INDUSTRIAL ARTS FOR GIRLS

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By

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CHAPTER I

SIGNIFICANCE AND COMPASS OF THE PROBLEM

Actual adoption of philosophies concerning curriculum content usually follows at least a decade after the formulation of the course of study. Although more and more of the larger schools have included industrial arts for girls in their programs, relatively few girls have had an opportunity to participate in such a program. When such instruction has been offered, it has almost universally been given in the area of home mechanics. Home mechanics is an important part of the training of a girl, but it is felt that the industrial arts program has a much broader obligation. The development of commerce, transportation, industry, and the salesmanship attendant to this growth has made necessary a more practical education for the future homemakers of the United States. Home economics is making notable progress in this direction, but it cannot cover nearly all the phases necessary to educate the girl for living in present society. The citizen of today needs knowledge of industry, of labor, and of technological practices and materials.

Origin of the Study. In the study of the book, Vocational Education for a Changing World by Struck (31, page 34) the writer noted these statements:

> In the light of current trends in industrial employment girls and women need industrial arts training as a background for understanding industrial activities of a gainful nature and participating in them. They need it also as preparation for increased mechanization in the home. And if they should want it for purposes of creative expression at the hobby level it should certainly be available to them.
>
> Commenting upon the value of industrial arts for girls, Proffit indicates that it is with keen regret that leaders in industrial arts education cannot report a strong trend in practice toward such courses for girls. In this respect it is recognized that the theory of suitable industrial arts courses for girls and women is far ahead of present practice. To date, teachers of home economics appear to have done more to develop home economics courses for boys than industrial arts teachers have done to provide appropriate courses in industrial arts for girls.

Further investigation showed that few schools offered industrial arts courses for girls, although leaders seemed to have a consensus of opinion that such a course was needed and justifiable. When the course was offered, it usually was composed of experiences related to household devices. In view of these facts, the writer is convinced that further study and action is needed.

Purpose of the Study. The objective of the study is to exemplify and substantiate the value of industrial arts experiences for girls in the secondary schools and to show the need of expansion and enrichment of such a course. The study will attempt to establish the fact that industrial arts for girls should be enlarged by adding to home

mechanics instruction broad exploratory experiences and varied industrial knowledge.

Delimitations. The course of instruction proposed in this study is intended to be flexible in that it may be used for a period of one semester, two semesters, or in an exchange unit with the home economics department. Probably no school will deem it advisable to use all the subject information suggested, but will find it necessary to build from it courses adapted to the needs and interests of the community. The curriculum advanced suggests the areas deemed important to the complete education of the girl, but the writer realizes that lack of time, circumstantial conditions, or the viewpoint of the administrator of the program may alter the proposed subject offerings.

Similar Studies. A review of the literature of the field of industrial arts reveals few studies pertaining to courses for girls. The writer could find no theses written after 1937, and assumes that the depression and the second World War were primary reasons for the lack of such literature.

Elizabeth Battle (1) probably made the first study at the University of New York in 1899. The title of her thesis is Manual Training Related to Girls. Any work done with the hands was considered as manual training at that time.

This study sought to show the value of sewing, cooking, paper cutting, clay modeling, drawing, sloyd, carpentry, and free hand drawing in developing neatness, exactness, sense of form, methodical arrangement, and general manual dexterity. The object of the curriculum did not aim at instruction in a specific trade.

C. E. Korn (14) completed a study in 1933, at Iowa State College, about the status of industrial arts for girls in the Middle West. Two hundred and four questionnaires were sent to schools in Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin, with fifty-two per cent replying. Korn found that there were few industrial arts courses adapted to the needs of girls in particular, but that most of the girls were in mixed classes with boys. Woodworking and drawing were the areas usually offered to girls.

Ray E. Brown (3) of Oklahoma Agricultural and Mechanical College completed a study in 1937, on the subject, Home Mechanics Instruction for Girls. Brown first made a questionnaire form of tasks most common in the average modern home. This was sent to one hundred and fifty Enid, Oklahoma, homes. Housewives were asked to check each task as to whether they had performed it or would liked to have performed it but did not know how. Results showed that the housewife did much of the work of a mechanical nature

in the home and would liked to have done more, had she known how. Brown also sent a questionnaire card to two hundred cities of approximately thirty-thousand population, from which he received seventy-four replies. Only fourteen reported that an industrial arts course of some type was being offered to girls. Brown (3, page 4) defines home mechanics instruction for girls as:

> The instruction necessary to teach girls to use and repair mechanical devices of the home, also to instruct them in the upkeep and general repair of the house and furniture.

