A STUDY TO DETERMINE THE NEED OF INDUSTRIAL ARTS
EDUCATION FOR GIRLS IN THE SECONDARY SCHOOLS
OF THE STATE OF TEXAS

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OF THE STATE OF TEXAS

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CHAPTER I

INTRODUCTION

Statement of the Problem

The purpose of this study is to determine to what extent the need for industrial arts instruction is being met by the secondary schools of Texas.

Since the introduction of industrial arts into the secondary schools, the subject has been almost exclusively associated with the training of boys. This concept was not unusual because of at least two viewpoints. First, the history of education reveals that it has been in comparatively recent times that women were considered in need of any training other than that which could be given in the home by the mother, e.g., sewing, cooking, and the care of the family. Second, the father was the provider, the wage earner, and the protector of the family so that there was no need for the women to lead other than sheltered lives, concerned only with the home and the care of the children. The changes in social conditions, political freedom, and greater tolerance in religion, aided in destroying the old traditions of educating woman. The new conditions demanded that woman be placed on a more equal basis with men. This same concept carried over into the schools where it was asked that the
girls be given the same educational training that was provided for the boys.

It was not until recently, perhaps during the past two decades, that noticeable effort was made to include girls in the field of industrial arts. Progress brings about changes in content, objectives, and ideals in every field of endeavor. Industrial arts is no exception to this rule. It is generally accepted that the purpose of education is to develop the youth of the nation into useful, satisfied, and successful citizens. For some time there have been in books and magazines, articles showing evidence that the leaders and teachers of industrial arts are taking cognizance of the fact "that developing useful, satisfied, and successful citizens" includes both boys and girls.

This rapidly changing and complicated machine age demands that the expanding and growing program of industrial arts provides information regarding modern industry in the fields of transportation, communication, distribution, processes and materials, and general conditions affecting the commonwealth, for all individuals who desire knowledge and training, whether boys or girls.

Purpose of the Study

The purpose of this study is to investigate the present need of industrial arts for girls in the secondary schools
of Texas, and to determine the need, if any, for a change in this program. The following questions are to be considered:

1. What courses in industrial arts are offered for girls?

2. Are the classes for boys and girls or for girls only?

3. In what grades is industrial arts offered for girls?

4. Are the aims the same for boys and girls?

5. Are there any industrial arts courses not available to girls? If so, why?

6. What industrial arts courses for girls do these schools plan to add?

7. What courses should be offered using the present accepted aims of industrial arts as a basis?

8. Should the girls use shop machines?

9. What do teachers in the field believe about girls pursuing industrial arts courses?

10. What have the leaders and writers in the field written concerning the courses in which girls are enrolled?

11. Are specially trained teachers needed to conduct industrial arts courses in which girls are enrolled?

12. Is there a need for more industrial arts courses available to girls?

Sources of Data

Before any definite conclusions could be reached or intelligent answers given, it was necessary to collect certain data relative to the major problem and as many facts as could be found having a direct relation to the main question.
The data and materials for the study have been gathered from several sources. The Fort Worth Public School bulletin, Industrial Arts, was used as a source of specific objectives in the field of industrial arts.

Books which have been written about industrial arts from its beginning in the latter part of the nineteenth century down to and including the present time were searched for any material that touched on the subject of industrial arts experiences or training for girls, and any references were recorded and analyzed. Magazines such as Industrial Arts and Vocational Education, Industrial Education, and others were checked in search of articles concerning the problem.

Before making out the first questionnaire the writer secured a World Atlas for 1949, and decided to write for data from cities in the State of Texas with a population of not less than 12,000. The first questionnaire was sent to the superintendent of thirty-one selected schools, asking for the name of representative industrial arts teachers. A second questionnaire was mailed to a representative selected from each junior high and senior high school returning the first questionnaire stating that they offered industrial arts in some form. In the second questionnaire the industrial arts teacher was asked that he furnish such data as were thought to be necessary, valuable, and pertinent to the question.
Limitations

The study will be limited to the investigation of industrial arts courses taught in the white junior and senior high schools of Texas located in thirty-one cities to determine the need, if any, for additional courses for girls or for the inclusion of girls in any of the courses as taught at the present time.

Definition of Terms

Any terms of a controversial nature when used in the discussion of a problem should be defined and limited to the meaning attached to them in the paper, in order that the reader may better understand and follow the discussion. Some of the terms, not so well known outside the field, will be defined, and when used in this paper will be restricted to the meaning given in the definition of the terms.

Manual training is the term under which industrial arts was introduced into the schools of this country as a part of the general plan of education. It means, as the name implies, hand training with the emphasis placed on the "manual" part of the term. Thus to acquire skill in working wood, metal, and other materials is to receive training or experience in manual training.

Manual arts came into use at the end of the century or a little later in answer to a demand for wider content and use of materials in the manual training work. As the name
shows, it is an attempt to make the name fit the content of the work. The emphasis shifts to the "arts" part of the term. Skill loses some of its value and the latter part of the term points to constructive art or to making something useful while acquiring a degree of skill.

Practical arts means the training or giving of contacts and experiences to both boys and girls, usually in grades one to six, in the practical work of the world, and is of a strictly non-vocational nature. The subject includes industrial arts, household arts, commercial arts, and others.

Method of Procedure

In the first chapter of the study, an outline will be given of the way the data will be presented. This chapter gives the purpose of the study, the source of data, and describes some related studies. Chapter II will give some idea of the needs of industrial arts education for girls as gathered from books and magazine articles. Chapter III will present the data secured by the questionnaires from the teachers of industrial arts in the secondary schools of Texas. Chapter IV will give the conclusions and recommendations.

Related Studies

Traces of the teaching of industrial arts were found as far back as 1898, but it was not until after 1900 and nearer the middle of the twenties that statistical records were
kept with any accuracy. The United States Commissioner of Education has from time to time collected and published in-
formation concerning the number or per cent of all secondary pupils enrolled in the various subjects included in the high school curriculum. Data taken from Offerings and Registra-
tions in High School Subjects revealed that by 1922, 11.3 per cent of the total high school population were enrolled in industrial subjects, and by 1934 fourteen per cent of the total enrollment were taking industrial subjects.¹

During the past few years several studies have been made to determine if industrial arts programs are meeting the needs of the students, industries, and communities. In many cases, each study was made in a single locality, taking into consideration the actual needs of that one locality, the interests and the needs of students, and the offerings of the industrial arts program of that school.

In 1941 Roy E. Bird made a study to determine methods of planning a shop program more effectively. He discovered a weakness of the industrial arts program, failing to arouse and maintain pupil interest. Bird concluded that students should be given actual part in planning their work, and that they should be given the chance to learn to work individually as well as collectively, and that the shop

should be so equipped and maintained to foster shop work interest.²

In 1948 Alvin C. Bishop made a study of the industrial arts program of the Highland Park School, Dallas, Texas. The program in Highland Park was relatively new and the advisability of enlarging the program was questioned due to the economic and social status of the residents. Bishop concluded in this study that the program should be enlarged and that an adult program should also be offered.³

In an article written in the April, 1949, issue of The Reporter and titled "Education for What?" many interesting facts concerning the education of youth were pointed out. The present distribution of employment in the United States indicates that seventy per cent of the children in high school will eventually work in technical or manual occupations, four per cent of the high school students are now attending trade or industrial schools, six per cent are being prepared for agriculture, and eight per cent are concentrated on courses designated as home economics. The education of the remaining eighty per cent is limited to one


form or another of the liberal arts. Trade and industrial education is more extensive now than it was a couple of decades ago when it was almost completely neglected by the school system. However, trade and industrial education now constitutes only four per cent of the entire public education program and virtually none of the private. The article recommended that vocational schools should be enlarged and an attempt made to draw more students with a technological knack into them instead of insisting that academic subjects constitute a large part of their curriculum.4

4"Education for What?" The Reporter, VII (April, 1949), 35.
CHAPTER II

THE EXTENT TO WHICH A NEED FOR INDUSTRIAL ARTS
EDUCATION FOR GIRLS EXISTS AS DETERMINED BY AN
ANALYSIS OF NEEDS AND INTERESTS OF STUDENTS

The purpose of this chapter is to make a study of the objectives of industrial arts education and to determine the extent to which girls need this type of training.

From the beginning of civilization man has probably been concerned with the coming of the next generation and has tried to pave a way for better living. The constant improvement has been evident from the history of education. In the early days while the father was providing for the family, the mother was educating her children at home. As life became more complex, especially after the changes in social conditions, political freedom, and religious freedom, it became more evident that problems arose which were not being solved entirely by a home education. As this change was felt, the first schools began to be formed and all children were given the first taste of a general education, which in reality is the education preparing youth for a more successful life in the present day adult life.

The generally accepted aims of general education as set up in the "Seven Cardinal Principles of Secondary
Education”¹ are: (1) health, (2) command of fundamental processes, (3) ethical character, (4) worthy use of leisure time, (5) worthy home membership, (6) citizenship, and (7) vocation. After carefully studying these principles, four basic purposes can be outlined, which are as follows: (1) that of making a living, (2) living in the home, (3) living in the community, and (4) the use of leisure time.

In Wilber's book, Industrial Arts in General Education, he has suggested the "Scientific Movement"² which gives the "supposed" needs of youth as determined by looking at adult society and learning those activities which youth will be called upon to perform. Wilber expresses the belief that much of the maladjustment which is apparent in the schools of today is a result of the failure of the school to give sufficient attention to the nature of the child, to his maturity level, to his interests, or to his abilities.

Another trend of thought has been guided by the philosophy of Rousseau. He expresses the theory that the "felt needs and interests" of the child are adequate guides to his developmental requirements. Failure to allow the child freedom to follow what he believes to be his needs and interests


would, in the opinion of Rousseau, endanger the personality of the child.

The Committee on the Function of Science in General Education found through a study of the needs of youth for a present day and adult life that these needs fall into four definite classes: (1) personal living, (2) immediate personal social relationships, (3) social civic relationships, and (4) economic relationships.  

Under "personal living" the Committee grouped such needs as those pertaining to the development of a sound basis for both physical and mental health.

With the attainment of adolescence, the Committee states that the child finds himself involved in a variety of social-civic relationships and that these relationships include the family and other immediate social groups of both sexes.

As the individual grows in relationship to his home, family, and the immediate social contacts, he is also becoming involved with civic or community groups—schools, churches, clubs, and many other organizations.

The further opinion is expressed that from the economic standpoint the child has need for assurance that he is growing toward normal and useful participation in the work of society. The school should teach the child that there is a place for him in the economic organization and should guide

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him toward understanding today's complex and industrialized technology and toward the selection of a life's work.

The Educational Policies Commission of the United States has outlined what it regards as the ten imperative needs of all youth, which it is the responsibility of the schools to meet. The ten most common needs of youth as expressed by this Commission are as follows:

1. All youth need to develop salable skills and those understandings and attitudes that make the worker an intelligent and productive participant in the economic life. To this end, most youth need supervised work experience as well as education in the skills and knowledge of their occupation.

2. All youth need to develop and maintain good health and physical fitness.

3. All youth need to understand the rights and duties of the citizen for a democratic society, and to be diligent and competent in the performance of their obligations as members of the community and citizens of the state and nation.

4. All youth need to understand the significance of the family life for the individual and society and the conditions conducive to successful family life.

5. All youth need to know how to purchase and use goods and services intelligently, understanding both the values received by the consumer and the economic consequences of their acts.

