionnaire which was either administered by mail or presented in person to the industrial arts instructors in the Negro high schools of the study. Data were obtained on the types of programs offered, facilities provided, the enrollment in industrial arts in proportion to the number of boys enrolled in the schools, materials and equipment for carrying on the industrial arts programs, class organizations, and the types of projects made by the pupils enrolled in industrial arts. These data were tabulated, analyzed, presented, and then compared

with similar data for industrial arts programs in Texas high schools for white students. Conclusions were drawn from the data and from the comparisons. Recommendations were then made in terms of needs indicated in the study.

### Conclusions

The following conclusions were developed from a study of the data presented in the study:

1. Of the two types of programs utilized in teaching industrial arts in the Negro high schools, 76.7 per cent used the unit shop industrial arts program; the majority of the schools, therefore, used the unit shop program in preference to the general shop.
2. Eight phases of industrial arts were taught; woodworking was taught in all the schools, drawing in 85 per cent, and the other phases such as metal work, electricity, and automobile mechanics were taught in only a limited number of the schools. The program as a whole was found to be limited with emphasis on two main types of units.
3. Little originality of thought or creative ability on the part of the students with respect to selection of projects was indicated, and the selection of projects was not carried on in a democratic manner.
4. The majority of the industrial arts shops in the Negro high schools are located in separated buildings apart from the main

building; those located in the main building are situated in the basement or on the first floor.

5. The amount of square feet of floor space provided for the industrial arts shops in the Negro high schools varies widely according to the size of the school. The amount of floor space available per pupil, however, did not vary widely in the majority of instances.

6. Thirty-five per cent of the Negro high schools lacked adequate power tools for woodworking.

7. Adequate power equipment was reported for metal work, but the number of schools offering metal work constituted only 27.6 per cent of the total number of schools participating in the study.

8. Sixty-nine per cent of the respondents reported that their schools, in their opinion, had sufficient hand tools for each phase of industrial arts taught.

9. The number of necessary benches for each phase of industrial arts taught was believed adequate because 62.7 per cent of the respondents answered questions concerning this phase of the study in the affirmative.

10. Only a small percentage of the Negro high schools have sufficient storage space for materials used in the industrial arts program.

11. More than 50 per cent of the Negro high schools of the study lack finishing rooms for their industrial arts shops.

12. Wash basins and toilet facilities were available in over 50 per cent of the industrial arts shops in the Negro high schools participating in the study.
13. A high percentage, 83.7 per cent, of the respondents expressed the opinion that the industrial arts shops of the schools in which they taught had adequate light for all phases of the program.
14. Ventilation was reported as adequate in over 90 per cent of the industrial arts shops.
15. A majority of the schools take adequate precautions in the care of tools.
16. Adequate library materials for use in the industrial arts classes are lacking in 39.6 per cent of the schools.
17. The schools participating in the study vary in size from very small schools to the large schools with several hundred pupils enrolled.
18. The enrollment in industrial arts of the boys in the schools varied, with larger proportions enrolling in the smaller schools than in the larger ones.
19. The number of classes taught daily varied widely according to the number of students enrolling in the different schools in industrial arts classes.
20. The proportion of girls taking industrial arts in the Negro high schools was very low.

21. Lack of interest in the work on the part of the students was the main idea advanced by the respondents for lack of greater enrollment in industrial arts classes.

22. Budgetary procedures in almost one half of the industrial arts shops were unsatisfactory in that no definite amount of funds was provided for organizing and administering the industrial arts program.

23. The majority of the schools require the pupils to buy the materials used in the industrial arts projects.

24. A high percentage of the Negro high schools follow accepted business practices in requiring an inventory of tools and equipment.

25. Support of the local merchants in the school communities is indicated by the data secured from the Negro high schools included in the study. This support is given through the purchase of needed materials and supplies from local business firms.

26. The majority of the Negro high schools included in the study have some type of student-personnel organization; schools without this type of organization are the smaller schools with limited programs.

27. The majority of the Negro high schools, in the organization of class personnel, fail to avail themselves of many opportunities for more adequate use of student personnel.

28. The majority of the industrial arts instructors have attended the Prairie View Teachers College in their academic preparation for teaching industrial arts.