And further states (page 50):

> An intensive analysis of all the data summarized in Chapter IV, namely, the questionnaire cards, magazine articles, and the letters received from various schools, indicates that the following subjects and jobs should be taught:
>
> 1. Art metal work (small dishes, trays, letter openers, etc.).
> 2. Repairing an extension cord.
> 3. Putting in a fuse (house).
> 4. Repairing an electric iron extension cord.
> 5. Varnishing furniture and floors.
> 6. Painting woodwork and furniture.
> 7. Repairing faucets (replacing washers).
> 8. Regluing loose joints in furniture.
> 9. Use of common woodwork tools.
> 10. Beadwork (coin purses and novelties).
> 11. Making simple furniture drawings.

12. Make house plans.

13. Leathercraft (coin purses, billfolds, etc.).

14. Cleaning and polishing furniture.

15. Instruction in the operation and maintenance of the common mechanical and electrical devices of the home.

Uses of the Study. Home economic courses for boys have ceased to be a novelty and are definitely established in many schools, yet the idea of industrial arts for girls has not received the attention to the extent of making definite progress toward organization and adjustment of courses. Schools offering home economics have attempted to expand their curriculum by striving to meet the needs of both boys and girls. Spafford (28, page 1) in A Tentative Statement Concerning Home Economics in General Education at the Secondary Level states:

> Much that is going on in home economics today has real value for all of education. The very nature of the materials with which home economics deals gives forward-looking programs a richness and vitality of extreme importance in present day curriculum reorganization. . . . The increasing interest of young men and boys is causing home economics to be thought of less as a field for girls alone.

In like manner, girls would become interested in industrial arts and it would become less of a subject for boys alone, if instructors and other leaders were convinced of the importance of industrial arts experiences for girls. It would seem, therefore, that if industrial arts departments

are to provide instruction necessary to the whole education of students, the needs of girls as well as boys must be met. It is hoped that the arguments advanced in Chapter II showing the place and value of industrial arts instruction for girls will cause school superintendents, principals, and other authorities to install such courses in their systems.

Summary. Comparatively few schools have taken any action toward promoting an industrial arts program for girls. In view of the affirmations of many leaders of the need of a course for girls, the writer is convinced of the need of study in this phase of industrial arts. Not only are more courses needed, but the content of existing courses are believed to be in need of revising. The aim of the study is to furnish a revised course of study and to show the need for industrial experiences for all girls.

CHAPTER II

LIFE ADJUSTMENT EDUCATION FOR GIRLS

The United States is no longer an agrarian nation, with simple industries which are widely decentralized. In the relatively short period of half a century, this nation has reached a place of world leadership in industrial development. No longer can the average youth become well-acquainted with the work of the village blacksmith or the local grist mill. Since he does not encounter these learning experiences in the modern world of centralized industry, it becomes the duty and obligation of the school to furnish similar experiences. Cassidy and Kosman (5, page 10) assert that:

> Men and women must share in working and serving, in the home, in the community, in industrial and professional life. Girls as well as boys must be educated for realizing these values.

If the school is to enable the student to adjust to any life situation, then a variety of probable experiences must be given all students.

Purpose of an Educational Philosophy. An educational philosophy may be thought of as a "frame of reference" which serves to actuate the educator in future procedures. Struck (30, page 1) states that:

> From a philosophy will emerge guiding principles, valid standards, and effective methods and techniques of teaching.

A philosophy serves as a measuring instrument to determine the validity and reliability of methods used and results attained.

Early Philosophy of Industrial Arts. Early industrial arts courses in this country were called "manual training" courses. The basic purpose of this training was to develop skill and accuracy in the use of tools, correct work habits, and desirable attitudes. Manual training was not an integral part of the public school. Hardin (11, page 223) says:

> At first the tendency was all toward setting up schools for manual training separate from traditional academic schools. With the growth of the manual training movement and its increasing popularity, however, there was a growing tendency to enrich the course of instruction so as to provide for individual differences for a larger number of students.

Because leaders believed woodworking to offer more opportunities to teach the pupil the use of a variety of tools, and to train him to be accurate and thorough, this area was the one most commonly taught.