6. All youth need to understand the methods of science, the influence of science on human life, and the main scientific facts concerning the nature of the world and of man.

7. All youth need opportunities to develop their capacities to appreciate beauty in literature, art, music, and nature.
6. All youth need to be able to use their leisure time well and to budget it wisely, balancing activities that yield satisfaction to the individual with those that are socially useful.

9. All youth need to develop respect for the other person, to grow into their insight into ethical values and principles, and to be able to live and work cooperatively with others.

10. All youth need to grow in their ability to think rationally, to express their thoughts clearly, and to read and listen with understanding.4

The Fort Worth Public Schools in a bulletin entitled *Industrial Arts* has outlined the specific objectives in the field of industrial arts as follows:

1. To develop and establish in the lives of the pupils the methods and processes of performing manual activities which are in greatest accord with the conservation of human strength, the gaining of muscular skill and control, and the assurance of safety to life and health.

2. Make constant use of the innumerable situations requiring application of the fundamentals of education. As the result of the tangible relationships encountered these principles should be more firmly fixed and awarded greater recognition in practical fields.

3. Encourage due consideration of home needs fostered through the school shop facilities, thereby developing ability and resourcefulness in the functions of home life.

4. Point the way to numerous industrial occupations, provide a preliminary fundamental training in a number of typical ones, assist the pupil, sooner or later, to make an intelligent choice of his life work, and contribute toward vocational preparation in case the choice is made in the industrial field.

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5. Undertake group and community activities as a valuable means to developing the unselfish spirit of individual contribution to the general good.

6. Take adequate account of artistic design in industrial arts in order to reveal the unlimited field wherein lies the source of much human enjoyment and appreciation of the beautiful.

7. Develop valuable personal traits, such as the habit of industry, responsibility for a task, and the ethical integrity illustrated so unquestionable by the manner in which every finished concrete article reveals the character of material and workmanship which have gone into its construction.

8. Develop economic judgment in the ultimate consumer, as a result of his own experience in planning, purchasing, constructing, and evaluating his own handiwork.5

When the objectives of general education as set up by the Educational Policies Commission are compared with the objectives of industrial arts education as set out by the curriculum committee of the Fort Worth Public Schools, it is found that there are many points in common and that there is general accord in the principles outlined. The specific objectives on which the two are in agreement may be summarized as follows:

1. Skill in manual activities.
2. The ability to meet varying situations.
4. Guidance in selection of a vocation or occupation.
5. Promote the democratic way of life.
6. Provide recreational interests.
7. Build integrity in character and work.
8. Develop the ability to buy, sell, and consume wisely.

The above principles are here used as a basis for determining the needs of girls for industrial arts education. Reference is here made to various sources consulted for statements concerning the principles in question. Many magazine articles and books, both new and old, were searched for information in regard to the application of these principles, and it was found that the old as well as the new were valuable in determining present day needs.

Charles A. Bennett, in his *History of Manual and Industrial Education*, states that Calvin Woodward pioneered in establishing the first manual training school in this country. This school was known as the St. Louis Manual Training School and was soon followed by similar ones in Chicago, Toledo, Cincinnati, New Orleans, Louisville, Menomonie, and others.⁶

Also, according to Bennett, the first secondary school to offer a manual training course planned especially for girls was Scott Manual Training School, Toledo, Ohio. This high school was opened on December 5, 1885, and marked a revolutionary departure for this type of school at the time by offering a four-year course, and for the very first time this type of school made provision in its program for girls as well as boys.⁷


⁷ Ibid., p. 376.
The "Domestic Economy" course for girls was listed in the following manner:

1. Light carpentry, wood carving, care of tools.
2. Clay modeling, wood turning, introduction to course in cooking or garment cutting and making.
3. Introduction in preparing and cooking food, purchasing household supplies, care of the sick, etc.
4. Cutting, making, and fitting garments; household decorations, typewriting, etc.

Sixty students were enrolled in the manual training classes of this school the first year, and ten of them were girls. In a few years, by 1900, the enrollment had increased to two hundred pupils and of this number, fifty were girls taking "Domestic Economy," which, as we have seen, was a combination of manual training, commercial work, and what was later to become known as domestic science. Ham in his book, Mind and Hand, includes besides the subjects listed by Bennett, those of mechanical drawing and designing for girls.9

Both Bennett and Ham have emphasized the fact that for the first time in the history of secondary education in the manual training high school the sexes were placed on a footing of absolute equality in that the courses in carpentry, drawing, carving, and so forth, were identical for boys and girls. It was with much commendation that Ham pointed out the fact that "the brightest and most faithful" pupils of

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8 Ibid., p. 330.
9 Charles H. Ham, Mind and Hand, p. 258.
the Toledo Manual Training School have largely availed themselves of the opportunity for manual instruction, and he mentioned the "zeal with which the new work is pursued."10

Manual training came into existence in the secondary schools as a result of criticism of the existing system of educating pupils for college and the professions, when the greater number of individuals would ultimately have to earn their livelihood by working with their hands. During the early period, while the leaders of the movement were often engaged in controversy and wrangling over claims for or against the new type of school, many merchants, manufacturers and critics were approving the manual training schools and backing their approval by donations of funds and grounds to construct such schools privately. They saw in this new type of school the solution of one of the outstanding problems of the times--that of providing more skilled labor for the industries of America.

James Huff Stout was so enthusiastic about offering manual training and household arts that he erected and furnished a two-room building for these two subjects. He also paid the salaries of the teachers for these two new lines of work. This school opened in January, 1891, in Menomonie, Wisconsin. Menomonie was probably the first city in the United States to have a directly organized course of

10Ibid., p. 365.
manual training and domestic science extending from the kindergarten through the high school.\textsuperscript{11}

As can be seen from the preceding paragraphs, manual training came into the schools as a result of the belief that it would be a means of providing practical education, especially for the boys, and through it they would receive training which would provide more skillful workers for industry. At the same time women were also beginning to take their places in some of the fields of industry along with and in competition with the men. The intensity of the industrial revolution was greatly accelerated by the Civil War with the result that more than ever before women began to take their places in industry. The secondary schools now offered the same facilities to both sexes alike, as is no more than one would expect that some of the schools mentioned above admitted girls to the manual training classes on an equal basis with the boys.

The term used to designate industrial arts education has changed a number of times. The first term, "manual training" was an attempt to fit the name to the extent rather than to the form of the work. Vaughn and Mays state, "It indicates that those who brought it forward were thinking in terms of ideals, materials, and practices of at least

some of the trades, vocations, or 'arts' in which the
people use the skill of their hands to do the work of the
world.\textsuperscript{12}

In the objective of developing a certain amount of
skill in manual activities, Wilber gives the following out-
line on what he believes the school can expect from the
student:

1. They will perform tool processes with an increas-
ing degree of accuracy.
2. The quality of workmanship in their projects will
be improved.
3. They will develop pride in their craftsmanship.
4. Their self-assurance will increase and will be
indicated by a willingness to attempt more diffi-
cult projects.
5. They will practice difficult operations in order
to perfect the skills.\textsuperscript{13}

Marion Burmaster Brown, in commenting on "What Indus-
trial Arts Has Meant to Me," states that

On graduating from a normal course I took a teach-
ing position in which I was required to teach elemen-
tary industrial arts, but had never had any such
training of this kind. I managed to teach the making
of such articles as broom holders of cardboard and
raffia and other/elementary problems.\textsuperscript{14}

She further relates that at the end of the term she went
back to the university and registered for industrial arts
courses where she made tablets, Indian bowls, tile, and so

\textsuperscript{12}Samuel J. Vaughn and Arthur B. Mays, \textit{Content and
Method of Industrial Arts}, p. 58.

\textsuperscript{13}Gordon O. Wilber, \textit{Industrial Arts in General Educa-
tion}, p. 54.

\textsuperscript{14}Marion B. Brown, "What Industrial Arts Has Meant to
Me," \textit{Industrial Education Magazine}, XIV (September, 1938),
189-193.
forth. She tells how she now admires welders who without school training can do such fine things with the welding flame and that she "now knows why primitive man could worship something made with his own hands."\(^{15}\)

H. C. Rose, the instructor of the high school in Augusta, Wisconsin, with the aid of his superintendent worked out a course for senior girls, which they believed met the needs of the high school in solving the problem under discussion. The course written in 1935 covered two semesters and had the approval of the State Department of Education. The first semester's work consisted of simple useful processes in woodwork, wood finishing, upholstery, design, surface decoration, and properly constructed projects. The second semester's work consisted of mechanical drawing, arrangement of the home, mechanical and electrical equipment, standard materials in the construction of the home, and so forth. Rose states that so great was the interest, that half of the women teachers came to class on Saturday to participate.

Discussions on this subject indicate that many educators agree with Rose when he says, "Industrial arts for girls can claim the natural interests of a large number of girls," and when he says that "It offers practical values not attained in any other courses as well as contributing

\(^{15}\)Ibid., p. 193.
in a large measure to the objectives of general education for all."  

In discussing the choice of a course for the girl in high school, William A. McKeever says,

The last few years have seen marked changes in the high school course of study . . . . At the beginning of the twentieth century there was, as a rule, only one course available for young people, and that consisted of a traditional arrangement of Latin, mathematics, history, and a smattering of abstract science, but the new high school is succeeding more and more each year in making itself what it pretends to be, an institution for the whole people. Instead of one course, as formerly, there are now many courses, each arranged to meet the needs of some class of society.  

Elwood P. Cubberly, in discussing Public Education in the United States, says:

As our civilization grows in complexity, as the ramifications of our social and industrial life become more extended, as production becomes greater, as our political life becomes wider and the duties and obligations of citizenship become more important, as our place in world affairs becomes larger, and as the privileges conferred and the responsibility for proper living resting on each individual in society increases, the nature and extent of education must correspondingly increase. Thus the courses for either boys or girls in the eighties became inadequate in the complex life of the twentieth century.  

In New View Points in American History, Schlessinger, in discussing the schools of the early nineteen hundreds,

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says, "Today we are told on good authority, our schools are no longer mere disciplinary institutions where drill is given in the mastery of the rudiments of knowledge but institutions of democracy calculated to train for useful service in the office, the shop, and the home, and intended to prepare young people for intelligent participating in the increasingly complex social and political life of our democratic society."

In analyzing the above quotation, it is found that industrial arts for either boys or girls is not specifically mentioned, but it is believed that the "useful service in the home and the shop" includes industrial arts and the part that it has in the larger conception of preparing all students for participation in the complex social, political and economic life of the times.

The task of the school is to make available to the pupils, especially in the secondary period, adequate training which will aid the pupil in making a wise choice of his or her life work, and in gaining worthwhile knowledge. If these functions are met and accomplished by the school, it seems that the girls as well as the boys must participate in the industrial arts program.

Homer J. Smith expresses the opinion that

Industrial education is not a movement or a suggestion, but has become a fact in the public schools. The task

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now seems to be to make it serve the social end for which it arose—that of providing for each individual those experiences whereby he learns successfully to carry on any gainful occupation in trade, industry, and mechanical pursuits.\(^{20}\)

There seems to be no reason why this opinion as expressed by Smith should not apply to girls as well as to boys, especially since many of the girls of today are engaged in gainful occupations. For those who marry, the making of a successful home certainly calls for a thorough training, which doubtless should be learned in school before marriage instead of by experience and the often heartbreaking trial and error method.

