FACTORS AFFECTING THE ENROLLMENT OF JUNIOR HIGH SCHOOL STUDENTS IN ELECTIVE INDUSTRIAL ARTS COURSES

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B.A.W.

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CHAPTER I

ORIGIN AND ORGANIZATION OF THE STUDY

Origin of this study stemmed from the writer's concern over an enrollment in elective Industrial Arts courses that appeared to be out of proportion to the total school enrollment and to enrollment in other elective courses. Believing that Industrial Arts is an integral part of education, an important aspect of learning how to live and work in a complex industrial society, the study of "Factors Affecting the Enrollment of Junior High School Students in Elective Industrial Arts Courses" was undertaken with application to the particular Junior High School in which the writer is an instructor in Industrial Arts.

Needs for the Study. Industrial Arts seems to be facing a period of crisis that could result in its relegation to a position of minor importance in general education. In an age when nations are racing for conquest of outer space, increased emphasis is being placed on mathematics, science and languages. The writer feels that these are important but also feels that Industrial Arts is or should be as important now as it has ever been.

This is felt to be true for more than one reason. First of all, we live in an era of technological accomplishment. Industrial Arts is that part of a total educational program for all youth which is concerned with the development of a practical understanding and appreciation of today's industrial and technical society. It is the curriculum area in the public schools which provides the setting for pupils to learn about industry and to experience the act of creating from materials new and different forms which have human value. In so doing they have the opportunity to learn to understand and appreciate materials, processes, operations, machines, tools, opportunity for work, quality of products and services, maintenance, safety, and the significance of technology and its effect on society and the individuals within that society. It is a laboratory-classroom experience designed to orient students to a technological society. It is a part of the common learning needed by all responsible citizens. It has general educational value for each individual.

Secondly, public education should be committed to the discovery and development of the talents of all boys and girls. Although all teachers are aware that individuals possess many different kinds of talent and express themselves creatively in many different ways, not all of them recognize that creativeness sometimes may emerge from what is thought

to be the lower level of intellect. Too often, verbal talents are underscored over and above more utilitarian talents which in the long run may be of more benefit to society. Industrial Arts provides many opportunities for the discovery and development of technical abilities possessed by students--technical abilities which society needs today.

Third, teachers today are confronted with the problem to find ways for able students to take Industrial Arts. The school administration has an organization that meets one hour a day, five days a week for all classes. At the same time, they require a specified number of credits in basic subject matter and limit the number of subjects a student may take. One of the questions back of this survey was that of choice on the part of the student in electing Industrial Arts. Would he have taken a course in it if it could have been scheduled? Or was the choice of some other elective his own selection or that of someone else?

All of these were need factors that entered into the study. Its purpose was to study all phases of factors affecting the enrollment of Junior High School students in elective Industrial Arts courses and to apply findings to the school and to Industrial Arts education in general.

Research Techniques. A questionnaire was used in gathering information from the boys in the ninth grade in 1960-61 in

the Thomas J. Rusk Junior High School, Dallas, Texas, relative to the Industrial Arts courses they had taken in the eighth grade or were taking in the ninth grade. In addition to the number or numbers of Industrial Arts courses elected, the boys were asked to indicate their attitude toward shop classes, working conditions, Industrial Arts teachers, reasons for electing or non-electing Industrial Arts courses, the ones most preferred, subjects interested in, subjects taken in school, father's occupation, hobbies, things liked or disliked about Industrial Arts classes, and average grades make in Industrial Arts and average grades made in regular academi subjects.

Two questionnaires were developed: one for the boys enrolled in Industrial Arts in the ninth grade and one for the boys who enrolled in the subject in the eighth grade and did not elect a course in the ninth grade or who did not take any course in the subject in the eighth grade. In order to make the data as comprehensive as possible, the questionnaires to the ninth grade boys were administered in their Industrial Arts classes and those to the other boys in their individual home rooms.

In compiling the data, the questionnaires were grouped according to the average grades made by the boys in subjects other than Industrial Arts. These groups were: A and B; C;

D and below. By means of this grouping, study was made of courses chosen, attitudes, and progress made in terms of academic ability in other subjects. Tables and percentages were worked out showing similarities, dissimilarities, and comparisons.

The occupations of the fathers as well as the boys' hobbies and their future avocational preferences were listed and studied. Comments written in on "things liked about Industrial Arts" and "things disliked in Industrial Arts" were included in full. In fact, an effort was made to develop an understanding of the boys from the standpoint of academic ability, inclination for Industrial Arts, future plans, and environmental conditions.

Findings were listed from the study and conclusions and recommendations developed. Probable use of the study will be an appraisal of its findings by the Industrial Arts Department and an effort made to incorporate them into the school program in this area, with special attention directed to remedying crowded classrooms and for some way of scheduling Industrial Arts courses for those interested.

The growth and development of the Industrial Arts Program in the Dallas Public Schools was studied as a basis for the individual study at the Thomas J. Rusk Junior High School. Information gathered in this research is presented in Chapter II.

CHAPTER II

GROWTH AND DEVELOPMENT OF THE INDUSTRIAL ARTS PROGRAM IN THE DALLAS PUBLIC SCHOOLS

Industrial Arts teachers have been much concerned with the recent rush of high school students to concentrate their efforts in the fields of science and mathematics. Without any inclination to disparage the contributions or the needs of these in this missile age, the merits of other subject matter should not be neglected. Since Industrial Arts is the basis of our great industrial society, it would seem to be fitting that this subject should have added interest and study. One of the purposes of this chapter is to make a comparison of participation in elective Industrial Arts courses in the Dallas public schools with other elective subject matter.

Growth of the Dallas Public Schools. Growth of the Dallas public school system has been rapid since 1945 when there were approximately 60,000 pupils. By 1955, the number was approximately 123,000, and the 1961 enrollment topped the 155,000 mark. With the opening of school in the 1945-46 term, there were 72 school buildings in the system with 1,678

classrooms available for instruction. This list, broken down, yielded eight senior high schools, four junior high schools, and sixty elementary schools. In 1960-61, there were 153 school plants in use, 4,174 permanent type classrooms, and 325 frame type and more than 4,700 teachers besides other service and maintenance employees.

Changes in the Curriculum. Two curriculum charts in the 1959-60 Annual Report contrast the 1915 curriculum with the one in use in 1959-60, and provide information regarding changes. In 1915 the subject-matter type of curriculum was used. Required in the elementary grades were reading, handwriting, spelling, language, arithmetic, geography, history, health, and drawing. Music was not offered in the first two grades but was required in grades four through seven. At the secondary level, English and foreign language were required in the eighth through the tenth grades, with an elective choice in the eleventh. History and economics were required in the eighth and ninth grades with electives permitted in the tenth and eleventh. No science was required, but electives at all four grade levels were permitted. Two years of mathematics, the eighth and ninth, were required with electives chosen in the tenth and eleventh grades. Courses were offered in Commercial Subjects, in Domestic Economy, and in Manual Training but they were all elective in nature.

Woodwork, Cabinet Making, Forge, Machine Shop, and Mechanical Drawing were listed as the courses under Manual Training.

In the 1959-60 curriculum, broad fields of knowledge rather than subject matter were designated: Language Arts, Social Studies, Health Science, Creative and Recreative Arts, Home and Vocational Arts, and Special Education for Exceptional Children. All of these except the Special Education area were required at all grade levels in the elementary school. An additional grade, the twelfth, had been added at the secondary level. English was required in the seventh through the eleventh grade. Foreign language was not offered in the seventh grade and was elective in all other grades except it was required in the eighth grade for honors courses. Social Studies were required in the seventh, eighth, tenth, and eleventh years, and three times a week in the twelfth year. It was elective at the ninth grade level.

Health Science was required in the seventh grade, for honor students in the eighth, and was elective at other grade levels. Mathematics was required for honor students in the seventh grade, for all students in the eighth, ninth, and tenth grades, and elective in the eleventh and twelfth grades. Arts and Crafts were required in the seventh and eighth grades, elective at other grade levels. Creative and Recreational Arts were elective at all levels. Home and Vocational Arts

included Homemaking, Industrial Arts, Technical, Trades and Vocational Education, and Business Education. Homemaking and Industrial Arts were required at the seventh and eighth grade levels, but were elective in the tenth, eleventh, and twelfth grades.

In content, the Industrial Arts courses had been greatly enlarged. Four fundamental courses were offered at the junior high school level, and these offerings were greatly expanded in the senior high school to meet the needs of the industrialist expansion of the Dallas community. This was particularly true in the Crozier Technical High School where Advanced Auto Mechanics, General Machine and Metal, General Wood, Radio Shop and Television, and Vocational Shop were offered in 1960-61. In the general high schools, the Industrial Arts courses, for the most part, were advance continuations of the four fundamental courses offered in the Junior High School.

Industrial Arts Teachers. A comparison of the number of Industrial Arts or Manual Training teachers and the subjects taught presents a comprehensive picture of the many changes and expansions from 1948 until 1960, the period in which the Dallas public schools have made their greatest expansion. As taken from the list of teachers in the superintendent's office for the years 1948-49 and 1959-60, there were 41 Industrial Arts teachers in 1948-49 and 125 in 1959-60.

Distribution of the teachers in the system was found to be:

School	Number Industrial Arts Teachers	
	1948-49	1959-60
Senior High School	9	32
Junior High School	14	57
Elementary School	0	2
Technical High School	14	13
Vocational School	0	8
Negro Senior High School	4	9
Negro Junior High School	0	4

The greatest increase in number of teachers has been at the junior high school level. The decrease in teachers in the Technical High School has been due to separation of the vocational instruction into a separate department or school. In 1948-49 the two were combined; in the 1959-60 year eight teachers were listed in the vocational school, making a total of 21 for the technical and vocational schools. Some instruction in the elementary school was indicated in the assignment of two teachers of Industrial Arts to this level. No Negro junior high schools were listed in 1948-49, but in 1959-60 four Industrial Arts teachers were assigned to such schools. The number of teachers in the Negro senior high schools had more than doubled over the ten year period.

Changes in the Industrial Arts curriculum can also be studied through the distribution of teachers in instruction

in different phases of subject matter. Table I shows this distribution in the senior and junior high schools.

TABLE I

DISTRIBUTION OF INDUSTRIAL ARTS TEACHERS IN DIFFERENT PHASES OF INDUSTRIAL ARTS INSTRUCTION, 1948-49, 1959-60

Subject Matter	Number of Industrial Arts Teachers	
	1948-49	1959-60
Drafting	17	27
Wood	3	19
General wood	5	5
Wood and metal	0	5
Wood and drafting	0	1
Metal	0	22
General Metal	5	6
Metal and electronics	0	2
Shop	2	4
Manual training	1	0
Electronics	0	20
Metal and electronics	0	1
Drafting and general shop	0	2
General electronics	0	1
Drafting and electronics	0	1
Auto shop	0	1
Totals	33	117

Other courses in the Technical High School are Advanced Auto Mechanics, Advanced Sheet Metal, General and Technical Auto Machines, General Machines and Metal, Radio Shop and Television. In the Vocational School, separate now from Industrial Arts, subject matter includes Auto Body and Auto

Paint, Furniture Repairs and Upholstery, Home Appliance Repairs, Machine Tool Operation, Auto Mechanics, Sheet Metal, and Welding.

Drafting comprised the major portion of the Industrial Arts program in the Dallas public schools in 1948-49, and the number of teachers of this subject in 1959 indicates that it is the major subject with metal, wood, and electronics next in order. Manual Training has lost its identity and no longer appears in the curriculum.

Industrial Arts Program. Some facts on the Industrial Arts program of the Dallas public schools, 1954-55, indicate the offerings, the number taking them, and a description of the courses:

1. Elementary General Shop--450 students.

   Three elementary schools have a program which teaches boys and girls to use simple tools in making projects.

2. Industrial Arts program in the Junior and Senior High Schools--5,006 students.

   Comprehensive subjects are taught, such as: drafting, electricity, metal, and wood. This program teaches the students the usage and care of supplies and tools in industrial exploration.

3. Work Experience Program--Industrial Cooperative Training and Distributive Education--409 students.

   This program teaches the students merchandising and industrial processes; in the afternoon, the students work in various businesses in the

community to gain work experience in these subjects.