The Manual Arts Period. During the last decade of the nineteenth century, a trend developed toward less emphasis on skill and craftsmanship. There grew an interest in the application of art principles to industrial products and

the stressing of the broader aspects of learning and living. By the end of the first decade of the twentieth century, the term "manual training" was replaced by "manual arts." Friese (8, page 47) states that:

> The newer term means skilled hand operations and also contains the thought of art and design.

More significance was being given to the intelligent choice and wise use of industrial products. Manual arts was beginning to be regarded as a means to an end rather than wholly an end.

Emergence of Industrial Arts. With the advent of the vast technological and industrial growth in the nation, the fact was recognized that industrial arts should contribute far more than disciplinary training and the development of hand skill. Charles R. Richards was perhaps the first to suggest the term "industrial arts," which he did in an article in the Manual Training Magazine in October, 1904, and so named the third period in industrial arts development. During the decade succeeding the first World War, industrial arts assumed a vocational role. Industrial arts courses in high schools were conducted to prepare students as completely as possible for a skilled trade or occupation. Wilber (33, page 2) says:

> . . . after the first World War, it became common practice to justify industrial work in the schools on the basis of trade or pre-vocational values.

By the third decade of the twentieth century, industrial arts was being accepted as a part of general education. The Smith-Hughes Act of 1917, and subsequent acts provided for and made possible many vocational school opportunities, thereby relieving industrial arts of strictly vocational objectives. Schweickhard (26, page 7) declares:

> The assumption throughout is that the purpose of industrial arts in the intermediate years of school life is not to provide vocational education, but to prepare the way for such training. The general feeling, apparent on every hand, has been that there exists a certain kind of native endowment known as manipulative ability, and that the chief guidance function is to determine whether or not it is possessed by a given individual.

Industrial arts began to encompass a diversity of activities and to strive for more useful objectives. The immense development of industry and the appearance of a labyrinth of industrial consumer products came to be recognized as consigning industrial arts, as a school subject, with the responsibility of providing a proper and adequate education that will prepare the pupil to live in the world of today.

History of Industrial Arts for Girls. Although there is no record of the extent of early shop courses for girls, the history of the movement goes back over a rather long period of time. Preston (22, page 32) states:

> The Scott Manual Training School of Toledo, Ohio, founded in 1885, included provision for giving manual training to girls, as a distinguishing feature. The girls were taught in divisions by themselves, and were taught the same drawing as the boys, and also light woodwork.

Most of the work in developing an industrial arts course for girls has been in the area of home mechanics and has taken place during the past two decades. In 1929, in Muncie, Indiana, a three-week course in shopwork for girls was instituted in the junior high school. A few years later in the Chicago Schools a Girls Home Mechanics Club was organized. The first home maintenance course was organized in 1932, in the junior high school of Lawrence, Kansas. Since then, more and more schools, especially the larger ones have instituted programs of similar nature. During the Second World War, shopwork was especially valuable to girls entering the war industries. Although the value of industrial arts for girls has been mentioned quite often by leaders, the growth has been slow. The modern trend toward a broad course content is relatively new, however, and as facilities of schools are expanded a greater number of girls, as well as boys, will have access to the school shop.

Current Beliefs. Industrial arts is a relatively new secondary school subject, thus the development of aims and objectives has been rapid and revolutionary. Hardin (11, page 179) states:

> We have always had a basic philosophy of industrial arts. It is and always has been "the welfare of the common man."

This may be true, but the method of providing for the

welfare of the common man is the problem with which educators are faced. Ludington (16, page 12) says:

> School communities can no longer be content with a unit course in woodwork or mechanical drawing inherited from the "manual training" era in their attempt to achieve the functions of industrial arts. Industrial arts should be a medium of interpretation through a wide range of practical experience which involves both manipulation and understanding on the part of the pupil.

Industrial arts has come to mean experiences in many areas and should be thought of as a curriculum, instead of a subject. It is comparable to the languages, in that it has a variety of subject selections.

Education Defined. The vast scope of learning makes it difficult to assign a definite and accurate definition of education. Comenius (17, page 90) believed that: "Education is the development of the whole man," and Herbert Spencer (29, page 35) gave the definition: "Education is preparation for complete living." But what comprises the whole man? Complete living embraces what qualities or requisites? Preparation for complete living in one century would, in all likelihood, differ from the desirable attributes of the succeeding century. Educational definitions must be concise; ambiguity must be avoided whenever possible. The Commission on the Secondary School Curriculum of the Progressive Education Association defines the purpose of education in their report, Science in General Education (24, page 23) as:

> The purpose of a general education is to provide rich and meaningful experiences in the basic aspects of living, so directed as to promote the fullest possible realization of personal potentialities, and the most effective participation in a democratic society.