"Industrial arts in one guise or another has been taught in all levels of schools from the kindergarten to the senior year in high school and for both boys and girls," according to Snedden and Warner in *Reconstruction of Industrial Arts Courses*.\(^{21}\) The same authors in discussing miscellaneous problems have this to say regarding industrial arts for girls,

> From the standpoint of objectives regarded in this book as controlling, there should be practically as good reasons for the taking of industrial arts by girls as by boys. There can be discovered no good reason why girls in the junior high school should not take printing, cabinet making, and other forms of industrial arts on exactly equal terms with the boys. The two values that might be of lessened importance

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might be guidance and pre-vocational training but they seem to be of little significance, even for boys.\textsuperscript{22}

The educational values in industrial arts as listed by these men are: (1) pre-vocational training, (2) centers of correlations, (3) "handyman" activities, (4) utilizers' appreciation, (5) social insights, (6) training hand and eyes, and (7) development experience.

In Bawden's book, he quotes William H. Stone of Ohio University, in discussing recent trends and history of industrial arts, by saying,

Traditionally, industrial arts education has been provided for boys only. Now the trend is to consider industrial arts not particularly as the beginning of trade education for many, but as an avenue to a liberal and appreciative understanding of industrial life, necessary for boys and girls alike.\textsuperscript{23}

Harold U. Faulkner, a writer in the field of American history, quotes from John Dewey as follows: "The school is a place where the individual should learn life by living life."\textsuperscript{24} This seems to mean that industrial arts should have quite a large part in bringing to all individuals, boys and girls alike, such training and experiences as will be usable to either in their lives after secondary school days.

\textsuperscript{22}Ibid., p. 57.

\textsuperscript{23}William T. Bawden, \textit{Industrial Arts in Modern Education}, p. 139.

\textsuperscript{24}Harold U. Faulkner, \textit{The Quest for Social Justice}, p. 139.
have passed and problems of the world are to be met and solved.

Deyo B. Fox states:

Guidance and human relations are built upon the concept of cooperation. We have to live with each other; we must learn to get along with one another. The pupil must be taught to make the necessary adjustments to live and work on a cooperative basis in a society of free enterprise.  

This writer seems to be trying to build up the fact that there must be respect for each other and that one must be able to meet any kind of situation, which ties in with the objective of the ability to meet any varying situation.

About 1905 when manual training was beginning to be established in the high school, Charles G. Leland wrote, "... when boys or even girls manifest an aptness or a fitness for it [Industrial arts], they may be taught simple carpentry, joinery, turning, or any of the trades, if there be an opportunity to do so and they can learn."  He would include in the courses for boys and girls, such subjects as drawing, designing, modeling in clay, wood carving, stenciling, sheet leather, ceramics, painting and repair work.

Following closely the same general trend of thought, Arthur McArthur wrote in 1894, "Nothing will make the home

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25Deyo B. Fox, "Improving the Industrial Arts," Industrial Arts and Vocational Education, XXVIII (September, 1949), 260.

more delightful than when its chief ornament has received the advantage of a practical education." He expressed the belief that women should be trained in the practical arts, that they should know something of household architecture, and then there would be sentiment where, without practical training, one would be likely to find or see only dry details of brick and stone. Some of the courses that McArthur would include in the program of the school for girls were drawing, wood carving, modeling, painting, designing, ornamental work in leather, and other subjects that would contribute to the making of a better home through first training the home maker.

Newkirk and Johnson, in their book, state:

Boys and girls in grades seven, eight, and nine use most of the tools, equipment, and appliances found in the modern home. They should be taught how to properly care for, service, and use these industrial products. For example, they should know how to replace a washer in a compression faucet, fix an extension cord, sew on a button, and clean spots from clothing. Ability to mend and service the products of industry is economical and highly essential in our modern industrial civilization.

Row, in his book, The Educational Meaning of Manual Arts, says, "The art of home making is only just beginning to find

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a place in the schools . . . Domestic science and household arts are very important under the right conditions."\textsuperscript{29}

With the rapid growth of manual arts and the enrichment of the subject matter, the courses became more attractive and pointed less to the aim of developing skill alone. "Such courses as interior decorating, landscape gardening, architecture, photography, painting, etc., began to find their way into the schools, and the girls found them, in many instances, valuable training which carried over into their lives, whether in the home or in industry."\textsuperscript{30}

Lapp and Mote in \textit{Learning to Earn} make the contribution,

\begin{quote}
The part of a successful homemaker is more important than that of a woman in business, or the industries, because in the former capacity there is dependent on her to some extent the financial success of a marriage relationship, the happiness of her children, her husband and herself . . . . She will never know how to spend money unless she is thoroughly trained for all the departments of the home and all the intricate aspects of the home life.\textsuperscript{31}
\end{quote}

The construction and care of the home should be of some concern to the woman. She should be able to judge and select equipment and labor saving devices which will make the home a better place in which to live. Too often when all these

\begin{itemize}
\item[\textsuperscript{29}] Robert K. Row, \textit{The Educational Meaning of Manual Arts and Industry}, p. 160.
\item[\textsuperscript{30}] Christene H. Hoerle and Florence B. Saltzbert, \textit{The Girl and the Job}, p. 263.
\item[\textsuperscript{31}] John A. Lapp and Carl H. Mote, \textit{Learning to Earn}, p. 145.
\end{itemize}
details are left to the husband the result is that the dealer gives the least for the most money.

"Who spends the income of the families of the nation?" This is one of the questions asked by Lapp and Mote, and it is further stated that, "From three-fourths to four-fifths of the family income is spent for food, clothing, shelter, etc., and all of this is usually spent by the wife."32

In analyzing the statement of Lapp and Mote, it seems that the high schools of the nation have the opportunity to provide a program of industrial and practical arts that will appeal to girls and give worthwhile training in all the various fields, so that the girls will become intelligent spenders of the family income.

It has been said by Ham that reform in education has usually come or had its beginning with the weaker sex.

It is from her that man receives his noble traits and his earliest impressions . . . . The regulations of the race must come through education then, begin with the child, and be directed by the mother; and this being the fact, the education of woman becomes far more important than that of man.33

This education should cause a very marked improvement in the home life of people because the school instruction and training would carry over into the home.

Row expressed this belief:

When the homemakers become more intelligent regarding their work, more skillful and more artistic in

32Ibid., p. 158.

33Charles H. Ham, Mind and Hand, p. 259.
performing it, that work will take on the dignity of both science and art. Then the glory of the American woman will be her home.  

In the Central High School of St. Paul a course was undertaken to give some needed instructions to prepare girls for the lives in which they have to live, by offering a course in industrial arts, which supplies certain information that can be classified as education for girls who have no desire to take a purely academic course. In this course the student is taught the use of hand as well as certain machine woodworking tools. Also, the methods of construction, processes, and principles which are involved in the making of projects that develop ideals in workmanship, design and finish are taught. A liberal amount of supplementary information is given concerning lumber, seasoning, and defects and some emphasis is placed upon wood finish, stains, varnishing, and refinishing.

The primary objective of this course was to teach girls to be better homemakers. In establishing a home, it is important to know something about each item that goes into its furnishing. The upkeep of a home makes many demands, and with the knowledge gained from this course, these girls are better fitted to supervise, if not actually to do the work themselves.  

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34 "Row, op. cit., p. 161.
Newkirk and Johnson expressed the opinion:

For those students who will enter the field of industry, industrial arts lays the foundation of vocational preparation and makes a basic contribution to the ability to earn a living. For those students who are not planning or preparing for an industrial career, industrial arts gives a practical training of value for intelligent living and the enjoyment of worthwhile hobbies.36

The complexity of the social and industrial life is very well illustrated in Vocational Education by Snedden, in which he enumerates some fifty courses or subjects under industrial arts and then closes the list with "etc." To give a few of the subjects will be worthwhile in proving the point that girls should and will be found to be interested in such courses when and if made available for them in the field of industrial arts. Following are a few as enumerated by Snedden: Cloth weaving, home repair and building, house construction, painting, water supply, machine dissection—such as sewing machines, vacuum cleaners, washing machines—photography, wallpaper decoration, pottery and glass making, tailoring and clothing repairs, and many others.37

When this course of study was set up in the schools, the schools were not vocational and vocational training was the last thing that the authorities wanted. They believed that what was wanted by industry was that the schools send to industry boys and girls who are physically strong, industrious, reliable and intelligent. This means that industry wanted

36Newkirk and Johnson, op. cit., p. 269.
37David Snedden, Vocational Education, p. 476.
youth who had the necessary training which gives them a foundation upon which to build, in order to learn the things that are taught in industry by industries themselves.

Each industry usually has a way of doing a job--this may not be in line with the next one--and the same thing applies to student training. Nevertheless, the student must have a basic knowledge in learning how to perform his duty to the fullest of his ability and this is where the school must make its contribution. Unless schools are preparing the girls and boys to the best of their ability they are failing to do their part in preparing the students for a vocation or occupation.

Wilber mentions this statement:

An industrial arts program provides try-out opportunities where some of the important occupational fields may be sampled. While no attempt is made in industrial arts classes to provide vocational skills, the child nevertheless is impressed by the fact that he is using the tools and processes of industry and that he is being given the opportunity to study and select from the trades and occupations of adult society.\(^{38}\)

Dean M. Sweickhard, assistant superintendent of schools in Minneapolis, in discussing the functions of industrial arts in his book, *Industrial Arts and Education*, sums up the things that the school must do for the pupil if it meets fully and adequately the situation with which it is entrusted. He does not say these functions should be for boys in

industrial arts nor for girls, but that they should apply to pupils. Following is the list as enumerated by Sweickhard:

1. Industrial arts should help to educate pupils to know industry as a matter of general information.
2. It should provide a sensible working knowledge of operations and materials useful to any citizen or consumer.
3. If the manipulative work is definite and complete enough it can be of usable value about the home.
4. It may lay a foundation which will help the individual in the choice of an appropriate vocation.
5. If the work offered is substantial it may be built upon in later vocational training.39

In discussing changing opportunities Newkirk and Stoddard point out:

The boy and girl of today do not have the same opportunity to learn to do these mechanical jobs about the home through participating in them with the parents that was afforded young people when our adults were boys and girls. Then, too, many of these problems are more complex than were those that confronted the members of the home a quarter of a century ago.40

Surely the school must assume the responsibility of training the boys and girls to do the mechanical things with which they will be confronted as adults later in life. The added complexity of conditions today offers all the more reason why it is justifiable and right that the responsibility of better preparing them for doing those things which later they will of necessity have to do anyway, should be the responsibility of the school.

In promoting a democratic way of life the schools teach the pupils to cooperate with one another, to have an understanding of one another in working in the shop together, to exchange ideas in the shop that will benefit both sexes. There seems to be a prevalent belief that boys are more mechanical, and girls are more nimble in using their hands and fingers in doing hand work.

By establishing industrial arts work for both boys and girls in the schools and teaching them to be good citizens with their work is one of the most outstanding ways of promoting a democratic life.

Wilber believes that the three basic precepts of democracy should be clearly understood by every boy and girl in America.

First, they should know that under this form of social organization there is a recognition of the unique worth of the individual. At the same time, each boy and girl should understand that freedom for individual development carries with it the responsibility to refrain from interfering in any manner with the development of others. Thus, the necessity for fostering such traits as tolerance, cooperation, and social sensitivity becomes clear. To accomplish this requires that each shall participate in a variety of "shared experiences." The extent and richness of such sharing is, to a degree, a measure of an individual's contribution to the program of a democratic way of life.\footnote{Wilber, \textit{op. cit.}, p. 7.}

It should be further recognized that only in a democracy is there a recognition of, and dependance upon, the intelligence of the common man. Wilber further commented that
"If democracy means that each individual has the right and the responsibility to express his ideas concerning questions of government and social policy—national, state, and local—then it is evident that such a society can be no better than the best thinking of the combined people can make it."\textsuperscript{42}

Since boys and girls work together in other classes and compete on the same level, one may well ask why should not they compete on the same level in industrial arts education. By learning to work together here they will learn to work together outside school and later in life in industry, factory, and homes.