4. Technical and Vocational Program--1,464 students.

This program offers opportunities for boys and girls to earn a livelihood by learning such subjects as: photography, printing, radio, television, machine shop, cabinet making, upholstery, automechanics, cosmetology, sheet metal, and technical and architectural drawing. (6, page 15)

Courses Completed by 1960 Graduates. Some additional statistics taken from a recent report of the Superintendent of the Dallas Public Schools indicate the extent to which 4,634 graduates of the school system in 1960 had completed different courses while in high school. Number completing different courses were: (6, page 18)

4 units of English	2,650
3 units of English	2,273
2 or more units foreign language	2,440
3 or more years in science	438
2 sciences	2,695
Advanced chemistry and physics	115
Advanced placement in chemistry and physics	130
4 years college preparatory mathematics	834
3 years college preparatory mathematics	1,105
2 units college preparatory mathematics	1,476
Advanced placement course in mathematics	196
1 or more units in typing	2,108
1 or more units in shorthand	759
1 or more years homemaking	2,032
1 to 4 years of art	645
2 or more years band or orchestra	451
1 or more years of chorus	1,688
1 or more years mechanical drawing	819
1 or more years of woodwork	521
1 or more units of metal shop	341
Courses in distributive education	369

These figures show that small percentages of the students selected courses in Industrial Arts in comparison with some other elective subjects. For example, 2,108, or approximately 46 per cent of the 4,364 students graduating, had taken a course in typing. In contrast, 819 students, or approximately 19.6 per cent, had taken a course in mechanical drawing; 521, or 11.4 per cent, had taken a course in woodwork; and 341, or 7.5 per cent, had taken a course in metal shop. These data indicate that a high percentage of the high school students choose electives other than those in Industrial Arts.

Facilities for Industrial Arts in Rusk Junior High School, Dallas, Texas. The facilities for teaching Industrial Arts can be an important factor in a student's decision to elect or not to elect one or more courses in this area. In order to reach some decision regarding the adequacy or nonadequacy of the space facilities provided in the Rusk Junior High School for teaching Industrial Arts courses, some standards of reference were studied. According to studies made by California teachers and administrators, space requirements for this purpose should be:

Open shop area (wood, metal, electricity shops):

Minimum----75 sq. ft. per student
Adequate---100 sq. ft. per student
Desirable--125 sq. ft. per student

Mechanical Drawing:

Minimum----40 sq. ft. per student
Adequate---50 sq. ft. per student
Desirable--60 sq. ft. per student

In contrast to this, the space arrangements for Industrial Arts instruction in the Rusk Junior High School are:

Electric shop-------912 sq. ft.

Wood shop-----------1,385 sq. ft.

Metal shop----------1,535 sq. ft.

Mechanical drawing--1,075 sq. ft.

When translated into the amount of space per pupil, based on a maximum of 32 students per shop, it is found that in the electric shop there is approximately 29 square feet per student compared to the recommended minimum of 75 square feet per student. In the wood shop, there is 43 square feet per student compared to the recommended minimum of 75 square feet per student. In the metal shop, there is 58 square feet per student compared to the recommended minimum of 75 square feet per student. In the mechanical drawing room, there is approximately 35 square feet per student compared to the recommended minimum of 40 square feet per student. In no instance does the space facilities of the Rusk Junior High School meet the minimum standards set up by the study in California.

The present chapter has been concerned with the growth and development of the Industrial Arts program in the Dallas

Public Schools. Included have been changes in the Industrial Arts curriculum, present content of Industrial Arts curriculum, number and distribution of Industrial Arts teachers, per cents of student body electing Industrial Arts courses, and extent to which the Rusk Junior High School meets space requirements in its facilities for teaching Industrial Arts.

Objectives that should govern an Industrial Arts program in a junior high school are the subject matter of the next chapter.

CHAPTER III

WHAT OBJECTIVES SHOULD BE EMPHASIZED IN INDUSTRIAL ARTS?

In the changing society of modern times, one of the questions that confront the Industrial Arts teacher is: What objectives should be emphasized in Industrial Arts? Should they differ for the slow learner and the superior student? Should they be limited to those that are unique to Industrial Arts? Do the programs based on present objectives attract a cross section of high school students? It is the obligation of the Industrial Arts profession to try to find the answer. The purpose of this chapter is to attempt to find some of the answers by reviewing the development of Industrial Arts objectives from 1928 to 1961 and listing some of the objectives which should be emphasized with the reasons for their selection. In the process, the philosophy of the writer will be developed along with his attitude toward some of the questions.

Development of Industrial Arts Objectives from 1928 to 1960. Industrial Arts, as a subject in the school curriculum, is of comparatively recent origin. Some idea of the changes

in objectives may be gained by presentation of lists made at various periods of time. In 1928 Warner made an extensive study of Industrial Arts objectives to determine which ones were used during the 50-year period preceding 1928. Fifteen specific objectives were listed:

1. Exploration
2. Educational Guidance.
3. Vocational Guidance.
4. Consumer Knowledge and Appreciation.
5. Household Mechanics.
6. Social Habits and Attitudes.
7. "Pre-Vocational" Purposes.
8. Avocational Purposes.
9. A Degree of Skill.
10. The Seven Cardinal Principles.
11. Mechanical Intelligence.
12. Correlation with Other Subjects.
13. Developing the "Faculties."
14. Coordinating the "Hand and Eye."
15. Vocational Training. (2, page 34)

Ten years later the publication, Industrial Arts, Its Interpretation in American Schools, listed the following objectives for Industrial Arts:

In the Junior High School -

1. Provides information regarding industry and workers.

2. Reveals employment opportunities offered by industry.

3. Satisfies the boy's and girl's desires to create useful things.

4. Develops hobby and handyman interests and abilities.

5. Contributes to the tastes and judgment of the prospective consumer.

6. Develops interest and ability in home repairs and maintenance.

7. Affords practice in safety related to the home and industry.

8. Gives opportunity for cooperative effort in groups.

9. Illustrates and vitalizes the academic subjects.

In the Senior High School -

1. Develops an appreciation of design and quality in manufactured products.

2. Provides practice in the use of materials and tools for recreation and home utilization.

3. Samples a variety of industries, through advanced school courses, in preparation for entrance as a beginner into the skilled trades or into college courses in engineering and architecture. (8, pages 41-61)

At the end of another ten years, we find the following nine objectives listed:

1. To explore industry and American industrial civilization in terms of its organization, raw materials, processes and operations, products, and occupations.

2. To develop recreational and avocational activities in the area of constructive work.

3. To increase an appreciation for good craftmanship and design, both in the products of modern industry and in artifacts from the material cultures of the past.

4. To increase consumer knowledge to a point where students can select, buy, use, and maintain the products of industry intelligently.

5. To provide information about and, insofar as possible, experiences in the basic processes of many industries, in order that students may be more competent to choose a future vocation.

6. To encourage creative expression in terms of industrial materials.

7. To develop desirable social relationships, such as cooperation, tolerance, leadership, "followership," and tact.

8. To develop safe working practices.

9. To develop a certain amount of skill in a number of basic industrial processes. (3, pages 42-43)

Typical of the 1959 objectives of Industrial Arts education are those set up for it in the Guide for Industrial Arts in Florida Schools in the State of Florida:

1. Knowledge of the overall impact of industry upon society primarily through planning, design, and production in the laboratory.

2. Development of basic skills with tools and equipment commonly used by people in solving everyday problems of home living and also development of proper and safe attitudes and habits of work with tools, equipment, and materials.

3. Development of the interest and talents or discovery of the limitations of students through instructional shopwork in a variety of materials and processes which relate to future occupational choices.

4. Development of the ability to select, use, and maintain equipment and goods produced by industry and used in everyday living, such as tools and machines, motors and engines, and electrical and household appliances.

5. Promotion of wholesome and worthwhile interests and abilities in creative and constructive work with tools and craft materials for leisure-time and hobby activities. All activities in Industrial Arts classes should promote social experiences in working with others and afford opportunities to share, lead, plan, take responsibility, and cooperate in group activities. (5, pages vi-vii)

Comparing these objectives which were listed in 1928 with the latest list compiled in 1959 shows some differences. The 1928 list of fifteen objectives is longer than the others and includes some of the older psychological ideas: "Mechanical Intelligence," "Developing the 'Faculties'" and "Coordinating the 'Hand and Eye'." The objectives are much shorter, more concise, yet less specific than later objectives. The 1938 list, in comparison, is practical and states objectives in a descriptive manner. The 1948 list is still more comprehensive than the one in 1938, and the 1959 list includes only five objectives. These five, however, are detailed and expanded to cover all phases of the Industrial Arts curriculum. Highlights of them may be summarized as: (1) knowledge of industry, (2) development of basic skills, (3) development of interests and talents...of students, (4) development of the ability to select, use, and maintain equipment and goods produced by industry, and (5) promotion of wholesome and worthwhile interests and abilities...for leisure-time activities...and social experiences in working

with others. These objectives, it is seen, are much less inclusive than the ones listed in the 1928 study and are more specifically designed for the Industrial Arts program.

One area of discussion that has erupted recently is the problem of who should enroll in the Industrial Arts courses. Some questions in this area are: Should the student with a high average grade in subjects other than Industrial Arts enroll in the subject? Does it have values for him? Does it have more values for the slow academic group than for the ones with greater academic achievement? Recent investigations into the cause of juvenile delinquency have resulted in the conclusion that "we waste a million kids a year" by lack of opportunities to work, lack of skill on the part of youth to do technological types of work. (4, page 16) Arguments have been advanced for the development of trade schools similar to those of the Russian educational system.

In a recent Conference Report on Improving Industrial Arts Teaching some answers to these problems are indicated. The statement is made that "public education in the United States of America should be committed to the discovery and development of the talents of all boys and girls regardless of the nature of the talents so long as the talents lie within socially accepted patterns." (7, page 8) These talents may be literary, mathematical, esthetic, scientific,

or mathematical. In broad sense of values one is just as important as the other. Society, generally speaking, has emphasized the verbal-literary achievements as being more worthwhile. The recent developments in science have tended to call for crash programs in science. When the requirements here are added to the verbal-literary subject matter, the course of study is loaded so heavy that there is little or no time for vocational subjects. Somehow the quick conclusion was reached that the literary-science program was the "be-all" in the curriculum. Industrial Arts could very well be left to the slower pupils who did not have a high degree of academic ability.

This line of reasoning has a fallacy. "Industrial Arts is a part of the common learning needed by all responsible citizens." (7, page 9) There is no sharp division line between general education and special or vocational education. All sciences, arts and crafts, and industries have come out of efforts to satisfy the basic needs of man. Modern industry today is the keystone of our national life; it is the predominant characteristic of our society--our capacity to produce goods in large quantities. When production is halted in a major industry, the results are far-reaching. Yet a study of this dominant characteristic of our national life is relegated to the students who are less intellectually able to

master the verbal-literary phases of education; the schools do not develop a good understanding of this aspect of our society.

The patterns of abilities possessed by different individuals, however, are not confined to those with verbal-literary skills. Individuals possess many different kinds of talents and express themselves creatively in many different ways; very often creativeness emerges from what is thought to be the lower level of intellect. It is the responsibility of the school to offer opportunities to all abilities inherent in youth. The teacher knows from daily experience that pupils differ, one from another, and that very often the literary-minded one does not have much ability or interest in technological processes. Many different skills, however, are needed in today's complex industrial society--planning, designing, creating, writing, evaluating, and manufacturing. There is no line between general education and the specialized phase. Each is grounded in the industrial society in which we live.

Developing objectives for Industrial Arts, then, requires real thinking and reasoning. Its prime objective should be providing opportunities to develop an understanding of technological industry, give insight into the tools, machines, and industries basic to our technical society and to discover

any latent talents and abilities. It may be that the youth who is slow academically has creative talents over and above those in the more verbal literary-minded ones. It seems logical that the verbal-literary minded student needs an understanding and appreciation of industry even if he is not going to actively engage in it. The slow learner, it is believed, often shows more proficiency in the manual work in Industrial Arts than the one with a higher academic rating, that is, generally speaking. He may learn a specialized skill but, at the same time, he needs appreciation and understanding of industry.

The task confronting the school is to provide a program wherein all pupils may have an opportunity to learn an understanding of technological processes. Labeling Industrial Arts as an area for "dumping" the slow learner and problem cases is to defeat the purpose of education. Rather, the problem is to find ways for able students to take Industrial Arts:

> We are stereotyped with an organization of one hour a day, five days a week. Why not fewer periods for the more advanced students? There are some things that should be done in a shorter period of time. Also, we have had the experience of offering a course where neither credit nor grade is given. The better students will attend whether they get credit or not. The important point is to see a need and develop a course to fulfill the need. (7, page 9)

Writer's Objectives and Philosophy in Industrial Arts Instruction. From this research, the writer is now able to set out his own objectives in teaching Industrial Arts, define his philosophy. From a general standpoint, he can agree with and accept the four major objectives set up in the Conference Report:

1. To develop in each student an insight and understanding of industry and its place in our culture.
2. To discover and develop talents of students in the technical fields and applied sciences.
3. To develop technical problem-solving skills related to materials and processes.
4. To develop in each student a measure of skill in the use of the common tools and machines. (7, pages 19-20)

These are general objectives. In the total program, however, there will be specific objectives for different levels. The objectives would not be the same for the slow learner as the gifted. At the junior high school level, the following are believed to be valuable in planning and developing Industrial Arts instruction: (1) provide information regarding industry and workers, (2) reveal employment opportunities offered by industry, (3) satisfy the desire to create useful things, (4) develop hobby and handyman interests and abilities, (5) develop interest and ability in home repairs and maintenance, (6) give practice in safety in handling tools, (7) provide opportunities for expression of creative

instincts, and (8) develop cooperation and democratic values through group work.