This definition of education recognizes the need for instruction that will have as its aim and ultimate end the improvement and perpetuation of the American form of society and government. In the final analysis, the destination of all education must be to help the individual improve himself and his environment.

Industrial Arts Defined. The State Advisory Committee for Industrial Arts in Oklahoma Schools (20) adopted as their interpretation of industrial arts the following:

> Industrial arts, as a school subject, may be defined as a study of machines, tools, and processes by means of which the forces of nature are utilized and the raw materials of nature are changed by man to make them more valuable and pleasing. It leads to an understanding of the native qualities of raw materials and of the natural forces together with a knowledge of the methods and practices of utilizing and changing these materials and forces. It is also concerned with the social and economic problems incident to these changes.

In the present-day trend toward life-adjustment education, certainly a knowledge of the ways and means of changing our vast natural resources to finished products is extremely important.

Objectives of Industrial Arts. The secondary schools are becoming life-centered, striving to make possible the ideal of full and happy living for everyone. In such an

educational program, the subject matter, the methods, and the techniques of instruction must be true to life. Frederick (7, page 18) states that:

> The content of the curriculum of the future high school should be drawn from the general areas of human interest and need, such as health, religion, philosophy, and leisure rather than from the traditional hierarchy of subject disciplines as mathematics, the sciences and history. Secondary education will eventually cease to be an institution devoted primarily to the imparting of academic information. The school will gradually come to emphasize the immediately practical habits and skills necessary for the daily job of living.

Williams (34, page 208) alleges:

> Modern industrial specialization has become a keynote of life. Therefore, much of the responsibility for introducing the child to this age of industry must rest upon the shoulders of the public-school system.
>
> Industrial arts is an important area of general education and every child, boy and girl alike, must have the chance to explore the various aspects of industrial life through a public school laboratory.

In order for the philosophizer, teacher, or administrator to classify, study, and evaluate the various components of a philosophy, the goals and objectives must be listed. Wilbur (33, page42) lists the following objectives for industrial arts:

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

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

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

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

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

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

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

8. To develop a certain amount of skill in a number of basic industrial processes.

The Oklahoma Industrial Arts Association Committee on Policies (21) worked out the following statement of objectives for industrial arts in Oklahoma schools:

1. Contributes to consumer education.

2. Develops avocational interests.

3. Aids vocational choices.

4. Develops handy man or home mechanic abilities.

5. Imparts industrial information.

6. Trains in industrial and home safety.

7. Guides in industrial design.

8. Instills an appreciation of applied skills.

9. Develops satisfaction in personal creative achievement.

10. Stimulates interest in a specific field of industrial occupation and develops a personal interest in successful achievement.

11. Provides a knowledge of industrial drawing, the language of industry.

12. Trains to analyze a job into its correct tool processes and to organize them into an efficient procedural order.

13. Recognizes the standards of industrial attainment.

14. Trains in good "housekeeping" or shopkeeping.

15. Develops appreciation of the value of industrial materials or contributes to the conservation of materials and resources.

16. Contributes definitely to later vocational efficiency.

17. Offers opportunity to apply knowledge learned in other school subjects in the completion of industrial projects.

18. Complements other school subjects in contributing to general education.

In these objectives, it may be noticed that a majority deal with information, attitudes, and the stimulation of interests and aptitudes.

Applications of Objectives. A list of objectives is useless unless it is applied and an attempt is made to put the aims into effect in the classroom. If industrial arts is to continue its emphasis on the fundamental needs of students, then instructors must constantly examine their course content to ascertain whether or not objectives are being realized. Wilbur (33, page 24) says:

> It is probably more important from an educational standpoint, that a child be able to plan his project correctly than he be able to carry it out skillfully.

Industrial arts teachers take boys to the shop five days a week, teach the procedures and steps in making a bookrack,

a footstool, a screwjack, a coin purse, or sugar scoop; and although a few skills are learned, have the students realized the demands of the objectives? Have the shop experiences been integrated with a knowledge of industrial life, and desirable work traits? Unless the school program is achieving as many of its objectives as possible, it is failing to do its task and its duty to society.