29. Only two instructors in industrial arts in the Negro high schools of the study have not completed a four-year college course.
30. A significant percentage of the teachers of industrial arts in the Negro high schools hold the master's degree.
31. The majority of the instructors meet minimum qualifications for certification; four instructors do not meet such standards; and approximately one third of the instructors have a high degree of training for their teaching positions.
32. The majority of the industrial arts instructors have less than ten years of experience in teaching, but fifteen have over twenty years of experience.
33. Tenure of the industrial arts teachers, in the majority of instances, is less than ten years in their present positions.
34. The offerings in the schools for white students and the Negro high schools in industrial arts are similar in that woodworking and drawing are stressed with much less emphasis being placed on metal work and other courses.
35. No significant differences in the amount of teaching experience between white and Negro instructors in industrial arts were developed in the comparison between the two items.
36. No significant differences were found in the comparison of professional training of the instructors in industrial arts for white students and in those for Negro students.



37. A slightly higher percentage of the industrial arts shops in the white schools have separate industrial arts shops located outside the main buildings.

38. The industrial arts shops in the Negro high schools of the study have a slightly higher average amount of square feet per student in their floor space than do the industrial shops in the junior high schools of the Panhandle area of Texas.

39. In comparing the industrial arts programs of the schools for white students and those for Negro students, the over-all conclusion was reached that no significant differences prevail between the white and Negro schools in regard to offerings, experience and preparation of the instructors, location of the industrial arts shops, and amount of square feet of floor space available for shops.

#### Recommendations

1. Further study is recommended along the lines of the present study in order to validate conclusions reached.

2. Closer co-operation between the white instructors in industrial arts and colored instructors in this subject in the Negro schools, it is believed, would result in a greater knowledge of the efforts of the Negro schools to institute an adequate program of industrial arts.

3. The Negro schools should be encouraged to strive for a larger enrollment in industrial arts classes.

## APPENDIX

Dear Sir:

A study is being made of the industrial arts program for the Negro population of Texas.

Would you please fill in the blanks and mail the attached card?

Yours truly,

Sam J. Ottinger

Please list the names and addresses of the industrial arts teachers in your colored school.