In the ensuing chapter, the survey made of the number of students electing Industrial Arts in the Rusk Junior High School, reasons for selection, attitudes toward the subject, average grades in Industrial Arts and in other subject matter, and environmental data are presented.

CHAPTER IV

FACTORS AFFECTING THE ENROLLMENT OF JUNIOR HIGH SCHOOL STUDENTS IN ELECTIVE INDUSTRIAL ARTS COURSES

In order to gather information on factors affecting the enrollment of junior high school students in elective Industrial Arts courses, a questionnaire was prepared and administered in 1960-61 to the boys in the ninth grade in the Thomas J. Rusk Junior High School, Dallas, Texas, relative to the Industrial Arts courses they had taken in the eighth grade or were taking at that time in the ninth grade. The questions covered not only the courses taken but various factors involved in the decisions of students to select or fail to select elective Industrial Arts courses offered in the school: attitude towards shop classes, average grades in Industrial Arts classes and in classes other than Industrial Arts, subject interest and subject enrollment, college plans, father's occupation, work desired in later life, hobbies, and likes and dislikes for Industrial Arts shop classes.

The enrollment at Thomas J. Rusk Junior High School for the 1959-60 school year was 960, with about 225 of these being eighth grade boys. An attempt was made to get a

100 per cent response from the boys enrolling in 1960-61 in the ninth grade regarding why they did or did not enroll in Industrial Arts for this year. To this end two questionnaires were developed and distributed. Form I was filled out in the Industrial Arts classes by students taking the courses. Form II was filled out in the home rooms by the ninth grade boys not enrolled in any course in Industrial Arts.

One hundred and eighty-three questionnaires were completed by the boys. Of these, 86 were enrolled in courses in Industrial Arts, and 97 were not taking any course in this subject. Twenty of the 97 students not enrolled in Industrial Arts, it was found, had no experience in Industrial Arts; so the two groups studied were comparable in size, being 77 and 86 respectively.

The completed questionnaires from these two groups provide the data for the present study. Tabulations were made, tables prepared, and comparisons and an analysis made of the findings. In addition, the questionnaires from the 20 students with no Industrial Arts experience were evaluated, inasmuch as they provided reasons for not selecting Industrial Arts courses in both the eighth and ninth grades. In view of some expressed opinions regarding students who select Industrial Arts courses, a further breakdown of the data obtained from students was made in order to make them more meaningful.

To do this, the questionnaires from both Forms I and II were separated into three groups on the basis of the average grades reported by the students in classes other than Industrial Arts: the A and B group, the C group, and the D and below group. By breaking the data down into these groups, it was believed that some significant information could be developed regarding the attitudes of students of varying academic ability towards the subject and whether or not the Industrial Arts department is a "catch-all" for the misfits, the slow learning, and the ones not interested in college careers. Other data concerning the father's occupation, the hobbies of the students, and expressed future plans, it was also believed, would be significant in revealing reasons for students' selecting or failing to select Industrial Arts courses in the junior high school.

Average Grade Groups in Subjects Other Than Industrial Arts

The questionnaires from the boys of the study were separated into average grade groups in subjects other than Industrial Arts. The classifications, as found, are shown in Table II.

TABLE II

NUMBER AND PER CENT OF STUDENTS IN AVERAGE GRADE GROUPS IN SUBJECTS OTHER THAN INDUSTRIAL ARTS

Average Grade	Enrollment in Groups					
	1959-60 (77 boys)		1960-61 (66 boys)		No Experience (20 boys)	
	No.	%*	No.	%*	No.	%*
A and B	32	41.6	20	23.1	16	80.0
C	33	42.9	42	48.7	4	20.0
D and below	12	15.9	24	28.7	0	0

*All percentages are approximate

As shown in Table II, the C group included more boys than any other in both years. A decrease in the number of boys enrolling in Industrial Arts in the A and B groups is apparent: 41.6 per cent represented this group in 1959-60 and 23.1 per cent in 1960-61. At the same time, the D group of boys greatly increased: 15.9 in 1959-60 and 28.7 per cent of the entire group in 1960-61. The tendency, it is indicated, was for the A and B pupils to drop out after the eighth year and for the C and D groups to increase.

Type of Courses Selected by the Students Enrolling in Industrial Arts

Other data gathered from the study supplements that on grade achievement in subjects other than Industrial Arts.

Closely related to grade achievement data are the types of courses selected by the different groups, the ones best liked, courses desired, and reasons for electing or not electing Industrial Arts courses.

Information regarding the type of courses selected by the boys in the different grade groups is shown in Table III.

TABLE III

INDUSTRIAL ARTS COURSES ELECTED BY THE STUDENTS ENROLLING IN INDUSTRIAL ARTS COURSES IN 1959-60 and 1960-61

Average Grade Group	Number in Group	Type of Course Elected: Electric Shop No.	Electric Shop %*	Mech. Drawing No.	Mech. Drawing %*	Wood Shop No.	Wood Shop %*	Metal Shop No.	Metal Shop %*
1959-60:									
A and B	32	24	74.4	6	18.6	23	71.3	1	3.1
C	33	22	66.0	19	57.0	16	48.0	2	6.2
D and below	12	9	76.5	4	34.0	6	50.0	0	0.0
1960-61:									
A and B	20	15	75.0	13	80.0	7	35.0	0	0.0
C	42	27	64.8	21	50.0	26	62.0	0	0.0
D and below	24	5	21.0	3	12.5	13	53.0	6	25.0

*All percentages in the study are approximate

Data in Table III show variations within the groups and from course to course. In electric shop, the highest

percentage of boys in the eighth grade, 76.5, enrolled from the D and below average grade group, while only 21 per cent from this group enrolled in it in the ninth grade. Similar percentages, 66.0 and 64.8, of the C average grade group enrolled in the subject in both grades.

In mechanical drawing, 18.6 per cent of the A and B group enrolled in the eighth grade; but 80 per cent of the boys in the ninth grade enrolled in the course. Percentages of the C group in this subject were similar for both grades, 57 and 50. Thirty-four per cent of the boys in the D and below group enrolled in the course in the eighth grade, but only 12.5 did so in the ninth.

In wood shop, 71 per cent of the A and B group in the eighth grade and 35 per cent in the ninth grade enrolled in this subject. More variance was found in the C group here than in other course choices; 48 per cent elected the subject in the eighth grade and 62 per cent in the ninth grade. Percentages of boys in the D and below group for enrollment in this area were similar, 50 in the eighth grade and 53 in the ninth.

Metal shop had the fewest enrolled at all grade levels and groups. Three per cent of the A and B group of boys enrolled in it in the eighth grade and none in the ninth grade. Slightly over 6 per cent of the C group chose metal shop in the eighth grade, none in the ninth. No boy in the D or below

group enrolled in it in the eighth grade, but 25 per cent of those in the ninth grade enrolled in it.

Over-all speaking, the most pronounced change from year to year was the increase in choice of mechanical drawing by the A and B group of boys and in the increase in selection of wood shop and metal shop courses by the boys in the D and below average grade groups. More stability in choice of course selection was indicated in the C average grade group.

Industrial Arts Courses Best Liked by Students In Different Grade Groups

Difficulties in scheduling classes sometimes result in a student's having to schedule a course, especially an elective, other than the one desired. To ascertain further data on the likes and dislikes of the boys in the different average grade groups, a question relevant to this was asked. Data in Table IV show the information.

TABLE IV

INDUSTRIAL ARTS CLASSES LIKED BEST BY STUDENTS IN THE AVERAGE GRADE GROUPS IN 1959-1960 AND 1960-1961

Average Grade Group	Number In Group	Course in Industrial Arts: Elect. Shop No.	%	Mech. Draw. No.	%	Wood Shop No.	%	Metal Shop No.	%	No Choice No.	%
1959-60:											
A & B	32	11	34.1	10	31.0	10	31.0	1	3.1	2	6.2
C	33	13	39.0	8	24.0	10	30.0	2	6.0	0	0.0

TABLE IV -- Continued

Average Grade Group	Number in Group	Course in Industrial Arts: Elect. Shop No.	%	Mech. Draw. No.	%	Wood Shop No.	%	Metal Shop No.	%	No Choice No.	%
D and below	12	3	25.0	0	0.0	7	59.0	2	17.0	0	0.0
1960-61:											
A & B	20	3	15.0	9	27.0	7	21.0	1	5.0	0	0.0
C	42	7	16.8	10	24.0	16	38.4	9	21.6	0	0.0
D and below	24	4	16.4	3	12.4	12	50.0	5	20.5	0	0.0

In the group of boys enrolling in Industrial Arts in the eighth grade, interest was about equally divided between electric shop, mechanical drawing, and wood shop. Less interest in mechanical drawing was indicated by the C group and none at all by the boys in the D and below average grade group. In this group, the preponderant percentage of boys, 59, enrolled in wood shop. The most pronounced differences indicated are in the preference for mechanical drawing on the part of the A and B boys and that of wood shop and metal shop by the boys with lower average academic grades.

Attitude of Non-enrolled Students Toward Industrial Arts Courses, Reasons for not Enrolling, and Courses Preferred if Enrolled

The 97 students answering Form II, those with previous experience plus those with no experience, were asked to state

their desires as to whether or not they had wished to enroll in an Industrial Arts course, reasons for not enrolling, and the courses preferred if they had have enrolled. Data in Table V show this information.

TABLE V

ATTITUDES OF NON-ENROLLED STUDENTS TOWARD INDUSTRIAL ARTS COURSES, REASONS FOR NOT ENROLLING, AND COURSES PREFERRED IF ENROLLED

Item	Average Grade Group					
	A and B (48 boys)		C (37 boys)		D and below (12 boys)	
	No.	%	No.	%	No.	%
Wanted to enroll in IA	15	31.2	12	32.4	5	42.5
Reasons for not enrolling:						
Couldn't schedule	22	46.1	16	43.2	4	34.0
Preferred other courses	13	27.3	9	24.3	4	34.0
Parents objected	2	4.2	1	2.7	0	0.0
Recommendations of others	2	4.2	0	0.0	0	0.0
Other	11	22.8	14	37.8	6	50.0
Courses preferred:						
Electric shop	8	16.8	7	18.9	0	0.0
Mechanical drawing	20	41.6	4	10.8	0	0.0
Wood shop	11	22.8	9	24.3	5	42.5
Metal shop	4	8.4	7	18.9	4	34.0
None	5	10.5	10	27.0	3	25.5

Data in Table V show that as the grade average decreased the percentage of boys wishing to enroll in Industrial Arts courses increased; almost 50 per cent of the D and below boys average grade group would have liked to have enrolled in the subject. In reasons for not enrolling, whether or not they desired to enroll, the reason most mentioned by the A and B group and the C group was inability to schedule a course. In the D and below group, 34 per cent of the boys reported that they could not schedule the course, while the same per cent indicated that they preferred other courses. Parents' objections and recommendations of others were more influential in the A and B group than in the C group and was not mentioned at all by the boys in the D and below average grade group.

In courses preferred, if the boys could have taken an Industrial Arts course, mechanical drawing and wood shop were most preferred by the A and B group, wood shop and electric shop and metal shop by the C group, and wood shop and metal shop by the D and below average grade group. None of the boys in this latter group indicated a wish to have enrolled in either electric shop or mechanical drawing. Five boys, 10.5 per cent, in the A and B group, ten, or 27 per cent, of the boys in the C group, and three, or 25.5 per cent, of the boys in the D and below group reported that they did not prefer any course in Industrial Arts. No boys in the 20 without any experience in Industrial Arts were in the D and below

group; so approximately 25 per cent of the group who enrolled in Industrial Arts in the eighth grade did not wish to take any more work in the department in the ninth grade. More than 41 per cent of the A and B boys would have liked to have taken mechanical drawing had it been possible. This indicates a growing realization on the part of this group for the need of mechanical drawing in later studies. More than 50 per cent of the boys in the D and below average grade group reported "other" reasons.

Reasons Advanced by Students in Industrial Arts Courses in 1960-61 for Enrollment

The students who were enrolled in some Industrial Arts course or courses in 1960-61 were asked to check reasons for enrollment. Data in Table VI give this information.