A Proposed Personal Philosophy for Industrial Arts for Girls. In the years before the era of industrialization, when each community and home was largely self-sufficient, the activities of most women were confined to the home. Household equipment was limited to essentials; house furnishings were plain and strictly utilitarian. Today, an increasing number of women are entering trades and professions; the women in the home may have access to a multitude of appliances and mechanical aids, and whether following a career or managing a home, she must make many purchases, and reach many decisions concerning a profusion of industrial products.

Industrial Arts for Girls Defined. The writer has not been able to find a definition of industrial arts for girls, except as embodied in objectives listed by various authors. Harris (13, page 43) states that:

> The purpose of a course in industrial arts for girls can be expressed by the question, "What should a girl know and do in order to be a better homemaker?"

Brown (3, page 4) gives the following definition of home mechanics for girls:

> The instruction necessary to teach girls to use and repair mechanical devices of the home, also to instruct them in the upkeep and general repair of the house and furniture.

Since the above definitions refer mainly to home mechanics courses, and the writer contends that an industrial arts course for girls should be much broader, the following definition is proposed: Industrial arts for girls in the secondary school should include experiences in the care, repair and maintenance of the home and its devices and appliances, the development of wise avocational and vocational choices, and preparation for intelligent participation in our consumer and industrial world.

Objectives of Industrial Arts for Girls. The general purpose of industrial arts for girls is to teach those things concerning the industrial world which will make them more valuable citizens regardless of their status in life. Both boys and girls, according to Proffitt (23, page 151):

> . . . should be provided educational experiences that will help them understand and to participate effectively in the social order in which they live and the factors which are most influential in producing that social order.
>
> It is important that every citizen be intelligent as to the industrial changes and innovations in order

to determine and know what effect these may have on the social and economic order.

Newkirk (19, page 71) gives the following aims for a course in practical mechanics for girls:

1. To teach the use and care of tools and mechanical devices used by women in the home and community, together with the principles involved.

2. To give information needed in the wise selection of industrial products.

3. To give some appreciation of the industries as to types and workers.

Kroll (15, page 146) in a research problem prepared at Iowa State College offers as objectives for industrial arts for girls:

1. To provide education in tasks of a mechanical nature adaptable to women around the home.

2. To provide adequate information and intelligent understanding of some of the common activities involved in our mechanical age.

3. To provide a more intelligent consumer knowledge pertaining to the more common activities found in domestic life.

4. To encourage and present a variety of possibilities which will serve as the basis for the development of hobbies.

5. To provide experience in a wide variety of materials with actual participation in manipulative processes.

6. To provide an appreciation of our common industrial services and products.

7. To provide the necessary safety education for the common devices and mechanisms pertaining to ordinary domestic, industrial and avocational life.

8. To help develop the ability to think, reason, or solve problems pertinent to active participation in industrial and social life.

9. To provide avocational interest leading to the possible discovery of aptitude traits by guidance through broad occupational contacts and studies.

10. To provide correlation with other vital studies found in the school curriculum.

11. To assist in establishing proper attitudes, habits, and ideals in the social and economic relationships of life.

Proposed Objectives of a Course in Industrial Arts for Girls. The following aims and goals are suggested:

1. Guidance and exploration in the following three aspects: educational, vocational, and avocational. This objective should vitally affect the student in the selection of her life work, the amount of education that she may need or can obtain, and the use of her leisure time.

2. Consumer's knowledge and appreciation of good design, good workmanship, and understanding of industrial methods.

3. Knowledge of factors involved in the selection, purchase, and upkeep of a home.

4. Knowledge of the care, repair, and maintenance of common electrical and mechanical devices of the modern home.

5. Knowledge of the construction, care, repair, and selection of furniture.

6. Ability to use simple hand and power machines, and the making of several projects, in a variety of materials.
7. Ability to read simple blueprints and other drawings and to make elementary sketches.
8. Knowledge of safety practices advisable in the use of tools, machines and appliances, and of safety hazards common to the home in general.

Guidance. Guidance and exploration are as important to girls as to boys, especially as pertains to education and avocation. The girl in the school shop may discover talents and aptitudes which would not have been found otherwise, and she can more wisely plan her educational future. Moore (18, page 1) states:

> In January of this year, 1950, almost one out of every three "females 14 years of age and over" was in the labor force, and married women outnumbered single women by about 3,000.000. Out of all women, married and living with their husbands, in April 1950, 22.5% were working. Of all women, from 45 to 64 years of age, 30% were in the civilian labor force. In every decade, we find that more women work, more married women work, and more older women work.
>
> The pattern of work for women differs from that of men. Some people tend to think that women stop work when they are married, and therefore training is important only for the few years between school and marriage. We must consider not only the 22.5% of all married women with husbands present who are working, but also the great numbers of women who return to the labor market after the family is reared and those who enter it for the first time in middle age. We cannot continue to ignore the need for training of these mature women.