Teachers

Addresses

_____	_____
_____	_____
_____	_____
_____	_____

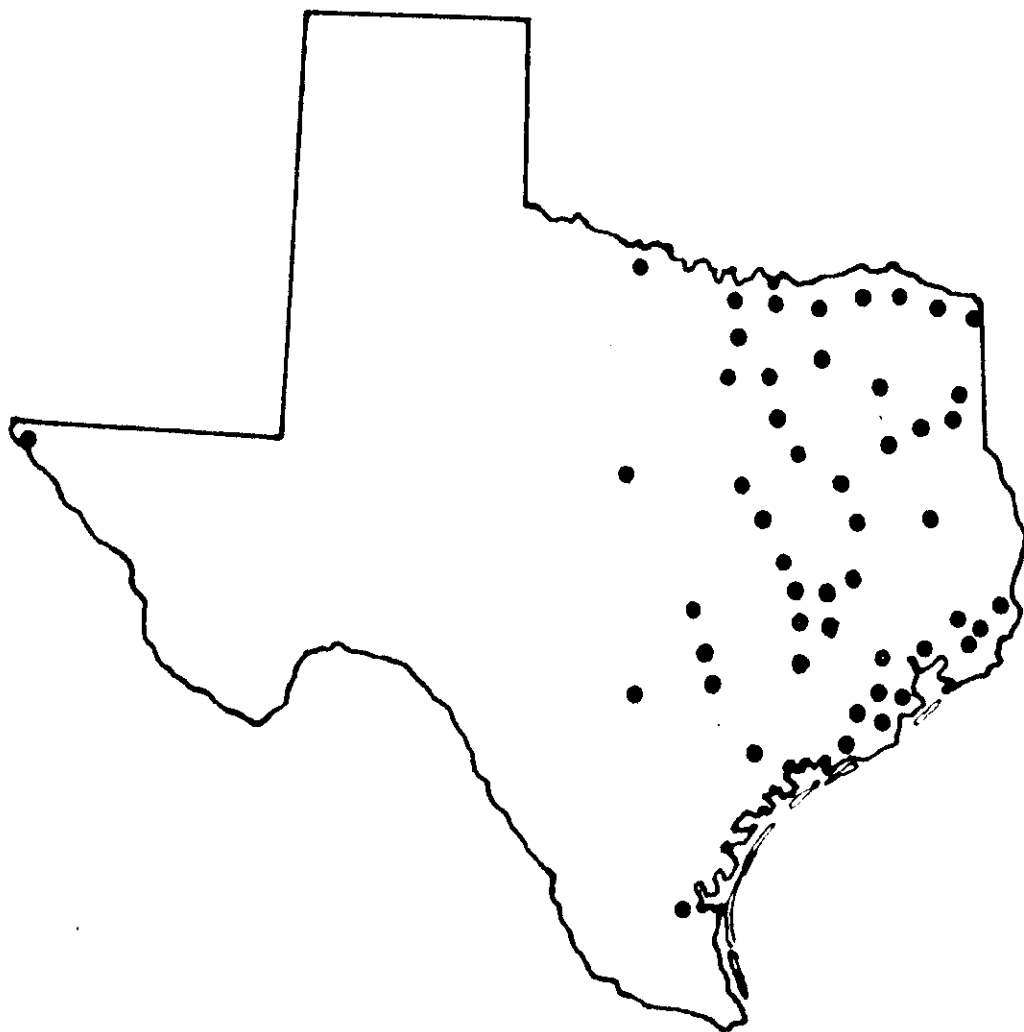


Fig. 2. —Spot map of Texas showing the locations of the forty-three Negro high schools which participated in supplying data for this study.

## QUESTIONNAIRE

### A STUDY OF THE INDUSTRIAL ARTS PROGRAM IN THE NEGRO HIGH SCHOOLS OF TEXAS

I am making a study of the Industrial Arts program in the Negro high schools in the State of Texas. Your school has been chosen to be included in the study. In order to complete the study, there is some information which is needed and I will appreciate it very much if you will complete the following questionnaire and return it to me in the enclosed, self-addressed envelope at your earliest convenience.

Yours sincerely,

Sam J. Ottinger

Name of Respondent \_\_\_\_\_  
Name of School \_\_\_\_\_  
Address \_\_\_\_\_  
Date \_\_\_\_\_

#### I. Type of Industrial Arts Program:

1. What type of industrial arts program do you have, that is, a general shop or a unit shop? (1) Unit shop \_\_\_\_\_  
(2) General shop \_\_\_\_\_

2. If you have a unit industrial arts program, please check the following units of work taught. (1) Woodwork \_\_\_\_\_  
(2) Drawing \_\_\_\_\_ (3) Metal work \_\_\_\_\_ (4) Foundry \_\_\_\_\_  
(5) Carpentry \_\_\_\_\_ (6) Automobile mechanics \_\_\_\_\_  
(7) Electricity \_\_\_\_\_ (8) General crafts \_\_\_\_\_

3. If you have a general industrial arts program where two or more phases of industrial arts are taught simultaneously during the same period, please check those phases of work taught. (1) Woodwork \_\_\_\_\_ (2) Drawing \_\_\_\_\_ (3) Metal work \_\_\_\_\_ (4) Foundry \_\_\_\_\_ (5) Carpentry \_\_\_\_\_ (6) Automobile mechanics \_\_\_\_\_ (7) Electricity \_\_\_\_\_ (8) General crafts \_\_\_\_\_

## II. Facilities Provided for Teaching Industrial Arts:

1. Is the industrial arts program housed in a separate building from the main building? Yes \_\_\_\_\_ No \_\_\_\_\_
2. What is the total number of square feet included in the space provided for industrial arts? \_\_\_\_\_ square feet.
3. Is the shop equipped with power equipment for woodworking? Yes \_\_\_\_\_ No \_\_\_\_\_
4. Is the shop equipped with power equipment for metal work? Yes \_\_\_\_\_ No \_\_\_\_\_
5. Do you believe that the shop is equipped adequately with the necessary hand tools required for each phase of work included in its present program? Yes \_\_\_\_\_ No \_\_\_\_\_
6. Do you believe that the shop is equipped adequately with the necessary benches for each phase of work included in its present program? Yes \_\_\_\_\_ No \_\_\_\_\_
7. Is adequate space provided for the storage of materials used in the program such as lumber and finishing materials? Yes \_\_\_\_\_ No \_\_\_\_\_
8. Is adequate locker space provided for each student to store work and personal belongings? Yes \_\_\_\_\_ No \_\_\_\_\_
9. Is there a separate finishing room? Yes \_\_\_\_\_ No \_\_\_\_\_
10. If a separate finishing room is provided, is it of adequate size? Yes \_\_\_\_\_ No \_\_\_\_\_