TABLE VI

REASONS FOR ENROLLING IN INDUSTRIAL ARTS COURSES BY STUDENTS IN 1960-61

Reason	Average Grade Groups					
	A and B (20 boys)		C (42 boys)		D and below (24 boys)	
	No.	%	No.	%	No.	%
I like it	15	75.0	37	88.8	20	80.2
It's easy	1	5.0	2	4.8	3	12.3
Parents wanted it	1	5.0	1	2.4	1	4.1
Teacher recommendation	0	0.0	3	7.2	1	4.1
Counselor recommendation	0	0.0	3	7.2	1	4.1
Wasn't anything else I wanted to take	0	0.0	4	9.6	3	12.3
I don't know	0	0.0	2	7.2	1	4.1
Other	10	50.0	4	9.6	2	8.2

The predominant reason for the students' enrolling in Industrial Arts courses, as shown in Table VI, was their liking for the subject. This was true in all grade groups, but more so in the C and D and below groups. Percentages of students checking "it's easy" indicated that this factor was negligible. Other reasons had small percentages, with fewer variations among the A and B group. In the "other" reasons listed, ten, or 50 per cent, of the students in the A and B group reported that they thought it would have value later in life or careers. Percentages mentioning this in the other two groups were much smaller. The inference here is that this group was much more concerned with future values than the students in the lower average grade groups.

Persons Influencing Students to Enroll In Industrial Arts Courses

Inquiry was made of the students regarding the person or persons influential in students' decisions to enroll in Industrial Arts and the one person most influential. Information on the answers given is shown in Table VII.

TABLE VII

PERSONS INFLUENCING STUDENTS TO ENROLL IN INDUSTRIAL ARTS CLASSES

Item	Average Grade Groups					
	A and B (20 boys)		C (42 boys)		D and below (24 boys)	
	No.	%	No.	%	No.	%
Persons influencing decision:						
Mother	4	20.0	6	14.4	4	16.8
Father	6	30.0	10	24.0	6	26.1
Brother or sister	1	5.0	3	7.2	2	8.4
IA teacher	2	10.0	7	29.4	2	8.4
Other teacher	1	5.0	3	7.2	1	4.2
Counselor	1	5.0	4	9.6	1	4.2
Other	7	35.0	19	45.6	14	56.8
No answer	1	5.0	0	0.0	0	0.0
Person most influential:						
Myself	9	45.0	12	28.8	12	49.2
Parents	1	5.0	6	14.4	2	8.2
Father	4	20.0	5	12.0	2	8.2
Mother	2	10.0	3	7.2	2	8.2
IA teacher	2	10.0	0	0.0	2	8.2
Counselor	1	5.0	4	9.6	1	4.1
Other teacher	0	0.0	6	14.4	2	8.2
Friend	0	0.0	2	7.2	0	0.0
Relative	0	0.0	2	7.2	1	4.1

Data in Table VII show that persons other than the ones mentioned in the checklist were most influential in selection of Industrial Arts courses by the students enrolling in them in 1960-61; "others" were checked by 35 per cent of the A and B students, 45.6 per cent of the C students, and 56.8 per cent of the D and below students. Of the persons checked, the

father was the most influential at all grade levels, with the highest percentage being in the A and B group. The Industrial Arts teacher had been influential in a number of instances, with by far the highest percentage indicated at the C grade level. Little influence at any grade level was attributed to the counselor.

In the specific person most influential in the students' choosing Industrial Arts courses, the real identity of the "other" person listed is shown; it was "myself." Forty-five per cent of the A and B group, 28.8 per cent of the C group, and 49.2 per cent of the D and below group wrote in "myself" as the most influential person. In other words, the boys made the choice themselves for one reason or another. The influence of fathers, mothers, teachers, and counselors was more pronounced in the A and B group than in the others. In the C and D and below groups, the "other" teacher had considerable influence. The general trend, as indicated by the data, was individual choice by the pupils themselves in selecting an Industrial Arts course in 1960-61.

General Attitudes of the Industrial Arts Students Toward Phases of Industrial Arts Instruction

A number of questions endeavored to gather information on the general attitudes of the students who had enrolled in

Industrial Arts toward different phases of the instruction in the subject. Data in Table VIII show information on attitudes of the different average grade groups toward shop classes, shop teachers, and working conditions in the shops.

TABLE VIII

GENERAL ATTITUDE OF THE INDUSTRIAL ARTS STUDENTS TOWARD SHOP CLASSES, TEACHERS, AND WORKING CONDITIONS IN THE SHOPS

Item	Average Grade Groups											
	A and B				C				D and below			
	1959-60 (32 boys)		1960-61 (20 boys)		1959-60 (33 boys)		1960-61 (42 boys)		1959-60 (12 boys)		1960-61 (24 boys)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Like shop classes	24	74.4	20	100.0	28	84.0	38	91.0	11	93.5	21	88.0
Like shop teacher	27	83.7	20	100.0	29	87.0	40	96.0	11	93.5	20	84.0
Like to work with hands	29	90.0	20	100.0	31	94.0	40	96.0	12	100.0	11	96.2
Like to use tools	30	93.0	14	70.0	31	94.0	40	96.0	12	100.0	22	90.0
Think it desirable to use tools and machinery	30	93.0	20	100.0	32	96.3	40	96.0	9	75.0	20	82.0
Like mechanical drawing	12	37.2	11	55.0	16	48.1	16	36.8	3	25.5	10	42.2
No answer	11	34.1	2	10.0	13	39.0	1	2.3	1	8.5	3	12.6
Shop class crowded	16	50.0	5	25.0	23	69.0	18	41.4	5	42.5	9	37.8
Enough tools and equipment	25	80.0	15	75.0	24	72.0	34	78.2	11	93.5	20	84.0
Shop dangerous place to work	0	0.0	1	5.0	2	6.6	6	13.8	2	17.0	3	12.6

Many differences in ideas and attitudes among the different average grade levels were found in tabulating the data in Table VIII. The A and B students enrolled in some Industrial Arts course in the eighth grade but not enrolled in the ninth showed the least percentage of liking shop classes. All of the boys in the C average grade group of the eighth grade indicated that they liked the shop classes and the shop teacher, while a high percentage of boys enrolled in courses in the ninth grade, 84 and 87, indicated the same. More of the boys in the eighth grade in the D and below average grade group indicated a preference in these areas than the boys at this level enrolled in an Industrial Arts course in the ninth grade. All of the boys in the A and B average grade groups and the C group who were enrolled in a course in the ninth grade reported that they liked to work with their hands, and more than 90 per cent of the boys at all other levels indicated the same, but the lowest percentage was indicated by the A and B group in the eighth grade.

More than 90 per cent of all boys at the different grade levels reported that they liked to use tools and machines, and high percentages indicated a feeling that it was desirable to be able to use tools and machines; the lower percentages, 75 in the eighth grade and 82 in the ninth, were found in the D and below average grade group.

In the data on the extent to which the students liked mechanical drawing, a large number of the participants indicated that they did "not know" - had not enrolled in any course. Of those answering, the highest percentage, 55, was found in the A and B group of boys enrolled in Industrial Arts courses in the ninth grade; the least percentage, 25.5, was reported by the D and below group of boys who enrolled in Industrial Arts in the eighth grade.

Fifty per cent of the A and B group of boys enrolled in Industrial Arts classes in the eighth grade and 25 per cent of the same grade level group in the ninth grade indicated that they thought the shop classes were crowded. In the C average grade group, 69 per cent of the boys at the eighth grade level and 41.4 at the ninth grade level were of the same opinion. In the D and below average grade groups, 42.5 per cent of the boys in the eighth grade and 27.8 in the ninth grade thought shop classes were crowded. Grade levels in these instances indicated no significant differences, but a large number of boys indicated that they thought shop conditions were crowded.

No significant percentages of boys at any grade level or year thought the shop a dangerous place to work. The least percentages were found in the A and B group and the highest, 17, in the C average grade group in the ninth grade.

Opinions Concerning Amount of Useful Learning In Industrial Arts Courses

The extent to which the Industrial Arts students regard the learning acquired as useful was also a part of the questionnaire. Data on the information secured are shown in Table IX.

TABLE IX

OPINIONS ON AMOUNT OF USEFUL LEARNING IN INDUSTRIAL ARTS COURSES

Item	Average Grade Group					
	A and B		C		D and below	
	No.	%	No.	%	No.	%
1959-60:	(32 boys)		(33 boys)		(12 boys)	
How much did you learn that was worth-while and useful:						
Much	11	34.1	2	6.0	3	25.5
Some	16	50.0	10	30.0	8	68.0
Little	3	9.3	21	64.0	1	8.5
None	1	3.1	0	0.0	0	0.0
1960-61:	(20 boys)		(42 boys)		(24 boys)	
Do you think you learned anything useful:						
Last year in 8th grade	20	100.0	33	79.2	19	79.0
This year in 9th grade	20	100.0	40	96.0	21	88.1

The boys who enrolled in an Industrial Arts course in the eighth grade and who did not re-enroll in the ninth grade varied in their opinions of the extent to which the learning was worth-while and practical. In the A and B group, 34.1 per

cent thought they had learned "much" and 50 per cent designated "some." Three, or 9.3 per cent, reported "little," and one thought nothing of any value had been learned. In the C group, only 6 per cent checked "much," while 20 per cent checked "some" and 64 per cent "little." The D and below group, however, showed higher percentages: 25.5 per cent checked "much," and 68 per cent, "some."

In the group enrolled in Industrial Arts classes in the ninth grade, all of the boys in the A and B average grade group reported that they had learned something useful in the work while in the eighth grade and in the ninth grade. High percentages of boys in both the C and D and below average grade groups reported that they had learned something useful during both years. The group of boys enrolled in Industrial Arts classes at the ninth grade level, it is indicated, had a more constructive attitude toward subject matter than those who did not re-enroll in the subject.

General Attitude of the Boys of the Study to School, Teachers, and Future School Plans

Some questions were designed to learn the general attitudes of the boys of the study towards school, other teachers than those in the Industrial Arts department, and future plans for school study. Data taken from the answers are shown in Table X.

TABLE X

GENERAL ATTITUDE OF PARTICIPANTS IN THE STUDY TOWARD SCHOOL, OTHER TEACHERS, AND FUTURE SCHOOL PLANS

Item	Average Grade Groups											
	A and B				C				D and below			
	1959-60 (32 boys)		1960-61 (20 boys)		1959-60 (33 boys)		1960-61 (42 boys)		1959-60 (12 boys)		1960-61 (24 boys)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Likes school	32	100.0	20	100.0	33	100.0	31	71.3	11	93.5	20	84.0
How many teachers liked:												
All	15	46.3	9	45.0	13	39.0	25	57.5	6	50.0	8	33.6
Most	10	31.1	6	30.0	13	39.0	16	36.8	3	12.6	8	33.6
Some	5	15.5	2	10.0	3	9.0	7	16.1	2	17.0	3	12.6
Few	0	0.0	0	0.0	1	3.0	6	13.8	1	8.5	1	4.2
One	0	0.0	0	0.0	1	3.0	1	2.4	0	0.0	2	8.4
None	0	0.0	0	0.0	1	3.0	1	2.4	0	0.0	1	4.8
Plan to go to college:												
Yes	27	83.7	18	90.0	26	78.0	21	50.0	7	59.5	5	20.8
Maybe	5	15.5	2	10.0	2	6.0	15	34.5	0	0.0	8	33.6
No	0	0.0	0	0.0	5	15.0	6	13.8	5	41.5	11	45.1

The boys varied from group to group in their expressed liking for school. In the A and B group, all of the boys who had enrolled in Industrial Arts at all levels reported that they liked school. All of the C group in the eighth grade said that they liked school, but this same grade level group in the ninth reported a percentage of liking of only 71.3. In the D and below group, only one boy did not like school in the eighth grade group, while four boys enrolled in Industrial Arts classes in the ninth grade did not like school. A greater per cent of school dislike, it is indicated, was found in the boys at the lower academic average grade levels.

Most of the boys at both grade levels reported liking all or most of the teachers. The greatest per cent of dissatisfaction was found in the boys with lower academic achievement; 3 per cent of the C group of boys in the eighth grade and 13.8 per cent of those in the ninth grade reported that they liked "few" teachers. Small percentages of dislike for one teacher were found in the C groups at both grade levels, and one boy in the C group at both grade levels and one in the D and below group in the ninth grade reported that they liked none or the teachers.

Much indecision was found regarding plans for college, but the greater percentage of the boys in the A and B average grade groups reported that they planned to attend. Much

smaller percentages of planned attendance were found in the lower academic average grade groups; in the D and below group in the ninth grade, only 20.8 per cent indicated that they planned to attend college. However, 33.6 per cent of them indicated "maybe."

In a previous question, data have been developed that the boys of the study, for the most part, were responsible for their decision to take or not to take an Industrial Arts course. Pertinent to this is the extent to which they had help in making out their schedules. Of the A and B average grade group, 86.8 per cent of the boys enrolling at the eighth grade level and 80 per cent of those at the ninth grade level reported that they made out their own schedules. Percentages of the C group at the two grade levels were 84.0 and 77.7 and at the D and below average grade level, 59.5 and 77.9, respectively, in making out their own schedules. While the percentage of boys receiving help was somewhat lower at the lower academic grade levels, the differences do not appear to have been significant.