In the development of a hobby or leisure-time interests, the high school girl has the opportunity to learn to spend her spare time both profitably and pleasurably. In the modern world, with all its tension and strain, everyone needs an avocational interest to aid in relaxing and in decelerating the rapid pace; a vent to release nervous energy. Because of the vast number of labor-saving devices, the modern woman has far more leisure time, thus she needs a way of using this time in an advantageous way. To master a hobby, to create and make things gives one a great sense of accomplishment, the satisfaction of achievement which is necessary for true happiness. Before the industrialization of the United States the women produced goods and performed services for the family group. Then when so many of these services began to be done commercially by agencies outside the family, the housewife had less need to perform household services and more need for money income with which to pay for goods and services. This fact, together with the need of an enlarged industrial world for more workers, has influenced women to seek jobs in increasingly large numbers. An industrial arts course in the secondary schools would afford the girl with some evaluation of her abilities and give her some knowledge of the requisites and practices of industry.

Consumer Education. Many industrial products are cheaply constructed and poorly designed. They are made for

the mass of people who have no knowledge of construction and design. Friese (8, page 59) states:

> We must all select and consume the products of industry, though we are not all producers in industry. Such consumer interest has a very logical place in industrial arts. It results in personal cultural satisfactions and creates a demand for better manufactured goods and possibly more of them. It is a splendid way of developing general industrial intelligence in youth--in this instance in either boys or girls. Consumer appreciation of industrial things can be taught to many in industrial arts, whereas the number to whom actual skill in design and manual execution can be taught is more limited. Taking the element of fear out of the use of modern industrial devices is an important phase of consumers' knowledge and skill in industrial arts.

Shockey (27, page 10) declares:

> Some few are beginning to realize the necessity for functional industrial arts to meet the total needs of the individual. However, much remains to be done, and it is a sad commentary upon leaders in the field that they have been too long concerned in teaching young people to earn. The spending of money is just as important, and it is high time to forget the old popular belief that consumers will somehow learn the art of living without any special training.

Since the modern housewife is the most influential person in most of the purchases connected with her household, and in view of the maze of manufactured products on the market, a knowledge of industrial products would be very beneficial in enabling the housewife or career woman or laborer to make wise and prudent selections.

Knowledge of Home Ownership. To own and occupy a home of their own is the fondest dream and most fervent desire of many families. Most of these families can have only one home in their lifetime, therefore, they should be able to

do a great deal of discerning and judicious planning, in order that their home will be economical, attractive, and constructed to best serve their particular needs. The woman should have must to say concerning the proposed home. Kroll (15, page 145) states:

> Women are becoming more and more a partner of equal standing in the business of making the home a success, whether it is in the selection of a house, a design, a problem of interior decoration, or one of purchasing a new refrigerator.

The housewife who is well-informed about the house as a whole, can perform a better job of maintaining it.

Home Mechanics. The home of today, especially the kitchen, is an array of "gadgets" and labor-saving devices, most of which are mechanical or electrical in nature and require some degree of maintenance and care for their satisfactory and economical use. Wood (35, page 269) asserts that:

> Men now no longer need to do the whole job, but only a small area or specialized task, perhaps largely automatic. Therefore they are less likely to be a "handy man." Women now have more time for leisure and less hard work in the home. They must keep the electrical and mechanical devices operating.

Proffitt (23, page 151) declares:

> The organization of present-day society and methods of living does not provide home experience that will serve to educate girls in the use of household equipment. For the development of such knowledge, which is held to be socially desirable, society is dependent on the schools.

The household which is mechanically deficient permits decay and damage of household equipment and supplies, the usefulness of which could easily be prolonged. Experts are called in to do trivial jobs at mechanic's rates, which the ordinary person skilled in the simple mechanical operations could perform with ease. Sometimes damage is done and loss incurred because the untrained individual is not capable of acting immediately upon the discovery of a defect. It is not proposed here that skilled plumbers, electricians and repairmen be replaced by amateurs. Rather it is suggested that the individual be capable of performing simple tasks, and to know when it is advisable to secure the services of an expert. Preston (22, page 33) contends:

> The girls of today, the housewives of tomorrow, are called upon to do in their homes and communities many things with tools and mechanical appliances which they could do more skillfully and more satisfactorily if they had been given some previous training in the public schools.