Laurence F. Ashley, professor of industrial arts education at Eastern Illinois State Teachers College, states, "Education should consist of the reconstruction of experiences into usable life patterns."\textsuperscript{43} He quotes Fitch as follows: "Man has nothing at all but experience, and everything he comes to, he comes to only through experience."\textsuperscript{44} Ashley believes also

The obvious move for the subject \textsuperscript{Industrial arts} and others is to recognize its place in contributing to the purpose of general education. To this end it becomes a subject for both boys and girls, and must provide a wide variety of media. The industrial arts

\textsuperscript{42} Ibid., p. 7.

\textsuperscript{43} Laurence F. Ashley, "What Now in Industrial Arts?" Education Magazine, LXVI (October, 1935), 116-118.

\textsuperscript{44} Ibid., p. 116.
of the future must be considered as contributing to the education of all people at all age levels, and in any life situation. For boys and girls it furnishes experiences in accord with their present interests which will furnish a basis for the interpreting of other knowledge, and thereby in formulating more intelligently a plan of life.\(^4^5\)

Waller expressed a belief in "A Versatile Unit for the Industrial Arts Curriculum" by stating, "A problem confronting the teachers today is to so organize the courses in industrial arts that they will contribute to the needs of all the students, regardless of future plans, and be broad enough to include the general education aims as they are accepted today."\(^4^6\) In an attempt to work out an answer to this problem, Waller, with the cooperation of the school superintendent in the University High School, Madison, Wisconsin, carried out an experiment in 1937, with twenty-two sophomore boys and girls.

In attempting to determine some industrial arts instruction which could be offered to meet the needs of all high school students in the present and would carry over into future life, the following objectives were set up:

1. To develop appreciative attitudes toward industry and workers.
2. To develop "handyman" skills, such as are needed in everyday life about the home and office.
3. To develop consumer's knowledge and appreciation for industrial products, to enable the pupil to select, use, and maintain these products wisely.

\(^{4^5}\)\textit{Ibid.}, p. 118.

\(^{4^6}\)C. H. Waller, "A Versatile Unit for the Industrial Arts Curriculum," \textit{Industrial Arts and Vocational Education}, XV (December, 1938), 419-421.
4. To give vocational guidance through the study of various industries.
5. To develop a vocational and leisure time interest.\footnote{47}

The course covers one semester of work and is equally divided, one half of the time being devoted to manipulative work and the other half to related information. The students participate in research, planning, and other activities. Trips are planned to study industries, various business, and consumer and cooperative organizations. In concluding the article, Waller made the following comment:

Taken in total a course of this type meets the needs of a great many of the boys and girls, regardless of their future plans. It provides rich opportunity for integrating industrial arts with other subjects in the curriculum and is a definite departure from the traditionally specialized shop course which has been receiving criticism from the educators who insist that the industrial arts curriculum has been too much a field unto itself and too little a contributing factor to general education objectives.\footnote{48}

Industrial arts work can be presented in the form of a recreation as well as education. Many high schools are offering club work for those taking industrial arts. It is usually not a regular course for which credit is given nor is it taught during the regular school hours. It comes under extra-curricular activities of the school program for which no credit is given, but in which all students must take part.

The girls are the ones who usually want an industrial arts club, but during the regular class periods the

\footnote{47}Ibid., p. 421. \footnote{48}Ibid., p. 422.
industrial arts teacher is busy with other classes. The only solution seems to be to have the club meet every week during the school year. These girls could take some other club activity which meets during the school hours and conform with the requirements of the system; but their selection fell in with the industrial arts, for it seems their main interest was in doing and building something that they could use and take pride in having done themselves.

Club work is usually planned to offer training in the use and care of tools used about the home, woodwork, wood finishing, upholstery, sheet metal, art metal, basketry, electrical appliances, and mechanical drawing. The girls are found to be as efficient as, and in some instances even better than, the boys.

Many of the schools now are beginning to take up the idea of exchange classes. Beryl M. Parrish, an instructor of industrial arts, states that during an exchange period of thirteen days between his department and home economics, "The girls took mechanical drawing, made flour scoops and cookie cutters, lamps, and finished stools and end tables." He found their work compared favorably with that of the boys and some of the girls even produced better work. He recommended to his state school a six-weeks course in home economics.

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mechanics for girls, for he believed this course to be a "real new deal in practical education."

In Wilber's book, Industrial Arts in General Education, he felt that by encouraging pupils to develop recreational and avocational activities they would find satisfaction in the following activities:

1. They will read such magazines as Popular Mechanics, Home Craftsman, and Popular Science.
2. They will ask advice on how to carry on constructive activities out of school.
3. They will become interested in, and will engage in, one or more constructional hobbies.
4. They will spend spare time in the shop, either in school or home.
5. They will ask questions and talk about their problems.
6. They will consult catalogs for information about their hobbies.
7. They will contribute to class discussions with information gained from reading along lines of their interests.
8. They will take the initiative in visiting industries along the lines of their interests.
9. They will develop home workshops.50

In a quotation by Whitsel in the Industrial Arts and Vocational Education magazine, he follows along the same line of thought as Wilber by saying,

As our industries become highly mechanized and labor is more and more plentiful, the hours are going to become ever shorter. There is probably no area of the senior high school program that offers greater opportunity for leisure-time activities than does industrial arts. Numerous avocational interests may be developed about the home through various mechanical activities and use of tools and materials.51

50 Wilber, op. cit., p. 28.
Bawden quoted L. D. Harvey's philosophy of education, "Intelligent, systematic, and persistent physical training is essential to the all-round development and well being of the individual."\(^{52}\) This quotation does not particularly suggest recreational activities, but it seems to fit in with the objective of industrial arts of providing recreational interests.

When manual arts classes were offered to girls long ago, it seems that these classes were offered mostly to children who had a handicap. In a few instances it was felt that they should be set aside and taught how to use their hands in building a stronger body, mind, character, and interest. This was well and good, but it did not take too long to discover that normal pupils were also interested in building a more sound character and interest in work that was creative.

"Many girls and women often wish they had the ability to do certain things with tools and mechanical appliances that are usually done by boys or men of the family."\(^{53}\) Such is the statement of Harold Sand Preston, an instructor of industrial arts. One of the aims of education is to assist the pupils to do better the things they will have to do.

\(^{52}\) Bawden, op. cit., p. 9.

anyway. The girl in the high school of today will perhaps have a home of her own tomorrow, so the school should give her such training as will prepare her to have and keep a better home. The function of industrial arts, it seems, should be to contribute to the education of the girls as well as to that of boys. It should prepare girls to perform tasks in the home which do not necessitate the calling of some skilled craftsman to make some minor repair. As we know, most everyone derives satisfaction from the fact that he or she is able to do the more simple tasks about the home.

If there ever was a time when soundness in character and work can be built, it is now.

Pride in one's ability to do useful things is one of the best guarantees of good citizenship. It can be acquired only through successful accomplishment, and every pupil should be trained until he can do well at least a few things. One likes to do the things he does well, and a distasteful task in learning may become a pleasure in accomplishment. 54

Fox made a contribution to this objective in stating that "the sense of social contribution and individual achievement for social and occupational good is a most important product of the industrial arts offerings."55

54 Charles P. Richardson, "A Reinterpretation of Industrial Arts Objectives," Industrial Arts and Vocational Education, XXI (February, 1944), 56.

55 Fox, op. cit., p. 260.
It seems that in order for an individual to make a social contribution and attain individual achievement, pride has to go hand in hand with the ability to perform the task.

All high school youth are not only going to be workers in some field of industry, but are potential users of all the many products of the wide field of industry. Appreciation and consumer knowledge will place these youth in the position to decide wisely when buying and to employ others with better judgment than they would have without this guidance.

Rose, the instructor in the high school in Augusta, Wisconsin, cites the Century of Progress Exposition as an example of the importance of industry in the world today.

Mechanical developments will continue since patents are being granted at a rate of more than a thousand per week. . . . Our everyday life is being more and more influenced by science, industry, and crafts and arts. . . . The time is at hand when boys and girls must be able to adjust themselves quickly and intelligently to changes coming through industry. . . . Boys are taught industrial arts for useful skills, habits of orderly procedure, intelligent consumption and exploratory experiences in the industrial world. . . . Why does not industrial arts do the same for girls?56

It seems that the objectives of industrial arts should apply equally as well to both sexes.

The importance of home planning courses for girls in industrial arts is very well shown in an article by Hargitt, supervisor of industrial arts in the city of St. Louis,

who is an enthusiastic advocate of such work for girls. Both boys and girls in the senior year take this course.

They make a well planned study of the home, so that upon acquiring homes of their own they will be more intelligent consumers of well planned and adequately constructed homes. They draw a set of plans from the ground up, and consider convenience, landscaping, site selection equipment, and lastly they construct models of the homes that they have planned. 57

The cooperation of the lumber company, local architects, city business bureau, and all business houses was sought in making the course more interesting and to bring related material and information to the students. All details such as excavation, framing work, carpentry, mill work, heating and plumbing, hardware, and in fact all the problems met in the construction of a modern home are studied.

Clarence J. Rodgers of Main Township High School, Park Ridge, Illinois, also teaches a course for girls in home planning.

In this course the girls draw plans of their ideal kitchen, living room, bedrooms, etc., and study the styles of architecture, make sketches of the house of their choice, make, read, and understand blue prints, make drawings to scale, make landscape layouts, and make a study of decorations and furniture styles. The aim of the course is to give the girls an appreciation of the modern home and what it takes to wisely set up a modern home of average means. 58


This course is in no way vocational, but is made as practical as possible, in order that the pupils will understand how to compare and buy wisely.

J. J. Metz, the editor of Industrial Arts and Vocational Education, one of the outstanding magazines in the field of industrial arts, very well summarizes the problem under discussion in this paper in an editorial in which he says:

The experiment of admitting girl students to the school shop has been tried successfully in many school systems. The practice is not so common as it ought to be, however, and the teachers in the schools where this idea has been tried out, have every reason to study this particular method of broadening the field of their work.

A number of the objectives set up for the giving of industrial arts for boys are just as valid when applied to the girls. The girls, too, live in this mechanical age and in their hands rests much of the selecting, purchasing, and operatively using the products of this age. It remains, then, to work out the details for making industrial arts work available to these future potential consumers. Whatever changes, if any, will be needed in the outline of the industrial arts courses as given will be determined and made . . . .