A boy does not always or cannot always choose the subject in school in which he is most interested. Two questions concerning the subject matter were asked, one pertaining to subjects interested in and the other to the subjects enrolled in in school. Information gathered from these areas is shown in Table XI.

TABLE XI

SUBJECTS IN WHICH THE BOYS OF THE STUDY WERE INTERESTED AND SUBJECTS IN WHICH THEY WERE ENROLLED

Item	Average Grade Groups											
	A and B				C				D and below			
	1959-60 (32 boys)		1960-61 (20 boys)		1959-60 (33 boys)		1960-61 (42 boys)		1959-60 (12 boys)		1960-61 (24 boys)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Subjects interested in:												
Math	27	83.7	15	45.0	14	42.0	16	38.4	6	50.0	8	32.8
English	17	52.7	7	35.0	14	42.0	15	36.0	6	50.0	5	20.1
Science	19	58.9	10	50.0	19	57.0	11	26.4	5	42.5	5	20.1
Industrial Arts	8	24.8	10	50.0	10	30.0	34	81.6	5	42.5	13	53.3
History	20	62.0	15	75.0	22	66.0	10	24.1	5	42.5	6	25.0
Physical Education	7	21.7	9	45.0	13	39.0	21	50.0	3	25.5	11	45.1
Art	5	15.5	6	30.0	5	15.0	9	21.6	5	42.5	4	16.4
Social Studies	2	6.2	3	15.0	4	12.0	2	4.8	1	8.5	3	12.3
Music	4	12.4	2	10.0	5	15.0	3	7.2	5	42.5	12	50.0
Language	17	52.7	5	25.0	8	24.0	1	2.4	0	0.0	1	4.1
Athletics	14	43.4	9	45.0	13	39.0	16	38.4	3	25.5	12	50.0

TABLE XI -- Continued

Item	Average Grade Groups											
	A and B				C				D and below			
	1959-60 (32 boys)		1960-61 (20 boys)		1959-60 (33 boys)		1960-61 (42 boys)		1959-60 (12 boys)		1960-61 (24 boys)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Subjects enrolled in:												
Math	30	93.0	18	90.0	33	100.0	38	91.2	12	100.0	24	100.0
English	31	96.1	18	90.0	33	100.0	40	96.0	12	100.0	24	100.0
Science	19	58.9	13	65.0	26	78.0	23	55.2	8	68.0	8	32.8
History	16	49.6	18	90.0	22	66.0	14	33.6	4	34.0	4	16.4
Physical Education	16	49.6	11	55.0	33	100.0	31	74.4	7	59.5	14	57.4
Art	1	3.1	11	55.0	15	45.0	6	14.4	5	42.5	5	20.1
Social Studies	2	6.2	1	5.0	5	15.0	0	0.0	3	25.5	4	16.4
Music	4	12.4	1	5.0	6	18.0	11	26.4	3	25.5	12	50.0
Language	19	58.9	3	15.0	7	21.0	6	14.4	2	17.0	0	0.0
Athletics	9	27.9	10	50.0	8	24.0	5	12.0	1	8.5	4	16.4
Industrial Arts			20	100.0			42	100.0			24	100.0

Data in Table XI provide material for interesting discussions. For example, there is wide variance in interest in different subject matter at the different average academic grade levels. In the A and B group of boys in the eighth grade, most interest was indicated in the subjects of mathematics and history, while in the ninth grade of the same grade level history was checked more than any other subject, and Industrial Arts and science were checked by 50 per cent of the boys. In the C average grade group in the eighth grade, history and science were the ones checked most often for interest, while this grade level group in the ninth grade checked Industrial Arts and physical education more times. Slightly more than 73 per cent of the boys in the latter group indicated an interest in Industrial Arts. In the D and below average grade groups, the subjects checked most often by the boys at the eighth grade level were mathematics and English, and mathematics and Industrial Arts by those in the ninth grade. Fifty per cent of the boys who were enrolled in Industrial Arts in 1960-61 checked an interest in athletics.

In subject matter in which the boys were enrolled in 1960-61, more than 90 per cent at all grade levels were studying mathematics and English; all of the boys in the eighth grade at the C average grade level and all of those at the D and below average grade level in both the eighth and ninth

grades checked these subjects. The D and below average grade group showed less enrollment in science at the ninth grade level, and the largest enrollment of any group was that of the C group of boys who were not enrolled in Industrial Arts in 1960-61. All of the boys in the C group who had enrolled in Industrial Arts in the eighth grade were taking physical education, and almost 75 per cent of this grade level group in the ninth grade were also taking it. Outside of mathematics and English, more boys at the D and below level who were taking Industrial Arts were enrolled in physical education than any other subject. One interesting factor in considering the enrollment is that 50 per cent of the D and below group enrolled in Industrial Arts were also enrolled in music. A higher percentage of the A and B group of 1960-61 was enrolled in athletics than any other grade level or group. As shown, the data indicate varying interests among the boys of different average grade groups as well as varying percentages of enrollment, particularly in elective subjects.

Grade Achievement of the Students in The Different Average Grade Groups

One of the purposes in breaking the data down into average groups was to ascertain, if possible, differences, if any, in achievement in Industrial Arts in the different groups. To this end, the average grades made in Industrial

Arts by the A and B students and of those in other groups as well were compared to determine progress. Data in Table XII show the comparisons.

TABLE XII

COMPARISON OF AVERAGE GRADES MADE BY THE BOYS IN INDUSTRIAL ARTS WITH AVERAGE GRADES IN OTHER SUBJECTS

Group	Average Grade in Other Subjects	Number in Group	Per Cent	Average Grade in IA	Number Making Grade	Per Cent
1959-60:						
A and B (32 boys)	A	2	6.2	A	0	0.0
	B	30	93.8	B	22	68.2
	C	0	0.0	C	10	31.8
C (33 boys)	A	0	0.0	A	0	0.0
	B	0	0.0	B	9	27.0
	C	33	100.0	C	20	60.0
	D	0	0.0	D	3	9.9
	E	0	0.0	E	1	3.0
D and below (12 boys)	D	9	76.5	A	0	0.0
				B	0	0.0
				C	2	17.0
				D	5	42.5
				E	2	17.0
	E	2	17.0	C	1	8.5
				D	1	8.5
	G	1	8.5	G	1	8.5
1960-61:						
A and B (20 boys)	A	2	10.0	A	5	25.0
	B	18	90.0	B	10	50.0
	C	0	0.0	C	5	25.0
C	A	0	0.0	A	0	0.0
	B	0	0.0	B	11	26.4
	C	42	100.0	C	24	57.2
				D	6	14.4
				E	1	2.4

TABLE XII -- Continued

Group	Average Grade in Other Subjects	Number in Group	Per Cent	Average Grade in IA	Number Making Grade	Per Cent
1960-61:						
D and below (24 boys)	D	18	73.8	C	10	41.1
				D	8	32.8
	E	6	24.6	C	4	16.4
				D	2	8.2

As shown in the data in Table XII, many variations were found in grade achievement. In the A and B average grade group of boys enrolling in Industrial Arts in the eighth grade, 1959-60, two of the boys made an A in average grades in other subjects; in Industrial Arts, neither boy made an average A grade. Thirty of the boys made a B average grade in other subjects, while in Industrial Arts only 22, or 68.2 per cent, made a B and ten, or 31.8 per cent, made an average grade of C. The tendency, as noted here, was for the A and B students to make, on the average, a lower grade in Industrial Arts than in other subject matter. In the A and B average grade group of boys enrolling in Industrial Arts in the ninth grade, 1960-61, two of the boys, 10 per cent, made an average grade of A in other subjects, while in Industrial Arts five, or 25 per cent, made an average grade of A, an increase of

15 per cent. Eighteen of the boys, 90 per cent, made an average grade of B in other subjects, while only ten, or 50 per cent, made an average grade of B in Industrial Arts, a loss of 40 per cent. Five of the B average grade group made a C average grade in Industrial Arts, a further loss of 25 per cent. In this instance, the gain of 25 per cent in the A group was offset by the loss of 25 per cent in the C group. On the average, then, no gain in achievement was made by the boys in this group in Industrial Arts over that made in other subjects.

In the C average grade group of the boys who enrolled in a course in Industrial Arts in the eighth grade, 1959-60, all of the boys had an average grade of C in other subjects. In Industrial Arts, nine, or 27.0 per cent, of these made a B average grade in Industrial Arts; 20, or 60 per cent, made an average grade of C; three, or 9.0 per cent, an average grade of D; and one, or 3 per cent, an average grade of E. Gains here of 27 per cent offset the loss of the D and E groups, 12 per cent, by 15 per cent. The over-all average of the C boys in this group, then, was greater than the average grade in other subjects. In the C average grade group of the boys who enrolled in Industrial Arts in the ninth grade, 1960-61, 42, or all of them, had an average grade of C in other subjects. In Industrial Arts, eleven boys, or 26.4 per cent, had an

average grade of B; 24 boys, or 57.2 per cent, had an average grade of C; six boys, or 14.4 per cent, had an average grade of D; and one boy, or 2.4 per cent, had an average grade of E. Gain here was 26.4 per cent over the C average in other subjects; and the loss was 16.3 per cent under the C average, an over-all gain of 9.6 per cent in the subject over the average grade in other subjects. In both instances, the boys with an average grade of C in other subjects made an over-all gain in grade progress in Industrial Arts.

In the D average grade group in other subjects, 1959-60, nine of the boys, or 76.5 per cent of the group as a whole, had a D average in other subjects. In Industrial Arts, two boys, or 17.0 per cent, had an average grade of C; eight boys, 68.0 per cent, had an average grade of D; and two boys, 17 per cent, had an average grade of E. Losses and gains were the same in this instance and no grade progress on the average was made. Two boys made an average grade of E in other subjects, and one of these raised his grade to a C average and the other to a D average in Industrial Arts. The boys with the lowest academic grade average here, it is indicated, made more progress in proportion to the boys in the higher academic grade groups. In the D and below average grade groups in other subjects in 1960-61, 12 of the boys, or 73.5 per cent, had an average grade of D and six, or 24.6 per cent, an average

grade of E. In Industrial Arts, ten, or 41.1 per cent, of the E boys raised their grade to a C; and eight, or 32.3 per cent, kept a D average. No losses were reported here, and the gain was 8.3 per cent in grade achievement in Industrial Arts. In the E average grade group of six boys, in other subjects four, or 16.4 per cent, made an average grade of C; and two, or 8.2 per cent, made an average grade of D, a total gain of 24.2 per cent.

These computed gains and losses of the different average grade groups show the following tendencies: the A and B groups either lost percentages of grade achievement in Industrial Arts or maintained their average; the C average grade groups showed small percentages of gain in grade achievement; the D group of boys in the eighth grade maintained their average, but the E group of boys in each instance raised their grades; the D group of boys in the ninth grade showed an 8 per cent gain in grade achievement, and the E group of boys a gain of 26.6 per cent. The inference here is unescapable; the boys with the lower average academic grades, on the whole, made much more progress in grade achievement in Industrial Arts.

General Data on Boys Participating in the Study

In order to get a more comprehensive picture of the boys participating in the study, some questions were asked in regard to the occupation of the fathers, desired vocation of

the boys, hobbies, and the likes and dislikes of the Industrial Arts shops and instruction. Table XIII shows the information regarding the occupations of the fathers of the boys in the study. In this table, the classification is by the combined groups of boys in both years from the different average grade groups.

The data in Table XIII indicate that the majority of the fathers of the boys in the study are either professional men or "white collar" workers. In the A and B average grade groups, the most common occupations were that of salesmen and engineers. In the C average grade group, the most common occupations were those of truck driver and clerk, while the ones most common in the D and below group were salesmen and mechanics. No professional occupations were listed for the parents in the latter group and very few for the C average grade group. The data here indicate some relationships between occupation of the fathers and grade average of the boys.