The woman of the house would derive great personal satisfaction and add to the economy of her household by being able to perform simple maintenance tasks.

Knowledge of Furniture. The average housewife makes most of the selections of furniture for her home with very little information. Courses in home economics that include some instruction in the selection of furniture are mostly concerned with color combinations and arrangement. With no

conception of good functional design; no knowledge of proper construction methods and types of woods, the housewife chooses at random, selecting the piece that perhaps has the shiniest surface, the most ornamentation, or simply the piece that happens to appeal to her untrained taste. Mass-produced furniture often has important constructional weaknesses, poor functional design, non-durable finish, and inferior wood that has been stained to resemble mahogany, walnut, or other more costly woods. An acquaintance with the desirable construction methods, the kinds of wood used, the imitations possible, finishes, and labeling practices would enable the housewife to select attractive and lasting furniture at a much lower overall cost.

Ability to Use Tools and Machines. Hall (10, page 159) declares that:

> Experiences of girls in shopwork should enable them to become more efficient in the modern home. Thus, instruction should embody uses of tools common to the home.

Learning is largely a matter of doing, especially in the manipulative processes. To have experiences in the use of tools and small power machines would familiarize the housewife with equipment needed to perform many simple household tasks and enable her to become more efficient. The making of small, useful projects in a variety of materials serves as a method of teaching tool uses, properties, and

utilization of many industrial materials. All this knowledge may be applied later to the creation and improvement of home furnishings and fixtures.

Drawing and Sketching. The aim of this objective is not necessarily to teach the girl to become a draftsman, but to enable her to read blueprints intelligently and to make simple dimensioned sketches of industrial products. Students will gain a better sense of proportion and the ability to set impressions on paper and to visualize the appearance of concrete objects. Many things are difficult to describe, especially with the limited vocabulary of the average high school student; but with practice, the object can be sketched, saying by a drawing what words have failed to express.

Knowledge of Safety Practices. A large percentage of accidents do not just happen but are caused--usually by the negligence of an individual. Much of this disastrous negligence is the result of ignorance, a lack of knowledge of safe practices and of the hazards often inherent in seemingly insignificant practices. Many people have unsafe habits and have never been informed of the fact that each time an unsafe act is performed, the well-being of other people is jeopardized by the potential consequences of the unsafe action. The time and place to teach safety principles is

in the school. The girl well-versed in safety education will be able to operate safely and maintain electrical and mechanical devices, because she can differentiate between the safe and the unsafe. She probably can eliminate many costly, annoying or distressing incidents in the home.

Summary. The emergence of industrial arts to include many industrial experiences and wide information has convinced educators of its place in general education. Because the content of industrial arts is taken from actual experiences and contacts of the industrial world that the student may have during and after his formal school education, the objectives of industrial arts supplement the objectives of general education and contribute invaluably to their realization. The change in the American economy that has created a demand for the participation, knowledge, and interest of women has changed the scope of the industrial arts program. The objectives of industrial arts are as applicable to girls as to boys, and industrial arts is vitally important and necessary in the complete life adjusting education of girls. Such a program for girls should have a goal of providing richer and broader experiences than a home mechanics course. The program should include industrial information to enable the student to be intelligent concerning the world of industry, as well as home appliances.

CHAPTER III

A PROPOSED COURSE OF STUDY

The course of study is the vehicle by means of which the goals and objectives are realized. It must be well-planned to insure achievement of desired aims and to preclude those subject areas that have come into the program by accident. In the rapid expansion of industrial arts to include so many subjects and areas, it is especially important that courses of study contain content most likely to accomplish the purposes of the objectives.

Definition of a Course of Study. Ericson, in Teaching the Industrial Arts (6, page 286), defines the course of study as:

> A course of study is a presentation of teaching material organized and arranged for instructional use. In its simplest form, it may consist of a mere outline of topics to be covered or processes to be performed. In more complete form, it will include additional features for the purpose of assisting the teacher in the presentation of subject matter.

Friese (8, page 11) comments on a course of study:

> A course constitutes a series of activities, experiences, or deeds, or items of information, through which race experiences are passed on. All race experiences and knowledge, however, cannot be handed down for lack of time. In industrial arts, representing industrial life in general education, the industrial subject matter selected comes first from those trades,

> industries, and crafts which bear the closest relationships to the common needs of life, the needs experienced by every boy and girl.