It is important in this day, when men and women so often share the same type of work in the office, factory, and the store, that the practical education and its vocational guidance presents a real problem and an opportunity, and the instructor, supervisors, and directors of the industrial arts must work cooperatively on its solution. If this is done on a large scale, the good now done by some school systems will be multiplied and the benefits of the work now offered to boys, in all communities will be opened up also to the girls of our country.59

In Wilber's book, Industrial Arts in General Education, he mentions the objective of increasing consumer knowledge

to a point where students can select, buy, use and maintain the products of industry intelligently. He believes that with the proper instruction the students will be more conscious of the following points:

1. They will examine articles carefully and judge their values before buying.
2. They will look for constructional features in judging the worth of an article.
3. They will learn about materials and will apply their knowledge in making purchases.
4. They will become acquainted with trade names and will look for proven brands when buying.
5. They will maintain and use manufactured articles in such a way as to prolong their life and usefulness.
6. They will recognize quality and will buy accordingly.
7. They will buy on the basis of their needs, rather than entirely on the basis of price.\(^{60}\)

"It is becoming increasingly evident that the student of industrial arts should have some instruction in consumer education, and appreciation, and evaluation of products in more fields of this modern social world in which he is living."\(^{61}\)

It is evident that no one student will be able to develop all of the objectives outlined here or all those usually given in any other list. The attainment of as many as possible, however, is the ideal toward which the industrial arts teacher must strive. It is recognized that some students will progress much further in the development of

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\(^{60}\) Wilber, op. cit., p. 28.

\(^{61}\) Ralph O. Johnston, "Matching Men and Jobs--Reorganizing the Industrial Arts Curriculum," Industrial Arts and Vocational Education, XIV (November, 1943), 351.
these objectives, but this is another way of saying that individual differences must be recognized in industrial arts as in any other course. The more objectives that are developed, the more nearly the industrial arts instructor has proved his point of the course.

The information gained thus far is incomplete for the purpose of this study in that no analysis was made of the actual need which girls find for the industrial arts program. The findings of this research are valuable for the purpose of making comparisons with the findings of this study.

In Doane's study, The Needs of Youth, it was his purpose to determine what youth needs and problems were in the present day curriculum. He discovered that, "Although there is general agreement among educators that the educational program of a secondary school should be based upon the needs of youth, there appears to be much difference of opinion as to just what these needs are and what they imply for the curriculum."\textsuperscript{62} Doane has outlined the following classification of needs:

1. Faults or shortcomings of society which need to be remedied by social action.
2. Lacks or shortcomings of youth as individuals, which need to be met by education, parental influences, or other youth training agencies.
3. Psycho-biological needs which give rise to personal adjustment problems felt by the individual youth.\textsuperscript{63}

\textsuperscript{62}Donald C. Doane, The Needs of Youth, p. 113.
\textsuperscript{63}Ibid., p. 114.
The school's contribution toward meeting needs of the first group is usually indirect through education regarding their existence and in methods of meeting them. The second group of needs suggests items of curriculum content necessary to provide that which is lacking in youth. Psychobiological needs suggest their utilization as a means toward meeting the two above needs by acting as vehicles or sources of motivation. Needs thus may suggest curriculum organization or method. 64

In the investigation, the youth were asked to make a choice among a number of courses from a hypothetical school situation. It was assumed that the courses selected would be those which promised to offer help in meeting the needs which, to those concerned, appeared to be the most important. There were nineteen courses included in this study—twelve of them represented social problems and social information, and the other four courses represented other subjects or common areas of interest. The study revealed that the area of greatest concern to the entire group was that of vocational choice and placement; and that interest in this topic increases with the rise in age groups—particularly toward the senior year of high school.

Eighty-four per cent of the eighteen-year-old girls and 93 per cent of the eighteen-year-old boys indicated they wanted to know "how to find a job," and 72 per cent

64 Ibid., pp. 113-114.
of the girls and 75 per cent of the boys indicated a desire for help in deciding what phase of work they wanted to enter. The topic representing a vocational survey was desired by only about one-seventh of the boys and one-fourth of the girls of the thirteen-year-old age group. On the other hand, it was desired by about one-half of the boys and one-half of the girls in the eighteen-year-old age group.  

Doane states in this study that "the findings based on the responses to this inventory are in substantial agreement with those of comparable studies--studies in which youth reveal their needs and problems indirectly through reactions to actual or hypothetical situations rather than to a direct query as to what they believe their needs or problems to be."  

In Doane's conclusions he stated that "if one accepts the philosophy that the school is to train for vocational competence and to meet the personal needs and adjustment problems of youth, extensive consideration of vocational choice and placement is indicated, particularly during the senior high school years." It was further shown by this study that the youth participating asked the school for help in this area. Doane concludes that since the school is an agency to train youth and prepare them for a better

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65 Ibid., p. 117.  
66 Ibid., p. 115.  
67 Ibid., p. 118.
life, the curriculum cannot overlook this expressed desire and need of youth for adequate vocational guidance—which under present conditions is provided all too infrequently. 68

In a recent study made by Yoshi Kasuya regarding A Comparative Study of the Secondary Education of Girls in England, Germany, and the United States, she found the philosophy underlying the secondary education of girls is distinct in each country in accordance with its particular social theory and cultural history. 69 Sex differentiation is singularly absent in the secondary schools in Europe, and in the academic and general courses of the American high schools, but some sex differences will appear in courses like manual training and physical education.

In both Germany and England early specialization is discouraged on the theory that it checks the free expansion of the inner power of youth.

America conceives liberal education in a much broader sense than does Europe. According to the majority of American educators, liberal education consists of more than book knowledge. 70

Culture and utility are the twin aims of liberal education. The American high school is not merely an institution preparatory to higher study, but an organic part of contemporary life. 71

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68 Ibid., p. 120.
70 Ibid., p. 177.
71 Ibid.
Kasuya further states that in order to meet the complex demands of modern life, the secondary schools for girls in all three countries must cope with many problems which may be grouped under the following seven points: (1) academic education, (2) vocational education, (3) health education, (4) social and civic education, (5) education for leisure, (6) education for the home, and (7) character education.72

These aspects of education receive different emphases in all three countries; they present to the secondary schools of those countries varied degrees of difficulty arising from social conditions. One notable fact in the academic schools in Europe and in the academic courses in the American high school, is that the problems of the education of girls are all similar to those with which boys' schools are confronted. The sole exception is the problem of education for the home. Owing to the crowded academic curricula, the demand for this phase of education in all three countries is reluctantly and inadequately met. It is the finding of Kasuya that "the tendency is to provide in separate institutions or in distinct courses special education for household arts and other activities which are suited to women, such as domestic science schools in England, and courses in household arts in the American high school."73

72Ibid., p. 178. 73Ibid.
In 1942 Grace E. Laleger made an investigation in the Brooklyn public secondary schools for the purpose of making an analysis and comparison of vocational and occupational interests. She used two types of inventories, the "Strong Vocational Interest Blank for Women," and the "Manson Occupational Blank for Women," administering both to groups of high school girls, after which she compared the results obtained through these tests with the stated occupational choice, the intelligence quotient, the age, and the socio-economic status of the girls. 74

Laleger expresses the opinion that in helping a student select a suitable occupation, intelligence tests have been particularly helpful in indicating courses of study and occupations likely to be difficult of attainment, and in suggesting the intensity of study a student might profitably undertake. However, she said intelligence tests alone will not provide sufficient data on which to base the student's choice of school work. In addition, subject grades, teachers' opinions, health conditions, socio-economic status, and personal qualities should be evaluated. 75 The above named factors have often been found too inconclusive in signifying the vocation for which a student is particularly fitted. A consideration of the student's interests has

74 Grace E. Laleger, Vocational Interests of High School Girls, p. 6.
75 Ibid., p. 5.
sometimes been the deciding factor in making an educational and vocational plan for the student.

Laleger found with the comparison of results obtained from these two blanks in regard to stated occupational choice, that girls selected by one inventory as having interests similar to those of nurses, for instance, are not selected by the other inventory as having these interests. There is some doubt which blank, if either, is of value in selecting girls who really possess the interests of women who follow the professions on which the blanks have been standardized.\(^{76}\)

In regard to the relationship between intelligence, age, and socio-economic status, Laleger found that high scores on the keys of a few of the intellectual occupations have some tendency to be associated with high intelligence test scores. On the whole, little relationship is found between the intelligence and inventoried interests of high school girls.

The relationship between age and interest score as shown in this study is negligible, even when intelligence is held constant. Apparently age does not influence either score on any particular key.

The correlation between rent decile (socio-economic status) and scores on the interest inventories is low.

\(^{76}\)ibid., p. 88.
Perhaps intelligence influences these findings somewhat, as it was found by Laleger that there is a slight positive relationship between intelligence test scores and interest inventory scores and ratings for a few of the so-called intellectual occupations.

The Strong and Manson blanks are based on the opposing belief that young persons possess well-defined interests, and that the function of the adviser is the discovery and measurement for these interests. Laleger's conclusion from her own study was:

On the basis of all the available data regarding the Strong and Manson inventories, there exists insufficient evidence of their validity and practicability to render them of significant value in vocational counseling. 77

A very recent study entitled Children's Interests has been made by Jersild and Tasch (1949). The aim of this study was to obtain information concerning children's interests and to ask what these interests mean for the school.

The method of study was to obtain the expressed opinions of pupils by having them fill out a blank called the "interest finder," with pupils from grades one through twelve taking part in the study.

These writers stated that

A person's wishes directly or indirectly reveal something concerning his outlook on life and what he wants from it. For this reason, findings with

77 Ibid., p. 93.
regard to the wishes children express might tell us much that is significant for education. 78

Jersild and Tasch found that boys and girls expressed a desire to learn more under the general heading of vocational preparation and self-improvement. These students outnumbered by a ratio of ten to one those who wished to be spared from learning of this type.

Jersild and Tasch stated, in other words, that "the pupils seem to desire more in the area of arts, crafts, and similar experiences which they recognize and value as a form of self-improvement, rather than in the area of the more verbal type of academic instruction." 79

The findings, in a portion of this study, show much variation between interests of children in different schools and in different classes, notably in connection with the arts and crafts. The study indicates that what a child likes to do is influenced by what he has had an opportunity to learn to like to do, provided, that he not only has the opportunity but also the ability to make use of his opportunity.

In summarizing the interests compared with needs, the writers found that "the children's interest in housing and living quarters is, if anything, likely to be less pronounced

79 Ibid., p. 39.
in a community where housing conditions are poor than in a community where conditions are relatively good."\(^{30}\)

It was further stated by these writers that "interests adults possess and can, in turn, help their children to acquire are considerably influenced by the interests and skills the adults happened to acquire when they were children."\(^{31}\)

It was also pointed out by Jersild and Tasch that "sometimes efforts by the school to increase the range of children's interests and skills have the effect of leading the children's parents to acquire the same interests and skills."\(^{32}\)

Examples were given to show that parents had taken up new interests, either because their children had become interested and had tried directly to get their parents to participate, or because the children had influenced their parents indirectly by having certain materials and equipment at home.\(^{33}\)

One of the findings made by Jersild and Tasch is that schools generally seem to encourage children's interests and skills in the fine and practical arts to a much greater extent than do homes or the community at large.\(^{34}\)

It is further indicated that the idea of making provisions in the home, in the schools, and in the communities for helping the student to acquire interests best suited to

\(^{30}\)Ibid., p. 79. \(^{31}\)Ibid., p. 81. \(^{32}\)Ibid.