TABLE XIII

OCCUPATIONS OF THE FATHERS OF THE BOYS PARTICIPATING IN THE STUDY BY AVERAGE GRADE GROUPS

Occupation	Average Grade Group		
	A and B (68 boys)	C (79 boys)	D and below (26 boys)
	Number	Number	Number
Salesman	11	6	4
Engineer (of some type)	10	5	1

TABLE XIII -- Continued

Occupation	Average Grade Group		
	A and B (68 boys)	C (79 boys)	D and below (26 boys)
	Number	Number	Number
Clerk	4	5	3
Mechanic	1	3	3
Company manager	3	4	1
Truck driver	0	7	2
Airlines	1	4	0
Painter	0	3	0
Plant foreman	2	3	0
Accountant	4	0	0
Machinist	1	2	0
Sheet metal	1	3	0
Contractor	3	0	0
Meat worker	1	0	2
Roofer	0	0	2
Restaurant work	0	0	1
Oil company employee	1	1	1
Teacher	2	0	0
Doctor	2	0	0
Correspondent	2	0	0
Insurance	1	2	0
City utilities	0	0	1
Minister	1	1	0
Carpenter	1	1	0
Self employed	1	2	0
Research director	1	0	0
Banker	1	0	0
Real estate	1	1	0
Government	1	1	0
President of company	1	0	0
Corporation director	1	0	0
Retired	1	0	0
Printer	1	2	0
TV repair	0	4	1
Brakeman	0	2	1
Barber	0	2	0
Cable puller	0	1	1
Plumber	0	5	1
Janitor	0	0	1
Diamond setter	1	0	0
Garbage man	0	0	1
Architect	1	0	0
Deceased	0	3	0
No answer	3	6	0

Desired Vocations Chosen by the Boys of the Study

A question was asked the boys regarding the vocations or occupations they thought they would like to follow in adult life. Table XIV shows the data gathered by means of this question.

TABLE XIV

VOCATIONS DESIRED IN FUTURE LIFE BY THE BOYS PARTICIPATING IN THE STUDY

Vocation	Average Grade Group		
	A and B (52 boys)	C (79 boys)	D and below (36 boys)
	Number	Number	Number
Engineer:			
Electrical	5	8	4
Electronics	6	7	4
Mechanical	1	3	0
Architectural	2	1	0
Civil	2	0	0
Chemical	3	0	0
Petroleum	1	0	0
Scientist	9	0	0
Truck Driver	0	4	7
Air Force	2	1	0
Forester	1	0	0
Meteorology	0	0	0
Politics	1	0	0
Business manager	0	2	0
Plastic surgeon	1	0	0
Astronaut	0	2	0
Bookkeeper	0	2	0
Lawyer	2	5	0
Doctor	3	2	0
Auto mechanic	0	6	9
Police work	0	3	4
Teacher	2	1	0
Draftsman	0	0	0
Architect	8	5	2
Accountant	1	1	0
Minister	0	0	8

TABLE XIV -- Continued

Vocation	Average Grade Group		
	A and B (52 boys)	C (79 boys)	D and below (36 boys)
	Number	Number	Number
Radio electronics	2	0	1
Contractor	0	0	1
Woodwork	0	0	1
Private investigator	0	0	1
Commercial artist	0	0	0
Printer	0	1	0
Machinist	0	1	0
Dentist	3	2	0
Go-cart track owner	0	1	0
Artist	1	1	0
Real estate	0	1	0
Musician	1	2	0
Athletics	0	1	0
Airline pilot	1	2	0
Gasoline business	0	1	0
IA teacher	1	1	0
Contractor	0	1	0
Car painter	0	1	0
Car stylist	1	0	0
Navy	2	0	0
Chemist	1	0	0
Manufacture uniforms	1	0	0
Don't know	5	9	2

If this group of boys follow their desired vocations, the ones in the A and B average grade groups will work in professional fields. Except for the field of engineering, the majority of the boys in the C average grade group and in the D and below average grade group will use some type of vocational skill.

Hobbies of the Boys Participating in the Study By Average Grade Groups

In tabulating the answers to the query on hobbies, the data were combined from the two years according to the average grade groups. Table XV shows the hobbies as listed by the boys. A large number of the boys mentioned more than one hobby, while a few reported no hobby of any kind.

TABLE XV

HOBBIES OF THE BOYS IN DIFFERENT AVERAGE GRADE GROUPS

Hobby	Average Grade Groups		
	A and B (68 boys)	C (79 boys)	D and below (36 boys)
	Number	Number	Number
Basketball	6	5	2
Football	2	9	3
Baseball	4	4	0
Cars	3	9	3
Coin collecting	2	1	2
Stamp collecting	5	2	0
Rocks	2	2	4
Fishing	5	7	2
Swimming	3	3	2
Hunting	6	6	1
Dancing	1	2	0
Magic	2	0	0
Horseback riding	1	2	1
Building hot rods	0	0	0
Working on electric things	0	1	1
Bowling	4	4	1
Models (airplanes,cars,etc.)	4	18	0
Guns	2	2	0
Girls	2	5	1
Fixing cigarette lighters	0	1	0
Flying	1	0	0
Soaring	0	1	0
Playing drums	0	3	0
Pets	0	2	1

TABLE XV -- Continued

Hobby	Average Grade Groups		
	A and B (68 boys)	C (79 boys)	D and below (36 boys)
	Number	Number	Number
Money	0	1	0
Music	2	4	1
Indian lore	1	0	0
Repairing bicycles	0	2	0
Drawing house plans	0	1	0
Cards	0	1	0
Records	1	0	1
Skiing	0	1	1
Designing cars	0	1	0
Motor scooters	0	0	1
TV	0	2	2
Motorcycles	0	3	1
Eating and sleeping	0	1	0
Chess	1	0	0
Skating	2	2	1
Geology	1	0	0
Meteorology	1	0	0
Electronics	2	2	0
Mechanics	0	2	0
Camping	1	1	0
Smoking	0	0	1
Collecting girl pictures	0	0	1
Sports	8	10	0
Woodworking	0	6	0
Golf	2	4	0
Rifling	0	1	0
Reading	2	2	0
Shows	0	2	0
Boy Scouts	0	1	0
Science	2	6	0
Pool	0	1	0
None	4	5	5

A wide variety of hobbies were mentioned with most of the boys listing more than one. The hobbies mentioned by the boys in the A and B average grade group were more closely grouped

than those mentioned in the other groups with outdoor sports predominating. In the C average grade group, more interest was indicated in collecting such things as coins, stamps, and rocks and in various types of models. More music as a hobby was also indicated at this level. Hobbies of the boys in the D and below average grade group were fewer and more diversified. Taken as a whole, however, the hobbies listed were sound and constructive in nature. The fact that so few of the boys mentioned reading as a hobby, though, indicates a weakness, it is believed.

Things that the Boys Liked About the Industrial Arts Classes

The boys of the study were asked to write in their own words what they liked best about shop or mechanical drawing classes. In order to present the material to best advantage, the comments, as written, have all been included but are separated according to the different average grade groups.

THINGS LIKED BEST BY THE A AND B AVERAGE GRADE GROUP OF BOYS, 1960-61 (20 BOYS)

1. I like shop and mechanical drawing all because you do something with your hands and because I am interested in craftsmanship.

2. In electric shop classes you can learn about electronic symbols and how to plan a project of your own. You learn about the atom and everything else about electricity. Also you learn how to repair minor electronic devices and how

to operate the different tools in the shop, and I like my instructor.

3. I like the freedom of a shop and the chance to work with my hands. It is the only course that one uses his hands and it will prepare you for many jobs in these fields and give you an idea of what the work is about. I think everyone should be required to take a shop for a full school year even if in honor courses.

4. You don't have to stay in one place all the time. It is a lot more interesting than the other subjects. I also like the teachers better than most.

5. I think that the student gets instruction and experience in a shop class that will become invaluable in later life.

6. I like to learn the necessary knowledge needed in drafting.

7. I like mechanical drawing because it broadens your field of knowledge in more than one way.

8. Not much.

9. I like shop; it teaches you general knowledge of electricity.

10. I like electric shop because it gives a chance to work with your hands; it gives necessary information and skills for building projects and working with electronics.

11. I like shop because you learn to work with your hands and get along with other people.

12. I like shop because I will work in one when I get out of school.

13. I like this type of work.

14. They are interesting.

15. I like mechanical drawing because I work on my own. I am always busy with something to do.

16. I like mechanical drawing because it helps me to understand problems better.

17. You can see out the window into the street and get ideas about drawing houses and cars. You are more relaxed and can work better.

18. I enjoy making useful objects that I can use.

Two had no comment.

A AND B BOYS ENROLLING IN INDUSTRIAL ARTS COURSES IN 1959-60 (32 BOYS)

1. Nothing.

2. I learned many things...different kinds of wood and how electricity flows.

3. Neatness - learning - keen tools.

4. Liked the freedom of the work and the way the teacher instructed.

5. The feeling of accomplishing something worthwhile made from the skill of your hands with tools and other equipment.

6. It is a friendly class with things I like to do. Sorter informal.

7. I like to learn more about electricity so when something happens around the house I can fix it.

8. Like to make things that I could use at home.

9. Interested in mechanical drawing.

10. What you learn will be valuable in later life.

11. Learning something new every day and working with my hands.

12. To be able to make something with your own hands.

13. You learn to work with your hands and use tools.

14. Teachers are OK; I enjoy drawing.

15. Making things.

16. Gives an opportunity to be with boys who in later life want to use their hands in business.

17. Good to work with your hands and be with other boys.

18. The main thing was the chance to work with tools.

19. Use machines and other equipment that you can't use at home.

20. Learning things by doing them.

21. Interesting to learn how to work with my hands and use tools.

22. Making interesting things.

23. Learning to use the machines.

24. You learn many practical things to help you around the house.

25. Gives a lot of information that you need.

Seven did not make any comment.

THINGS LIKED BEST BY THE C AVERAGE GRADE GROUP OF BOYS, 1960-61 (42 BOYS)

1. Like to make things out of wood and use the machines.

2. Have learned many things about tools and how to use them.

3. I like the machines and the way the work is... it is a lot of fun and not very hard work. You do what you want to do in making a project.

4. Like to work with the machines.

5. Like the teacher, the tools, and some classmates.

6. Like it because it gives me a chance to work with my hands and has freedom in choosing projects.

7. Working with your hands.

8. Find learning and relaxation at the same time.

9. I have learned a lot about working with my hands; one thing I like to do is to weld things with the oxy-acetylene torch. I have learned a lot since I have been taking shop that I would never have learned if I hadn't have gone to school.

10. I like to work with wood and electricity.

11. Like to work in wood shop.

12. Will help me in future years; I like to build things and to make more use with my hands.

13. I like it because we can talk and get a drink of water when we want to.

14. You always get to know something new and useful and you can use what you learn in later life.

15. I like to see a drawing form. You start from a blank sheet of paper and end up with a very interesting drawing. I would like to put a drawing into real life some day.

16. I like to draw; most of my friends are in the class.

17. I like drawing - how to use the tools.

18. Shops are a lot of fun and I enjoy working with the materials and equipment.

19. Like everything connected with it.

20. I don't like shop.

21. Like the freedom of moving around and like to make things.

22. I like it because you can learn a lot.

23. Like the teacher and the interesting work.

24. I really don't like shop, but I take it because it's easier than most subjects and there is not much studying to do.

25. Like the good tools.

26. Everything.

27. Helps me to learn a trade in case I need it some day.

28. I think we have a good room to work in and more things to be used than most schools have. I like the way the teacher explains things and the problems are sometimes hard but interesting.

29. Learning to operate the machines.

30. It's a lot of fun. I can make things and take them home.

31. I think the shop will help me as I go along in life.

32. I like my teacher and enjoy making the drawings.

33. Like everything but mostly to figure out the problems we are given and draw them.

Nine had no comment.

THINGS LIKED BEST BY THE C AVERAGE GRADE GROUP OF BOYS, 1959-60 (32 BOYS)

1. Learn many things to help you in life.

2. It teaches you useful techniques in working with your hands and using tools.

3. I think you learn a lot from the classes.

4. I prefer drawing.

5. You have a time of feeling free in school when you can work on whatever you want to draw or design.

6. We learn how to work with our hands and minds together.

7. I like to work with my hands and I like to meet with other people and make new friends.

8. You can do what you want to do and you learn by doing.

9. Like mechanical drawing.

10. Learned how to use many tools and many new terms.

11. Like to work with my hands.

12. Like the teacher, the boys, and the time of the shop class.

13. Being able to have something in the house that you made yourself.

14. The things you can learn and have lots of fun.

15. Learning to use tools and know materials.

16. You get to make things you can use.

17. I got experience in knowing how to fix things around the house.

18. You learn something that you don't know.

19. In electric shop you learn to build electric machines.

20. Talking with other students.

21. Use my hands, my own designs.

22. Gives you a chance to work with your hands instead of reading or writing all the time.

23. Work with my hands and accomplish a project.

24. The things we did.

Eight boys did not make any comment.

THINGS LIKED BEST BY THE D AND BELOW GROUP
IN 1960-61 (24 BOYS)

1. I like working with my hands and the machines.

2. The chance to work with my hands and the right kind of tools.

3. It will help me to learn more about carpentering.

4. You get to make things by yourself.

5. I like mechanical drawing because I like to draw things. It should get me a good job.

6. I like it because I can make things that I might need at home or bring things that need fixing.

7. I like to work with tools.

8. I like to build things with my hands and machines; I like to work with machines and build things with welding and use tools.