11. If the program is housed in the main building, where is it located? Basement \_\_\_\_\_ First floor \_\_\_\_\_ Second floor \_\_\_\_\_
12. Are wash basins and toilet facilities located in the industrial arts shop? Yes \_\_\_\_\_ No \_\_\_\_\_
13. If wash basins are not located in the industrial arts shop, are they located near-by? Yes \_\_\_\_\_ No \_\_\_\_\_
14. Do you believe that the industrial arts shop has adequate lighting? Yes \_\_\_\_\_ No \_\_\_\_\_
15. Do you believe that the industrial arts shop is adequately wired for the power equipment located in the shop? Yes \_\_\_\_\_ No \_\_\_\_\_
16. Do you believe that the industrial arts shop is properly ventilated? Yes \_\_\_\_\_ No \_\_\_\_\_
17. How are the hand tools and other small equipment kept?  
Tool room \_\_\_\_\_ Open tool panels \_\_\_\_\_ In drawers of work benches \_\_\_\_\_
18. Do you have books that are adequate for teaching industrial arts shop? Yes \_\_\_\_\_ No \_\_\_\_\_
19. Are the books, magazines, etc., kept in the industrial arts shop? Yes \_\_\_\_\_ No \_\_\_\_\_

### III. Information Concerning Student Body and Enrollment in the School:

1. How many students are enrolled in the school? \_\_\_\_\_
2. How many boys are enrolled in the school? \_\_\_\_\_
3. How many students are enrolled in industrial arts? \_\_\_\_\_
4. How many classes are taught daily in industrial arts? \_\_\_\_\_
5. Are girls permitted to take industrial arts? Yes \_\_\_\_\_ No \_\_\_\_\_
6. If so, how many girls are presently enrolled in industrial arts? \_\_\_\_\_

IV. Information Concerning the Procurement and Distribution of Tools and Materials Used in Industrial Arts:

1. Does the administration provide a definite budget or amount of money each year to be used for the purchase of materials for student use? Yes \_\_\_\_\_ No \_\_\_\_\_
2. Are the students required to pay for the materials used? Yes \_\_\_\_\_ No \_\_\_\_\_
3. If the students are required to pay for the materials used, who collects the bills? Shop teacher \_\_\_\_\_ Principal \_\_\_\_\_ Business manager \_\_\_\_\_ Others \_\_\_\_\_
4. Do you believe that an adequate sum of money is provided each year for the maintenance and operation of the industrial arts program? Yes \_\_\_\_\_ No \_\_\_\_\_
5. Are you required to prepare an annual inventory of all tools, equipment and materials? Yes \_\_\_\_\_ No \_\_\_\_\_
6. Are materials used by the students purchased from dealers located in the town? Yes \_\_\_\_\_ No \_\_\_\_\_
7. Are the students required to pay for the materials prior to their use? Yes \_\_\_\_\_ No \_\_\_\_\_

V. Information Concerning Class Organizations Used in the Industrial Arts Classes:

1. Do you use a student personnel organization in your classes? Yes \_\_\_\_\_ No \_\_\_\_\_
2. How are tools issued to the students? By the teacher \_\_\_\_\_ By a tool foreman \_\_\_\_\_ Open tool room \_\_\_\_\_
3. List the responsibilities usually assigned to the students in your classes.

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4. Do you use a progress chart? Yes \_\_\_\_\_ No \_\_\_\_\_

VI. Information concerning the Types of Projects Made by the Students:

1. Is each student required to make certain projects selected by the instructor? Yes \_\_\_\_\_ No \_\_\_\_\_
2. Are students permitted to select projects with the approval of the instructor? Yes \_\_\_\_\_ No \_\_\_\_\_
3. List the chief sources used to secure plans and ideas for projects.

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VII. Preparation and Qualifications of the Industrial Arts Teachers:

1. Where did you attend college? \_\_\_\_\_
2. Did you major in industrial arts? Yes \_\_\_\_\_ No \_\_\_\_\_
3. Check the degree or degrees that you have completed.  
B. S. \_\_\_\_\_ B. A. \_\_\_\_\_ M. S. \_\_\_\_\_ M. A. \_\_\_\_\_ None \_\_\_\_\_
4. How many semester hours have you completed in industrial arts? \_\_\_\_\_
5. How many years have you taught? \_\_\_\_\_
6. How long have you taught in your present position? \_\_\_\_\_

If you have any remarks on other information concerning the industrial arts program in your school, please give them in the space provided below, or on the backs of the pages. They will be appreciated.

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