\(^{33}\)Ibid., p. 82. \(^{34}\)Ibid.
the kind of person he is, gives a new meaning to the role of interests in education. The interests a student happens to have acquired will not be utilized as a guide to what and how to teach, nor will his interests be used as aids or guides to learning—the interests will be used as forms of experience through which the child discovers and realizes the resources of his nature.\(^{85}\)

With the above view in mind, Jersild and Tasch showed that interests are more than a group of favored activities, for they represent modes of life in which the child's emotional well-being and his social relations are deeply involved. When education is taken literally and one seeks to educ the resources with which children are by nature blessed, one is not simply helping them have a good time, but is making a fundamental investment in human welfare.\(^{86}\)

**Summary**

The objectives of general education as set up by the Educational Policies Commission were compared with the objectives of industrial arts education as set out by the curriculum committee of the Fort Worth Public Schools. It was found that there were many points in common and that there was general accord in the principles outlined. The eight specific objectives on which the two were in agreement are summarized as follows:

\(^{85}\)Ibid., p. 86. \(^{86}\)Ibid., p. 87.
1. Skill in manual activities.
2. The ability to meet varying situations.
4. Guidance in selection of a vocation or occupation.
5. Promote the democratic way of life.
6. Provide recreational interests.
7. Build integrity in character and work.
8. Develop the ability to buy, sell and consume wisely.

The above named principles were used as a basis for determining the needs of girls for industrial arts education. The many books and magazine articles that were searched in regard to the application of these principles were valuable in determining the present day needs. It was the opinion of not only the recent writers, but of the early writers, that industrial arts education was valuable to girls as well as to boys, for it soon became apparent that the complex social and political conditions were drawing the girls into this field of training.

The studies that were used in this paper shed light on the actual needs and interests of students. Doane's study definitely showed that the students' greatest needs and interests were for vocational competence and personal adjustment of problems of youth.

Laleger made an investigation of two types of inventories to determine how they would agree when given to the same groups of students. It was found that there was little relationship between the intelligence and inventoried interests of the high school girls.
Jersild and Tasch made a study of children's interests, wishes, likes, and dislikes, and according to this study the students asked to learn more under the general heading of vocational preparation and self-improvement by a ratio of ten to one.

An analysis of the data in this chapter indicates the following factors which must be considered in reaching conclusions regarding the need for industrial arts for girls:

1. A knowledge of what constitutes the needs of youth and how the school can best contribute to the meeting of these needs is important.

2. A study of likes and dislikes as expressed by youth have been regarded by some as the proper basis for determining needs of youth.

3. Studies of children's interests, taken by themselves, do not constitute a complete basis for determining need.

4. An analysis of the objectives of secondary education should supplement studies of interest in order to make a more complete picture of need for industrial arts for girls.

Doane's study attempts to show: (1) what the needs of youth are as revealed through pupil's reactions to actual or hypothetical situations rather than through statements of what pupils themselves believed to be their needs; (2) the extent to which the school is meeting the needs of youth; and (3) the type of curriculum through which the needs of youth can best be met.

As a basis for his study Doane outlined the following classification of needs:
1. Faults or shortcomings of society which need to be remedied by social action.
2. Faults or shortcomings of youth as individuals, which need to be met by education, parental influences, or other youth training agencies.
3. Psycho-biological needs which give rise to personal adjustment problems felt by the individual youth. 87

In the investigation, the youth were asked to make a choice among a number of courses from a hypothetical school situation. It was assumed that the courses selected would be those which promised to offer help in meeting the needs which, to those concerned, appeared to be the most important. There were nineteen courses included in this study—twelve of them represented social problems and social information, and the other four represented other subjects or common areas of interest. The study revealed that the area of greatest concern to the entire group was that of vocational choice and placement; and that interest in this topic increases with the rise in age groups—particularly toward the senior year of high school.

Eighty-four per cent of the eighteen-year-old girls and 93 per cent of the eighteen-year-old boys indicated they wanted to know "how to find a job," and 72 per cent of the girls and 75 per cent of the boys indicated a desire for help in deciding what phase of work they wanted to enter.

The topic representing a vocational survey was desired by

87Ibid., p. 113.
only about one-seventh of the boys and one-fourth of the girls of the thirteen-year-old group. On the other hand, it was desired by about one-half of the boys and one-half of the girls in the eighteen-year-old age group.\textsuperscript{88}

Doane concludes his study with this statement: "Since the school is an agency to train youth and prepare them for a better life, the curriculum cannot overlook this expressed desire and need of youth for adequate vocational guidance— which under present conditions is provided all too infrequently."\textsuperscript{89}

Also, in Doane's conclusions he stated that: "If one accepts the philosophy that the school is to train for vocational competence and to meet the personal needs and adjustment problems of youth, extensive consideration of vocational choice and placement is indicated, particularly during the senior high school years."\textsuperscript{90}

In a recent study entitled \textit{Children's Interests} by Jersild and Tasch, their aim was to obtain information concerning children's interests and to ask what these interests mean for the school. The author says of the bounds of the study that "it is frankly a survey of the wishes, interests, likes, and dislikes of children when they are asked very simply what they like best and dislike most."\textsuperscript{91}

\begin{footnotes}
\item[88] \textit{Ibid.}, p. 117.
\item[89] \textit{Ibid.}, p. 120.
\item[90] \textit{Ibid.}, p. 115.
\item[91] Jersild and Tasch, \textit{op. cit.}, p. 7.
\end{footnotes}
The method of obtaining data was to interview children who were too young to write and to allow those who could write to fill out a blank known as an "Interest Finder." Pupils from grades one through twelve were included in this study. Those persons participating in the study included a representative group from large cities, small cities, suburban and small town areas. A total of more than one thousand children was included.

These writers stated:

A person's wishes directly or indirectly reveal something concerning his outlook on life and what he wants from it. For this reason, findings with regard to the wishes children express might tell us much that is significant for education.92

Jersild and Tasch found that boys and girls expressed a desire to learn more under the general heading of vocational preparation and self-improvement. These students outnumbered by a ratio of ten to one those who wished to be spared from learning of this type. "In other words, the pupils seem to desire more in the area of arts, crafts, and similar experiences which they recognize and value as a form of self-improvement, rather than in the area of the more verbal type of academic instruction."93

The findings, in a portion of this study, show much variation between interests of children in different schools and in different classes, notably in connection with the

92Ibid., p. 9. 93Ibid., p. 39.
arts and crafts. The study indicates that what a child likes to do is influenced by what he has had an opportunity to learn to like to do, provided that he not only has the opportunity but also the ability to make use of his opportunity.

In summarizing the interests compared with needs, the writers found that "the children's interest in housing and living quarters is, if anything, likely to be less pronounced in a community where housing conditions are poor than in a community where conditions are relatively good." 94

It was further stated by these writers that "interests adults possess and can, in turn, help their children to acquire are considerably influenced by the interests and skills the adults happened to acquire when they were children." 95

It was also pointed out by Jersild and Tasch that "sometimes efforts by the school to increase the range of children's interests and skills have the effect of leading the children's parents to acquire the same interests and skills." 96

With reference to school and intellectual pursuits the authors stated that "only a small number of children expressed wishes pertaining to life and work at school." 97

The findings of the study as reported by Jersild and Tasch differ in a number of ways from the findings reported

94 Ibid., p. 79. 95 Ibid., p. 81. 96 Ibid.
97 Ibid., p. 13.
by Doane. Some of the contrasts of the two studies are as follows:

**Doane's Study**

1. Interest in vocations increased with a rise in age groups.

2. A close parallel between interests for vocational education as shown through expressed choice and as shown through experiences and need in daily lives.

3. Children expressed interest is regarded as a clue to what the educational program should include.

**Jersild and Tasch Study**

1. Decline with age in educational morale in practically all communities included in study.98

2. Lack of parallel between children's expressed interest and other evidences of need in their daily lives.

3. Necessary to go beyond the study of children's expressed interests in order to get a clue to what the educational program should include.99

In summarizing, the contentions are as follows:

1. There is not, in practice, any accurate measure for determining the needs for vocational education for girls.

2. The pupil interest factor, in itself, does not constitute a complete basis for determining need.

3. More study is needed to determine the relationship between children's interest and curriculum content.

4. An analysis of the expressed wishes and interests of pupils to be most worthwhile should also include a study of the motives underlying these expressions.

98Ibid., p. 74. 99Ibid., p. 79.
5. There are few definite agreements as to what are the needs of youth on which to base a curriculum of industrial arts education for girls.

6. An analysis of the objectives of secondary education should supplement studies of interest in order to make a more complete picture of need for industrial arts for girls.

7. Therefore, both interests expressed by youth and needs developed and agreed to by educators are necessary to establish a basis for determining whether a given subject, such as industrial arts, is to be useful in the education of girls.

8. A summary of interests as expressed by students is as follows:

   a. Vocational choice and placement
   b. Relationships with friends of the same and opposite sex
   c. Sex
   d. Personal health
   e. Personal problems
   f. Social problems.

9. A summary of needs as expressed by sociologists and educators is as follows:

   a. Skill in manual activities
   b. Maintain good health and physical fitness
   c. Better home life
   d. Guidance in selection of a vocation or occupation
   e. Promote the democratic way of life
   f. Provide for recreational interests
   g. Build integrity in character and work
   h. Develop the ability to buy, sell, and consume wisely
   i. Understand the methods of science and its influence on human life.
CHAPTER III

INDUSTRIAL ARTS FOR GIRLS AS PRESENTED BY TEACHERS IN THE SECONDARY SCHOOLS OF TEXAS

To determine as fully as possible the needs of industrial arts for girls in the State of Texas, it was decided to have the teachers of that field furnish some pertinent facts regarding their industrial arts courses for boys and girls, for girls only, industrial arts club work for both boys and girls, and industrial arts club work for girls only. In order that such data might be acquired, two questionnaires were prepared.

The most recent World Atlas for 1949 was consulted and the writer selected as many Texas towns as possible with a population of not less than 12,600. There were thirty-one towns that came in this category and a questionnaire was mailed to the school superintendent in each town with an explanation of the purpose of the questionnaire, and asking that he submit the name of an industrial arts instructor from each junior and senior high school in his school system. Twenty-five questionnaires were returned. Three of these questionnaires were returned with the comment of "no industrial arts department in the school system." Six of the questionnaires were not returned by the superintendents.
From data collected from the twenty-two questionnaires returned by superintendents stating that industrial arts was offered, eighty-nine questionnaires were sent direct to the industrial arts teachers of the schools so reporting. Sixty-nine, or 77.5 per cent, were returned. A copy of the questionnaire is given in Appendix A.

The writer chose to make this survey over the entire state as it was believed that a truer concept of the situation would be found by including representative schools of both the small town and the large city system.

The results of the first questionnaire as shown by Table 1 gives thirty-one forms being sent out to the selected school superintendents. These forms were placed in seven groups, according to the population of the town.

In the first group of 12,000 through 25,000, eleven forms were sent out with seven or approximately 63.6 per cent being returned. In the second group of 26,000 through 50,000, three forms were sent out and all were returned, giving a 100 per cent return. In the third group of 51,000 through 100,000, ten forms were sent out with nine forms being returned, or 90 per cent. In the fourth group of 101,000 through 200,000, three forms were sent out with a 100 per cent return. In both the fifth group and the sixth group, 201,000 through 300,000 and 301,000 through 400,000, one form was sent to each superintendent and
it was returned, giving 100 per cent for each group. In the seventh group, 401,000 through 500,000, two forms were sent out with only one being returned, or 50 per cent. A total of six forms were not returned, four questionnaires from the first group, one questionnaire from the third group, and one questionnaire from the seventh group.