9. You don't have to do much homework. I like to draw with the tools we have. I like to draw, period.

10. I like to make things with my hands; I like to work with my hands, make coffee tables, lamps.

11. It helps you to learn different things about making things and working.

12. I like the teacher and to work with my hands and to make things that work.

13. I like the opportunity to learn a useful art.

14. You get to make things.

15. Nothing and TEACHERS.

16. Work on machines and with other people.

17. Making things and putting them in my room so everybody can see them.

18. Learn how to use tools, work with machines.

19. Wood shop - because I like to build things, work with machinery, sand wood, putting the finish on the product and seeing the product finished and it looks nice.

20. I like to make things out of wood.

21. Well, I like wood shop because you can do your own work and work with your hands and build things and design your own work.

22. I like electric shop because I don't think it's easy but it helps you to learn how to use your hands and keep in pretty good shape.

23. The teacher is never on your back. You learn how to make things with little help from your teacher which is good.

One had no comment.

THINGS LIKED BEST BY THE D AND BELOW AVERAGE GRADE GROUP, 1959-60 (12 BOYS)

1. I like to make things.

2. I like the part in which you build your own projects.

3. I like metal shop because I would have a better chance to use machinery.

4. I like the teacher in wood shop because he taught the way I like it. Also he knew the subject well.

5. I liked it because they taught us how we could work when we grow up.

6. I like to take wood shop courses; you learn more how to do your own work.

7. The best I like about shop is that you can learn things.

8. Not particularly anything.

9. I like a shop, because I like to work.

Three made no comment.

The most noticeable thing about these comments is the reiteration of the phrases, "I like to work with my hands," and "I like to make things." Many of the boys, too, were aware of the help that the information and skills learned in the Industrial Arts classes would be to them in later life. Such comments should be most interesting to the Industrial Arts instructors in this particular school. It should be mentioned, perhaps, that the boy who commented that he took the course because it was "easy" and did not require much study was the one boy in the C average grade group in subjects other than Industrial Arts who made an "E" average grade in this subject.

Things that the Boys Disliked About the Industrial Arts Classes

Space was left in the questionnaire for the boys to write in the things that they disliked about the shop classes. As in the comments on "things liked," the quotes have been segregated into the three average grade groups, A and B, C, and D and below.

THINGS DISLIKED MOST ABOUT SHOP CLASSES BY THE A AND B AVERAGE GROUP, 1960-61 (20 BOYS)

1. I really don't dislike anything except the bent compass in mechanical drawing and the tests that I don't make good grades on.

2. The shop is a little crowded. I'm also sorry that it doesn't last longer. We don't have time to work on our project enough, and it takes us too long on account of this reason.

3. The equipment isn't too good and there isn't enough personal instruction by the teacher. Also some students in the class are in it just because it's an easy course and are not really doing anything.

4. Don't have any dislikes.

5. I think shop classes are too crowded for teachers to give individual instruction to students.

6. I do not like the noise going on in the class and the students who copy the other fellow's work.

7. GRADES.

8. Mechanical drawing is boring. Shops are not as exciting as world history or algebra.

9. I dislike the grading system. Teacher is too strict on all details.

10. Have no dislikes.

11. I don't like people who won't work and are always acting up.

12. I dislike shop because most of the less bright boys take a shop to get out of a harder course. They come in and just have a good time.

13. The noise.

14. Nothing.

15. Nothing.

16. You have to be so careful about getting your paper dirty. I don't like exams where you have to answer questions.

17. I think the mechanical drawing teacher is a little too strict and it gets boring at times.

18. The desks have holes in them and the chairs are a little squeaky and the drawers are broken. Gum is all over the place. The grading system is hard.

19. It's too crowded.

One did not have any comment.

THINGS DISLIKED BY THE A AND B AVERAGE GRADE GROUP, 1959-60 (32 BOYS)

1. I dislike nothing in shop work. The reason I didn't take it was because I just wanted four whole solids. Prepare myself for college with necessary subjects.

2. Too many hoods and boys who stole stuff and didn't care about life or accomplishing anything.

3. I don't believe I had any dislikes.

4. Being oversupervised.

5. In mechanical drawing class, I don't like to draw.

6. I didn't like one teacher and some of the projects you had to draw.

7. Not particularly interested in it.

8. Slightly crowded - can't do what you want to sometimes because others are using necessary tools.

9. Tests.

10. Too crowded and not enough supervision.

11. Mechanical drawing is hard but I still like it some.

12. Tests.

13. The way the teacher goes about giving out assignments.

14. When your stuff gets swiped.

15. The main thing was the course was not technical enough and it took a long time to get supplies.

16. Not enough time to finish your project.

17. Too crowded.

18. Not being able to work very long in one period.

19. I disliked the crowded conditions and the small supply.

20. Not very well ventilated on hot days.

21. Required project.

Eleven did not make any comment.

THINGS DISLIKED ABOUT SHOP CLASSES BY THE BOYS IN THE C GROUP, 1959-60 (33 BOYS)

1. Nothing.

2. The only thing I think is that there are too many in one class for one teacher to help.

3. Room is too cramped; not enough room to work.

4. Too crowded and too few tools.

5. That we weren't free enough in the room and couldn't use the tools that we wanted to.

6. Dislike mechanical drawing because it is complicated.

7. Not enough tools.

8. I don't like the teacher.

9. In wood shop I had no liking for it and never will have.

10. The teachers.

11. Nothing except the teacher sometimes.

12. Crowded, rowdy.

13. Too much writing and not enough time on projects.

14. Sometimes he gave us too many drawings to finish in a certain length of time.

15. Nothing.

16. Everybody fighting over a tool or piece of material

17. Disliked the mechanical drawing tools.

18. I don't like mechanical drawing because I don't like to draw.

19. We proceeded too fast.

20. Working on projects. I didn't know how to work with the tools and didn't know how to fill in a diagram of my project.

21. I didn't like to hand in drawings every six weeks. I think it would be better to hand in a drawing when it is finished.

22. Don't dislike them but have no use for them other than wood shop.

23. Nothing.

24. Not enough room.

25. Nothing.

26. Tedious work - waiting for conference with instructor.

Seven did not have any comment.

THINGS DISLIKED BY THE C AVERAGE GRADE GROUP
OF BOYS IN 1960-61 (42 BOYS)

1. Not enough time to work, sometimes too crowded, and not enough stock to choose from.

2. I dislike our wood shop teacher.

3. Nothing.

4. I think that the periods are too short.

5. I disliked the whole class at the start, but now I wouldn't trade any other shop for it because I've begun to like it.

6. There are always so many kids in there that you are waiting to use some tool. I like the teacher, though.

7. Not enough time to work.

8. I can't think of anything I dislike.

9. Nothing in wood shop but you have to be absolutely perfect in mechanical drawing.

10. Sometimes it gets boring when you just take notes.

11. I dislike the new grading system which my teacher uses. I think the point system is too high, and I do not think we can do this many drawings to get enough points to make a good grade.

12. Tests.

13. Not having enough time to work.

14. The way the students act in class and the way they use the tools.

15. There are so many people in one shop and only one teacher that you can't get very much done, besides people coming in and fooling around.

16. I don't like the way the shop is set up.

17. I don't have any dislikes.

18. I dislike the way the grading is done.

19. I DON'T LIKE SHOP, PERIOD.

20. Well, it's too crowded and a lot of guys won't pay any attention to the teacher - and having to write in our notebooks.

21. I think we should have a few new tools and textbooks. Also, I dislike the new grading systems that all the teachers use.

22. Nothing I dislike about wood shop.

23. Nothing.

24. Nothing.

25. Nothing, but a little crowded.

26. I like everything about wood shop.

27. Someone stealing your project or making dents in it or smearing glue on it.

28. I dislike mechanical drawing in every way that I know of.

29. A quick test or answering questions.

30. People stealing our supplies, the heat in the summer, and the noise.

Twelve boys did not report any dislikes.

THINGS DISLIKED BY THE BOYS IN THE D AND BELOW AVERAGE GRADE GROUP, 1960-61 (24 BOYS)

1. I don't like the teacher griping at you and having to draw all the time.

2. In mechanical drawing I can't do the work - don't know how - too hard.

3. Well, we don't have long enough to work most of the time.

4. Not having enough time to work.

5. Not enough working time - need longer hours.

6. When the teacher talks and won't shut up or the loud speaker is going.

7. Writing in our notebooks and hearing the teacher talk.

8. Not enough tools, GRADES, and GRADING SYSTEMS.

9. Only thing disliked is leaving the shop.

10. In most shops there are a few guys that want to mess around and not work.

11. I dislike some of the people in mechanical drawing.

12. Not enough room in which to work and too many students in one class.

13. The other boys that don't try to work and help the teacher and don't try to clean up after they finish.

14. I don't like the way the people put dents and scratches in your project as a joke.

15. Written work.

16. When the teacher makes us write class notes instead of letting us work.

17. I don't like it because of some of the people that are in the shop.

Seven boys had no comments.

THINGS DISLIKED BY THE BOYS IN THE D AND BELOW AVERAGE GRADE GROUP, 1959-60 (12 BOYS)

1. The teachers.

2. I don't dislike any.

3. You didn't get enough responsibility.

4. I disliked the teacher in wood shop.

5. I don't like mechanical drawing much.

No dislikes were mentioned by seven of the boys.

The dislikes written in, as well as the "likes," should be most interesting to the Industrial Arts staff of the Rusk Junior High School. The most common complaint at all average grade levels was "too crowded" or "too few tools" for the number of boys wanting to use them. The several references to the point grading system, too, appear to be worthy of study. Some problems common in most classrooms and Industrial Arts shops are indicated on the comments about theft and defacement of projects. The tendency of some boys to use the shop period as one for loafing was mentioned more than once. Over-all speaking, the criticisms appear to be constructive and indicate a group of boys, in the main, who like the shop classes and desire to derive as much benefit from the instruction as possible. No significant differences in dislikes are indicated between the average grade groups. The A and B average grade groups were perhaps a little more articulate in their comments, but no basic differences are indicated.

Findings

The following findings may be listed as an outcome of the questionnaire administered in the study:

1. The enrollment in Industrial Arts class in 1960-61 in Rusk Junior High School in Dallas, Texas, increased over that of the previous year, 1959-60; but the percentage of increase was in the boys with a C average grade or a D or below average grade in other subject matter than Industrial Arts.

2. More stability of choice in the selection of Industrial Arts students at the C average grade level than at either a higher or lower level was indicated; the A and B average grade group increased their interest in mechanical drawing and the D and below group their interest in wood shop and metal shop.

3. In the main, the Industrial Arts course most preferred by the A and B average grade group of boys was mechanical drawing; wood shop and metal shop were the ones most preferred by the C and D and below average grade groups.

4. In the group of boys not enrolled in any Industrial Arts class in 1960-61, the reason most given for not doing so was their inability to schedule a course; in the D and below group of boys, a high percentage gave reasons other than this.

5. In courses preferred, if the boys had been able to have scheduled it, the A and B average grade group indicated mechanical drawing, and the other groups wood shop and metal shop.

6. In the group of boys enrolled in Industrial Arts courses in 1960-61, more than 75 per cent of all the groups reported that they had taken the course because they liked it; the percentages of C and D and below average grade groups reporting this reason were higher than the percentage indicating it in the A and B average grade group.

7. The person most influential at all average grade levels in the selection of an Industrial Arts course was the student himself. More influence by other persons was indicated in the A and B average grade groups than in the lower average grade groups.

8. Attitudes toward shop classes, teachers, and working conditions in the shops varied somewhat; but, on the whole, attitudes were good and a high percentage of all of the boys indicated that they liked to work with their hands, liked to use tools, and liked the shop teachers. Mechanical drawing was not liked by many of the boys. Shops were crowded in the opinion of many boys at all average grade levels.

9. The group of boys re-enrolling in Industrial Arts in 1960-61 were found to have a more constructive attitude towards what they had learned in the courses than those who failed to re-enroll.

10. More interest in going to college was indicated in the A and B average grade group of pupils, and less interest in the D and below average grade group.

11. A greater per cent of school dislike was found in the boys at the lower academic average grade level; the same was true in their dislike of teachers.

12. With few exceptions, the boys reported that they made out their own schedules; the school counselor, it was indicated, had little influence in this area.

13. Mathematics was the subject of more interest to the A and B average grade group of boys, but Industrial Arts was the one with the highest percentage of interest in the C and D and below average grade groups.

14. In subject enrollment, mathematics and English had the highest percentages at all average grade levels; the variations were in other subject matter. Fifty per cent of the D and below average grade group were enrolled in music in 1960-61, in contrast to 5 per cent in the A and B group. No student in the D and below average grade group, though, enrolled in language at that time, while 15 per cent of the higher level group enrolled in this subject.