Table 2 shows the number of schools having girls enrolled in industrial arts classes. The same aims applied to the group as a whole and not one comment or opinion was found that the girls were not the equal of the boys in all aspects of the work and just as quick to grasp the
TABLE 2
DATA SHOWING NUMBER OF SCHOOLS HAVING GIRLS IN INDUSTRIAL ARTS CLASSES

<table>
<thead>
<tr>
<th>School Number</th>
<th>Classes with Boys &amp; Girls Grades in which I. A. Is Offered</th>
<th>Total Number Girls in Boys' Classes</th>
<th>Classes with Girls Only Grades in which I. A. Is Offered</th>
<th>Total Number Girls in Girls' Classes</th>
<th>Total Number Girls in Both Classes</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
<td>12</td>
<td>12</td>
<td>15</td>
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<tr>
<td>2</td>
<td>91</td>
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<td>100</td>
<td>191</td>
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<td>232</td>
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<td>332</td>
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<td>4</td>
<td>100 50 50</td>
<td>200</td>
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<td>260</td>
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<td>7</td>
<td>117 70</td>
<td>187</td>
<td>30 21</td>
<td>51</td>
<td>238</td>
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<td>8</td>
<td>6 11</td>
<td>17</td>
<td>145 43</td>
<td>233</td>
<td>250</td>
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<td>75 27 46</td>
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<tr>
<td>School Number</td>
<td>Classes with Boys &amp; Girls</td>
<td>Grades in which I. A. Is Offered</td>
<td>Boys' Classes</td>
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<td>8</td>
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<tr>
<td>26</td>
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</tr>
</tbody>
</table>

| Total         |                          |                                 |              |   |   |   |    |    |    | 2602 |

TABLE 2--Continued
fundamentals of the subject. One teacher mentioned this was the first year industrial arts had been made available to girls and they seemed to enjoy their work thoroughly; in fact, they were in the leading group of the class. Another teacher commented that this year, for the first time, he had had a girl come to him and ask the value of taking mechanical drawing in relation to her interior decorating work. At the present time she is leading the group because of her keen interest in art work.

As shown in Table 2, eight schools were offering courses for girls only in which all six grades were represented. There was an enrolled total of 623 girls. Twenty-six schools were offering courses for boys and girls with a total enrollment of 1,979 girls. This was a total of 2,602 girls enrolled in industrial arts classes.

Two teachers commented that the industrial arts program had missed an opportunity by not including "courses for girls only." Both teachers had instructed girls during the war, one in using drill presses and the other in using shop tools in an airplane factory. Both teachers felt that industrial arts supervisors, principals and shop teachers should encourage the girls in this field, rather than discourage them. Another teacher commented that it would be better to have classes for the girls alone. As a whole, the
entire group answering the questionnaire felt girls had a
definite place in the industrial arts field.

In Table 3 the instructors were asked to list the dif-
ferent phases of industrial arts which were being offered
to girls only. It has been shown that only eight schools
offered this type of course. Table 3 indicates that in the
seventh grade more girls are offered the opportunity of tak-
ing industrial arts work. In several of the schools, indus-
trial arts for girls is offered through the art department
and the home economics department, but it is gradually being
worked out into a department of its own. It seems that more
schools are interested in offering the work to girls, but
that crowded conditions, shortage of teachers, and lack of
equipment are the reasons why it is not being developed.
Several teachers commented that they had tried to encourage
industrial arts work for girls, but had received no coopera-
tion from their supervisors in this task. One teacher com-
mented that "girls should have as much of an opportunity to
take industrial arts courses as boys, for they should be
given the 'know how and do' in home mechanics courses."
Another teacher's comment was, "The women of the homes are
consumers of manufactured goods and, as such, need a back-
ground as to what is quality and what is not. Any course in
industrial arts for girls would make them more conscious of
their future needs." These two comments were brought out in
the objectives of industrial arts in the preceding chapter.
### TABLE 3

SUBJECTS OFFERED FOR GIRLS ONLY AND THE GRADES AND NUMBER ENROLLED IN EACH GRADE

<table>
<thead>
<tr>
<th>Subject or Course</th>
<th>Grades and Number Enrolled in Each Course</th>
<th>Total Number of Girls Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>House Planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crafts and Home Repair</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Home Mechanics</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>Woodwork and Mechanical Drawing</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Art Metal and Woodwork</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Handicrafts</td>
<td>30</td>
<td>21</td>
</tr>
<tr>
<td>Interior Decorating and Family Relations</td>
<td>145</td>
<td>43</td>
</tr>
<tr>
<td><strong>Grand Total Enrolled</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As indicated in Table 3, a total of twelve girls were enrolled in house planning. A total of one hundred girls were enrolled in crafts and home repair, and 160 girls were enrolled in home mechanics. A total of sixty girls were enrolled in art metal and woodwork, and a total of fifty-one girls were enrolled in handicrafts. A total of 233 girls were enrolled in interior decorating and family relations.
Table 4 gives the summarized results of the questions asked in the second questionnaire.

**TABLE 4**

TRAINING AVAILABLE TO GIRLS UNDER THE PRESENT INDUSTRIAL ARTS PROGRAM

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Are provisions adequate for girls in your school?</td>
<td>11</td>
<td>15.9</td>
<td>49</td>
<td>71</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Should girls be permitted to use power machines?</td>
<td>50</td>
<td>72.4</td>
<td>15</td>
<td>21.7</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>Do you have an I. A. Club for girls?</td>
<td>1</td>
<td>1.4</td>
<td>68</td>
<td>93.6</td>
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<td></td>
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<tr>
<td>Do you have an I. A. Club for both the boys and girls?</td>
<td>3</td>
<td>4.3</td>
<td>66</td>
<td>95.7</td>
<td></td>
<td></td>
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<tr>
<td>Are you in favor of industrial arts courses and laboratories as interest centers for recreation and pastime for girls in the community for outside school activities?</td>
<td>50</td>
<td>72.4</td>
<td>12</td>
<td>17.4</td>
<td>7</td>
<td>10</td>
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<tr>
<td>Are there I. A. courses not open to girls?</td>
<td>43</td>
<td>62.3</td>
<td>23</td>
<td>33.3</td>
<td>3</td>
<td>4.3</td>
</tr>
<tr>
<td>Should girls be permitted to study I. A. in junior high school?</td>
<td>48</td>
<td>69.5</td>
<td>11</td>
<td>15.9</td>
<td>10</td>
<td>14.3</td>
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</table>
Table 4 presents data derived from questions asked the instructors in an effort to determine whether the girls are receiving sufficient and proper training under the present industrial arts program. It was necessary to present these questions and answers in order to have a better understanding of the opinions of the instructors. In answer to the question, "Are provisions for industrial arts courses for girls adequate in your school?" eleven, or 15.9 per cent of the teachers replied that the provisions were adequate. Forty-nine, or 71 per cent, of the teachers believed that provisions for girls in industrial arts was inadequate in their schools, and nine, or 13 per cent, of the teachers did not reply to the question.

The question was asked, "Should girls be permitted to use power machines?" Table 4, page 73, shows that fifty, or 72.4 per cent, answered that they should be allowed to use them to some extent. Some qualifications were, "when properly
guarded," "after proper instruction," "only hand tools," and "limited use." Fifteen, or approximately 21.7 per cent, definitely stated that the girls should not be permitted to use power tools. Four teachers, or 5.7 per cent, failed to answer the question. Such machines as jig saws, lathes, drill presses, and grinders were listed as machines girls might learn to use before working with the saws, jointers, and shapers.

The data in Table 4 indicate that only one school offered an industrial arts club for girls. This club meets weekly and has fifteen girls enrolled. Three schools have industrial arts clubs for both boys and girls. They meet twice a week, weekly, and twice a month. One school had had a club for girls, but overcrowded conditions and lack of space had eliminated the club work and that time was now used as class time.

In relation to the question of industrial arts clubs, the following question was asked on the questionnaire, "Are you in favor of industrial arts courses and laboratories as interest centers for recreation and pastime for girls in the community for outside school activities?" Table 4 shows that fifty teachers, or approximately 72.4 per cent, were in favor of such an activity; twelve teachers, or 17.4 per cent, definitely stated they were not in favor of such; and seven teachers, or approximately 10 per cent, failed to answer the question.
One teacher commented that since overcrowded conditions prevailed in the school and the girls were not encouraged to take industrial arts, it would be an opportunity for them to take it outside the school and receive a great deal of training and recreation they are missing. However, another teacher commented that the girls would not be interested enough in such a plan to make it a success. On the other hand, one teacher who has an industrial arts club for the boys and girls in his school found the girls to be more interested than some of the boys he let become members of the club who are not regular shop students.

One school mentioned an exchange plan in which the boys of the seventh grade go to the home making department and the seventh grade girls go to the shop for a household mechanics course. This course, at the present time, is a six-weeks unit, and plans are being worked out for it to be possible that the other grades may do the same.

Answering, "Are there industrial arts courses that are not available for girls," forty-three teachers, or 62.3 per cent, stated they had no courses available for girls. Twenty-three teachers, or 33.3 per cent, answered that the courses were available for both, but several teachers commented that the crowded conditions gave the boys first choice and the girls were not encouraged in this field.

Three teachers, or 4.3 per cent, gave no answer. Woodwork
and shop metal courses were most outstanding in not being available. This is shown in Table 4.

Data also shown in Table 4 indicate that forty-eight teachers, or approximately 60.5 per cent, answered that girls should be permitted to study industrial arts in junior high schools. Eleven teachers, or 15.9 per cent, answered that girls should be permitted to study industrial arts in junior high school, and ten, or approximately 14.3 per cent, failed to answer the question. As to whether the girls should be permitted to study industrial arts in senior high school, fifty-nine teachers answered they should. Two answered that they should not and eight failed to give an answer. Thus, 85.5 per cent agreed they should be permitted to take industrial arts in senior high school; approximately 2.9 per cent answered they should not, and 11.6 per cent failed to give an answer. In answering the question as to whether the girls require specially trained teachers, twenty-four teachers, or approximately 34.7 per cent, answered that girls do require specially trained teachers. Thirty-one teachers, or 44.9 per cent, answered that they do not require specially trained teachers. Fourteen, or 20.3 per cent, did not answer the question.

Figure 1 is in graph form showing the courses the instructors desired for girls. The teachers were asked to check the list as to the subjects they believed should be offered in their school for girls. Two teachers wrote in
<table>
<thead>
<tr>
<th>Subject or Course</th>
<th>Number of Teachers</th>
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<tbody>
<tr>
<td>Mechanical Drawing</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
<td>House Planning</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
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<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
<td>Leather Crafts</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
<td>Use and Care of General Household</td>
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<td>Tools</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
<td>Landscaping</td>
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<td>General Home Mechanics</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
<td>Furniture Design</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<td>Ceramics</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
<td>Wood Crafts</td>
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<tr>
<td>Plastic</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
<td>Architectural Drawing</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<td>Paint Materials</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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<tr>
<td>Elem. Auto Care and Mechanics</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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</table>

Fig. 1.—A graph showing the courses the instructors desired for girls.
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<th>Subject or Course</th>
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<tr>
<td>Elem. Knowledge of Plumbing and Heating</td>
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<td>Furniture Construction</td>
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<td>Home Construction</td>
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<td>Machine Shop</td>
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<tr>
<td>Consumer Education</td>
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<tr>
<td>Upholstering</td>
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</table>

Fig. 1.--Continued
added courses on the questionnaire, upholstery and consumer education, which they thought should be offered in their schools.

The courses of mechanical drawing, house planning and electrical home appliances were chosen more frequently than any other. Leather crafts and use and care of general household tools came in the following group with forty-seven teachers checking these courses. Landscaping and general home mechanics followed closely with forty-three teachers preferring these two courses next. Furniture design and ceramics were in the fourth group with forty-two teachers selecting these courses as among the top ten. Wood craft, plastics, architectural drawing and paint materials followed with no less than thirty teachers preferring these.

The answers to the question regarding educational qualifications of the teachers of these sixty-nine schools show that six teachers have Master of Arts degrees; fifteen have Master of Science degrees; three have Master of Education degrees; six have Bachelor of Arts degrees; thirty-eight have Bachelor of Science degrees; and one has three years of college work and five years' teaching experience in industrial arts. The average number of years of teaching experience in industrial arts was approximately 9.5 years for each teacher. The number of years in the present teaching position was approximately 6.5 years for each teacher. These teachers were graduates of or had had training in nineteen
different colleges or universities; the institutions were located in various parts of the United States, but most of them were located in the State of Texas. Twenty-one teachers were graduates of North Texas State College.

Of the schools reporting the data used in this survey forty-two were junior high schools, twenty-three were senior high schools, and four were junior-senior high schools combined. There were nineteen different counties represented with eight from West Texas, three from East Texas, four from North Texas and four from South Texas.

As these data show, regular industrial arts for girls is offered in classes which are for both boys and girls, in classes for girls only, in industrial arts clubs and in one school where the exchange plan is carried out. The subject of industrial arts for girls is a vital one, and from the results of the survey, the statement can be made that the teachers of the subject are not only thinking about it in the light of the aims, content, and usefulness of the work in considering the experiences of the girls of the secondary schools, but are doing something about it at the present time, and will continue to work out details, and study the question until the aims and objectives of industrial arts and those of general education are realized more fully by providing experiences for all pupils, girls as well as boys.
Summary

In determining the needs of industrial arts for girls in the State of Texas, the teachers in that field furnished pertinent facts regarding their industrial arts courses.

In acquiring this information two questionnaires were prepared—the first being sent to thirty-one selected public school superintendents. These superintendents supplied the name of an industrial arts instructor from each junior high and senior high school of that school system.

The compiled results of both questionnaires have been placed in table and graph form. Table 1 contains the summarized results of the first questionnaire. This table shows thirty-one questionnaires being mailed to the school superintendents with twenty-two or approximately 71 per cent of the forms being returned. From the twenty-two returned forms, eighty-nine teachers were selected for the second questionnaire and sixty-nine or 77.5 per cent were returned.

Table 2 gives the number of girls in boys' industrial arts classes and the number of girls in classes for girls alone. In this table it is shown that twenty-six schools had 1,979 girls enrolled in boys' industrial arts classes. Eight schools were offering courses for girls only in which all six grades were represented. There was an enrolled total of 623 girls in these eight schools.

Table 3 reveals that the seventh grade offers more opportunity at the present time for girls in taking
industrial arts work. From the comment, more teachers are interested in giving this work to girls, but crowded conditions are a handicap.

Table 4 gives the summarized results of the second questionnaire. It shows that eleven teachers, or 15.9 per cent, believe that the provisions for girls in industrial arts in their school were adequate; forty-nine teachers, or 71 per cent, did not agree, and nine, or 13 per cent, gave no opinion.

In regard to the use of machines by girls in the shop, fifty teachers, or 72.4 per cent, answered that they should be allowed to use the machines to some extent. Fifteen teachers, or 21.7 per cent, definitely stated that they should not be allowed to use the machines, and four teachers, or 5.7 per cent, did not answer the question.

Only one school offered an industrial arts club to girls. Three schools offered an industrial arts club to both boys and girls. These clubs meet twice a week, weekly, and twice a month.

In relation to the question of industrial arts clubs, the teachers were asked, "Are you in favor of industrial arts courses and laboratories as interest centers for recreation and pastime for girls in the community for outside school activities?" Fifty teachers, or 72.4 per cent, were in favor of such an activity; twelve teachers, or 17.4 per cent, definitely stated they were not in favor, and
seven teachers, or approximately 10 per cent, failed to answer the question.

In answering whether or not they had industrial arts courses not available to girls, twenty-three teachers, or 33.3 per cent, stated that the courses were available to both; forty-three teachers, or 62.3 per cent, stated that there were none available, and three teachers, or 4.3 per cent, gave no answer. Woodwork and metal courses were most outstanding in not being available.

Forty-eight teachers, or 69.5 per cent, answered that girls should be permitted to study industrial arts in junior high school; eleven teachers, or 15.9 per cent, answered they should not, and ten, or 14.3 per cent, failed to give an answer.

In answering whether girls should be permitted to study industrial arts in senior high school, fifty-nine, or 85.5 per cent, agreed they should; two teachers, or 2.9 per cent, answered that they should not and eight, or 11.6 per cent, failed to answer the question.

Twenty-four teachers, or 34.7 per cent, answered that girls do require specially trained teachers; thirty-one or 44.9 per cent answered that they do not require specially trained teachers, and fourteen or 20.3 per cent did not answer.

Figure 1 is in graph form showing the courses the instructors desired for girls. The first ten courses selected
were as follows: (1) mechanical drawing, (2) house planning, (3) electrical home appliances, (4) leather crafts, (5) use and care of general household tools, (6) landscaping, (7) general home mechanics, (8) furniture design, (9) woodcraft, and (10) plastics.

Of the sixty-nine teachers answering the questionnaires, it was noted that twenty-four held Master's degrees, forty-four have Bachelor's degrees, and one has no degree. The average number of years' teaching experience in industrial arts was approximately 9.5 years per teacher. The number of years in the present teaching position averaged approximately 6.5 years per teacher.

Of the schools reporting data used in this survey, forty-two were junior high schools, twenty-three were senior high schools, and four were combinations of both the junior and senior high school.

From the results of this questionnaire, it is definitely shown that girls have a place in the industrial arts program and that more attention is now being given to meeting this need. The teachers of the subject are not only thinking about it in the light of the aims, content, and usefulness, in considering the experiences of the girls of the secondary schools, but are doing something about it now. Crowded conditions, lack of equipment and shortage of teachers have interfered with the program due to the fact that the boys were given first choice.
CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

1. Sixty-nine, or 77.5 per cent, of the eighty-nine senior high schools included in this survey answered and returned the questionnaire.

2. Twenty-six schools had 1,979 girls enrolled in boys' industrial arts classes. Eight schools were offering industrial arts classes for girls only. There was a total enrollment of 623 girls in these eight schools.

3. The seventh grade offers more opportunity at the present time for girls taking industrial arts courses.

4. Eleven, or 15.9 per cent, of the sixty-nine instructors believe that provisions for girls in industrial arts courses were adequate. Forty-nine, or 71 per cent of the teachers believe that the provisions are inadequate, and nine, or 13 per cent, gave no opinion.

5. The majority, or fifty, of the instructors stated that girls should be allowed to use the machines in the industrial arts shops. Fifteen teachers objected to having girls use the machines.
6. Industrial arts clubs were established in only four schools. One club was for girls only, and three clubs were for boys and girls.

7. Fifty, or 72.4 per cent, of the teachers were in favor of having industrial arts offered as outside school activity for girls. Twelve, or 17.4 per cent, stated that they were not in favor of this.

8. The first ten courses of industrial arts selected for girls were: (1) mechanical drawing, (2) house planning, (3) electrical appliances, (4) leather crafts, (5) use and care of general household tools, (6) landscaping, (7) general home mechanics, (8) furniture design, (9) wood craft, and (10) plastics.

9. Of the sixty-nine teachers answering the questionnaires, twenty-four held Master's degrees, forty-four held Bachelor's degrees, and one had no degree.

10. The average number of years of experience in teaching industrial arts of these sixty-nine instructors was 9.5 years. The number of years in the present teaching position averaged approximately 6.5 years per teacher.

Conclusions

The results of this survey show that the industrial arts teachers believe that industrial arts courses should be made available to more of the girls in the high schools, and indications are that some schools not now offering such work
are planning courses to be given in the near future. Girls should have training in any industrial arts courses which will contribute to making them better and more adept in the very important job of home making. Crowded conditions and lack of equipment seem to be the retarding factor in making the work available to more girls. Since traditionally the subject has been thought of as for boys, even today boys' needs claim consideration in the field before much is done concerning training for girls.

Recommendations

The findings of this study seem to justify the following recommendations:

1. That a study similar to this should be made of other high schools of Texas so that a more complete picture of the field might be obtained.

2. That more training should be given girls in industrial arts if the present aims of industrial arts and general education are to be realized.

3. That the traditional conception of industrial arts for boys only must be completely broken down, so that experiences and training in the field will be available to all pupils.
APPENDIX A

Dear Industrial Arts Instructor:

In reply to an inquiry sent to your superintendent, your name was given as the teacher interested in industrial arts courses in your school. I am making a study of the status of industrial arts for girls in Texas and am in need of certain information which you can help supply. I will appreciate it very much if you will fill out and return this form in the enclosed envelope.

Thank you.

A STUDY OF THE STATUS OF INDUSTRIAL ARTS FOR GIRLS IN THE PUBLIC SCHOOLS OF TEXAS

1. Name of industrial arts teacher filling in questionnaire
   Name________________________________________
   Address______________________________________

2. Degree or degrees held________________________

3. College granting degree or degrees______________________________

4. Years teaching industrial arts (include current year)____

5. Years in present position (include current year)____

6. School in which you are now teaching__________________________

   Junior High________________________ Senior High_____________________
   City_______________________________ County_________________________

7. Number of girls enrolled in school________number of boys____

8. List by grades the number of girls enrolled in industrial arts classes comprised of both boys and girls: Grade 7____; Grade 8____; Grade 9____; Grade 10____; Grade 11____; Grade 12____.
9. List the names, such as printing, leathercraft, house planning, etc., of industrial arts courses for girls only which are offered in your school and the number enrolled in each course.
Grade 7

Grade 8

Grade 9

Grade 10

Grade 11

Grade 12

10. In your opinion are the provisions for industrial arts courses for girls in your school adequate? Yes ______ No ______

11. Check the courses listed below which you believe should be offered to girls in high school.
Electrical home appliances _____; mechanical drawing _____; woodworking _____; printing _____; ceramics _____; wood crafts _____;
leather crafts _____; plastics _____; general home mechanics _____;
arithmetic drawing _____; home construction _____; house planning _____; furniture design _____; landscaping _____; elementary knowledge of heating and plumbing _____; use and care of general household tools _____; blueprint _____; furniture construction _____; elementary automobile care and mechanics _____; painting materials _____; elementary metal work _____; machine shop _____; other courses _____

12. Should girls enrolled in wood shop be permitted to use power machines? Yes _____ No ______. If so, which ones?
Joiner _____; Shaper _____; Table Saw _____; Band saw _____;
Lathe _____; Drill Press _____; Grinder _____; Surface Planer _____;
Jig Saw _____; Others _____

13. Do you have an industrial arts club for girls in your school? Yes _____ No ______. If so, how often does it meet?
Once a week _____ Twice a week _____; Once a month _____;
Other _____
Number of girls in club _______ number of boys _______

15. Are there any industrial arts courses in your school that are not available to girls? Yes _____ No _____ If so, please list.
16. What is your opinion of girls pursuing industrial arts courses in high school?
   a. Girls (should) (should not) study industrial arts in junior high school.
   b. Girls (should) (should not) study industrial arts in senior high school.
   c. Girls (do) (do not) require specially trained teachers.
   d. Are you in favor of industrial arts courses and laboratories as interest centers for recreation and pastime for girls in the community for outside school activities. Yes____ No____.
   e. If, in question d, the answer is yes, do you think it would increase the value of the industrial arts department of the community? Yes____ No____.

17. Remarks:
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