15. In grade progress or achievement, the A and B average grade groups in other subjects either lost percentages or held their own in the subject of Industrial Arts; the C average grade groups showed small percentages of gain in progress in Industrial Arts; and the D and below average grade groups made much more progress in Industrial Arts than in other subjects.

16. A majority of the fathers of the boys participating in the study were either professional men or "white collar" workers; few of the manual labor groups were represented.

17. None of the boys in the A and B average grade groups indicated a preference for manual labor as a life vocation; a few boys in the C average grade group indicated a preference for vocational trades, such as mechanics. Outside of a choice for engineering by four of the D and below average grade group of boys, the majority chose some type of vocational skill.

18. A variety of hobbies was listed with no significant differences being indicated among the different average grade groups.

19. The most mentioned "likes" for Industrial Arts classes were for the opportunity to work with one's hands and for making things.

20. The most often mentioned criticism of the Industrial Arts classes was that they were too crowded, too many boys for the number of tools, and the limited amount of supplies.

This study has been most revealing in more than one category. The boys were most cooperative in the project; the care taken in filling out the questionnaires indicated their interest in the subject. A new insight into the difficulties met by boys in choosing electives was another result of the survey. Environmental data revealed in the survey developed

further understanding of some of the problems of the boys. The comments on "things liked" and "things disliked" should be constructive to all Industrial Arts teachers in the school. These things are all touched on in the conclusions and recommendations made in the ensuing and concluding chapter.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The present study was both general and specific in that it included some general data on objectives in Industrial Arts instruction and a survey of data gathered from the Thomas J. Rusk Junior High School in Dallas, Texas. The conclusions reached from a study of these data are necessarily limited, but it is believed that many of the findings are applicable to Industrial Arts instruction in general.

Summary of the Study. The purpose of the study was to make a survey of some factors affecting the selection of Industrial Arts courses by ninth grade students in the Thomas J. Rusk Junior High School of Dallas, Texas. In order to make the survey meaningful, background study was made of the growth and extent of the Industrial Arts program in the Dallas public school system, of the nature and content of the program, the percentage of students electing Industrial Arts in comparison with those selecting other electives, and the objectives of Industrial Arts instruction, yesterday and today.

The survey data were gathered through a questionnaire administered to ninth grade boys enrolled in Industrial Arts

courses at the time of the survey and to ninth grade boys who had not elected Industrial Arts for that semester or with no previous experience in Industrial Arts classes. Information requested included environmental data on the boys, average grades in both academic subjects and in Industrial Arts, attitudes toward the subject in general, reasons for electing or non-electing of a course in Industrial Arts, best-liked subject matter in the area, and the things liked or disliked about Industrial Arts classes. The data were compiled for the two groups represented in the survey on the basis of classification by average academic grades in subjects other than Industrial Arts. Comparisons were then made of the findings and conclusions formulated.

Conclusions. A number of conclusions have been formulated through study of the findings. These may be stated as follows:

1. The number of students electing Industrial Arts courses in the Thomas J. Rusk Junior High School in Dallas, Texas, was less in percentage than those selecting other elective subjects; in this respect the data corroborate opinions expressed by workers in the field.

2. The main reason for non-scheduling of Industrial Arts courses appeared to be lack of time for the subject in view of the need for taking required subject matter; however, the high

percentage of students electing business education courses could indicate that the Industrial Arts department has a more intensive "selling job" on its hands for this area of subject matter.

3. The boys were most cooperative in filling out their questionnaires and in writing in comments; this indicates a constructive attitude on their part.

4. Differences in attitudes and in progress in Industrial Arts outcomes were indicated between the groups with higher academic achievement in other subject areas and those with lower academic achievement; these differences tend to confirm some expressed opinions that the students with lower average academic grades make more progress in proportion in Industrial Arts instruction than those with a higher average academic level.

5. A high percentage of the boys of the survey indicated a desire for professional or "white collar" work in later life; a boy's plans in the ninth grade are not always fulfilled, but these expressed desires indicate a tendency away from manual labor.

6. In this technological age, all boys need a knowledge of industrial processes and their impact on American life; Industrial Arts is one of the most important subject areas in which this knowledge can be developed and understood.

Industrial Arts education, therefore, is an integral part of the education process.

7. The comments on the crowded conditions in the Industrial Arts classes constituted the major criticism of the boys in the survey; the fact that space facilities of the Thomas J. Rusk Junior High School for Industrial Arts classes do not meet minimum requirements indicate that such comments were justified.

8. In the expressed desire of many of the boys for mechanical drawing, particularly in the upper academic levels, a weakness is indicated in the general school setup wherein a set schedule has to be followed. This criticism is applicable to all schools, not only the school surveyed which is following practices and regulations of other schools. Mechanical drawing is the basis for many of the professional occupations today and the comments of the boys unable to schedule any work in this area indicate that they are aware of their needs.

9. The boys of the survey, to a very large degree, make their own decisions regarding electives; the task, it appears, is in providing opportunities within the framework of required subject matter for them to select a wider range of electives.

Recommendations. In the light of the findings and conclusions, the following recommendations are offered:

1. The findings of this survey should be studied by the administration of the Thomas J. Rusk Junior High School in order to more fully understand the achievements and needs of the Industrial Arts department of the school.

2. More comprehensive study should be made of the curriculum areas by educators and state administrative personnel to see if changes could be effected wherein some provision could be made for a wider range of electives - at least, some changes of the present stereotyped pattern of one hour a day, five days a week. Today's industrial society is going to make new demands on education; the writer, it should be emphasized, recommends "study," no specific measures.

3. The Industrial Arts educators and leaders should lead in promoting more students at all academic grade levels in Industrial Arts and not go along with some accepted opinions that the department is a "dumping ground" for the slow learners and the unadjusted pupils. The slow learner may have more skill with his hands, make more progress; but, at the same time, the subject has intrinsic value for all students.

APPENDICES

[illegible]

[illegible]

1. [illegible] Industrial Arts [illegible]

2. [illegible] Industrial Arts [illegible]

3. [illegible]

[illegible]

1. [illegible] The Saturday [illegible]

[illegible]

1. A Guide—Industrial Arts in [illegible] Schools, [illegible] State Department of Education, [illegible]

2. [illegible] Industrial Arts Annual Report, [illegible] School District, [illegible] pages.

3. [illegible] Industrial Arts Teaching, Conference Report, U.S. Department of Health, Education, and Welfare, Office of Education, Washington, D.C., [illegible] pages.

4. Industrial Arts—Its Interpretation in American Schools, U.S. Government Printing Office, Washington, D.C., [illegible]

9. "The Curriculum," Superintendent's Annual Report, Dallas Independent School District, Dallas, Texas, 1959-60, 39 pages.

10. Records of Dallas Public School System, Dallas Public Schools, Dallas, Texas.

FORM I

QUESTIONNAIRE

1. What Industrial Arts course or courses did you take last year?

   a. Electric shop
   b. Mechanical drawing
   c. Metal shop
   d. Wood shop

2. What Industrial Arts course are you taking now?

   a. Electric shop
   b. Mechanical drawing
   c. Metal shop
   d. Wood shop

3. Do you think your shop or drawing class is crowded?

   a. Yes
   b. No

4. Do you think you have enough tools and equipment to work with?

   a. Yes
   b. No

5. Do you think the school shop is a dangerous place?

   a. Yes
   b. No

6. Do you like shop classes?

   a. Yes
   b. No

7. Do you like mechanical drawing?

   a. Yes
   b. No

8. Which Industrial Arts course do you like best?

   a. Electric shop
   b. Mechanical drawing
   c. Metal shop
   d. Wood shop

9. Do you think you learned anything useful in Industrial Arts last year?

   a. Yes
   b. No

10. Do you think you are learning anything useful in Industrial Arts this year?

    a. Yes b. No

11. Do you like to work with your hands?

    a. Yes b. No

12. Do you like to use tools and machines?

    a. Yes b. No

13. Do you think it is desirable to know how to work with tools and machines?

    a. Yes b. No

14. Do you like your Industrial Arts teacher?

    a. Yes b. No

15. How much did you learn last year in shop or drawing that you consider worthwhile or useful?

    a. Much c. Little
    b. Some d. None

16. What was your average grade for Industrial Arts classes last year?

    A B C D E F G

17. What was your average grade for classes other than Industrial Arts?

    A B C D E F G

18. Why are you taking an Industrial Arts class this year?

    a. I like it
    b. It's easy
    c. Parents wanted me to take it
    d. A teacher recommended it
    e. The counselor recommended it
    f. There wasn't anything else I wanted to take
    g. I don't know
    h. Other, explain_____

19. What person or persons influenced your decision to take Industrial Arts?

    a. Mother
    b. Father
    c. Brother or sister
    d. Other teacher
    e. Counselor
    f. Industrial Arts teacher
    g. Other, explain_____

20. Which person do you think was the most influential?

    _____

21. Did you make out your own schedule?

    a. Yes b. No

22. What subjects are you interested in?

    a. Math
    b. English
    c. Science
    d. Industrial Arts
    e. History
    f. Physical Education
    g. Art
    h. Social Studies
    i. Music
    j. Language

23. In what subjects are you now enrolled?

    a. Math
    b. English
    c. Science
    d. Industrial Arts
    e. History
    f. Physical Education
    g. Art
    h. Social Studies
    i. Music
    j. Language

24. Do you plan to go to college?

    a. Yes b. No

25. How many of your teachers do you like?

    a. All
    b. Most
    c. Some
    d. Few
    e. One
    f. None

26. Do you like school?

    a. Yes b. No

27. What kind of work does your father do?_____

28. What kind of work do you want to do when you grow up?

    _____

29. What are your hobbies?

    a._____
    b._____
    c._____
    d._____

30. Tell in your own words what you like best about shop or mechanical drawing classes. _____

    _____

    _____

31. Tell in your own words what you dislike most about shop or mechanical drawing classes. _____

    _____

    _____

FORM II

QUESTIONNAIRE

1. What Industrial Arts course or courses did you take last year?

   a. Electric shop
   b. Mechanical drawing
   c. Wood shop
   d. Metal shop

2. Did you think the shop or drawing room was too crowded?

   a. Yes
   b. No

3. Did you feel that you had enough tools and equipment to work with?

   a. Yes
   b. No

4. Do you think the school shops are dangerous places?

   a. Yes
   b. No

5. Do you like shop classes?

   a. Yes
   b. No

6. Do you like mechanical drawing?

   a. Yes
   b. No

7. Which Industrial Arts course did you like best?

   a. Electric shop
   b. Mechanical drawing
   c. Metal shop
   d. Wood shop

8. Do you like to work with your hands?

   a. Yes
   b. No

9. Do you like to use tools and machines?

   a. Yes
   b. No

10. Do you think it is desirable to know how to work with tools and machines?

    a. Yes b. No

11. Which of your Industrial Arts teachers did you like?

    a. Both b. One c. Neither

12. How much did you learn that you consider worthwhile or useful?

    a. Much c. Little
    b. Some d. None

13. What was your average grade in Industrial Arts classes?

    A B C D E F G

14. What was your average grade for classes other than Industrial Arts?

    A B C D E F G

15. Did you want to take an Industrial Arts course this year?

    a. Yes b. No

16. Which course would you like to take?

    a. Electric shop c. Metal shop
    b. Mechanical draving d. Wood shop

17. Why did you not take this course this year?

    a. Couldn't schedule it
    b. Preferred other courses more
    c. Parents didn't want me to take it
    d. Someone recommended that I not take it
    e. Other, explain_____

18. What person or persons influenced your decision not to take Industrial Arts?

    a. Mother
    b. Father
    c. Brother or sister
    d. A teacher
    e. Counselor
    f. Other, _____

19. Which person do you feel was the most influential?

_____

20. Did you make out your own schedule?

a. Yes b. No

21. What subjects are you interested in?

a. Math
b. English
c. Science
d. Industrial Arts
e. History
f. Physical Education
g. Art
h. Social Studies
i. Music
j. Language
k. Athletics

22. In what subjects are you now enrolled

a. Math
b. English
c. Science
d. History
e. Physical Education
f. Art
g. Social Studies
h. Music
i. Language
j. Athletics

23. Do you plan to go to college?

a. Yes b. No

24. How many of your teachers do you like?

a. All
b. Most
c. Some
d. Few
e. One
f. None

25. Do you like school?

a. Yes b. No

26. What kind of work does your father do?_____

27. What kind of work do you want to do when you grow up?

_____

28. What are your hobbies?

a. _____
b. _____
c. _____
d. _____

29. Tell in your own words what you like best about shop or mechanical drawing classes._____

_____

_____

30. Tell in your own words what you dislike most about shop or mechanical drawing classes._____

_____

_____

VITA

Bradley A. Washington
Candidate for the Degree of
Master of Science

Report: FACTORS AFFECTING THE ENROLLMENT OF JUNIOR HIGH SCHOOL STUDENTS IN ELECTIVE INDUSTRIAL ARTS COURSES

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