Procedure in Organizing a Course of Study. After objectives have been formulated, the administrator of the course must determine how best to realize the objectives. A method in common practice is to prepare a complete analysis of possible jobs and operations. By considering the length of time, equipment available, ability of students, and other factors, a selection of the most feasible items is made from this listing. These are organized into a course of study. Newkirk (19, page 28) states:

> Common practice in establishing a curriculum is to begin with a list of aims or objectives, and then forthwith to select arbitrarily a number of school tasks and projects which may plausibly be expected to fit in with the aims.

The supervisor may be expected to initiate changing or making a course of study, but the teacher, who is cognizant of existing conditions and of the limitations of instructor and pupil, should decide the details of the course. Ericson (6, page 287) states:

> The attempt of supervisors to make detailed courses, and to force them upon their teachers, has probably made a large contribution to the lack of confidence that some teachers have shown toward the supervisor's work. Under a skillful supervisor the making of the course of study will eventually come as a contribution by the teachers, rather than as a document presented by the supervisor.

Two types of material must be considered when choosing from

the listing of subject matter. Wilbur (33, page 57) discusses these types:

> First, there is the work which is largely manipulative. This includes all the constructive activities carried on with tools and machines. The tangible results are the projects which the student produces or the jobs which he completes. The second type of subject matter is usually designated by such terms as "related," "related technical," or "related subject matter." Included are all the lessons and concomitant learnings which take place in the industrial arts class and cannot be classified as manipulative. Under this heading may be classified such items as the names of tools and materials, the manufacture of lumber and steel, the work of the loom tender, how to make a working sketch, how to figure board feet, and countless other topics.

A curriculum committee is the usual method of determining subject content. As the writer was not able to work with such a group, or to circulate a questionnaire to obtain status information, the proposed course of study is based on a study of literature found in the library at Oklahoma Agricultural and Mechanical College.

Other Courses of Study for Girls in Industrial Arts. At the time of this writing, there could be found no textbooks for an industrial arts course for girls, although several have been published on home mechanics. Various magazine articles have appeared, however, describing programs offered. According to these, a diversity of areas are taught; some departments give the student craftwork only; some home mechanics only; while others offer a wide range of choice, from craftwork to automobile mechanics.

Terre Haute, Indiana. Sylvan A. Yager (36, page 30) describes a course offered to girls at the Indiana State Teachers College:

> The original idea was not to provide just another course to take care of conflicts in students' programs but rather to open up a new field for girls which seemed to present unexplored opportunities.
>
> The course has been given several times and needless to say several changes have been made in regard to content, organization, and methods. The following is a description of the course which consists of five separate units and continues for the entire year.
>
> The first unit deals with mechanical and free hand drawing and sketching, and extends over a period of about four weeks. The girls are taught the fundamental principles of orthographic projection with emphasis on their application. Free hand sketching and pencil and rule drawing principles are emphasized.
>
> The second unit extends over a period of eight weeks, and deals with the study of design, construction, care and refinishing of furniture, involving:
>
> 1. A brief study of the most popular periods of furniture, with emphasis upon the characteristics of each period studied.
>
> 2. A brief study of a few most common pieces of furniture, such as the chair, table, bed, and dresser, to the extent that the girls will understand something about how they are made and what to look for in the intelligent purchasing of furniture. Frequent visits are made to furniture stores and furniture factories in connection with this part of the course.
>
> 3. A brief study of the different kinds of wood used in furniture construction is studied with emphasis upon the characteristics that make each wood adapted to furniture making.
>
> 4. A brief study of how to care for furniture, with emphasis upon how to clean and polish and simple repair, such as regluing parts of a chair.

5. A study of the refinishing of furniture, involving actual practice in as wide a variety of work as time will permit. Some girls refinish furniture in their rooms.

The third unit is devoted to nine weeks of furniture weaving. Each girl is given opportunity to make two or more projects with the instructor's approval. The girls design their own project.

The fourth unit extends over a period of three weeks and is devoted largely to the care and repair of household mechanical appliances. The study of this unit will help the girl to better understand how to use and care for these appliances. Other work of an electrical nature taken up are:

1. Conductors and non-conductors of electricity.

2. Electrical circuits and their purpose.

3. Fuses, their purpose and how to replace them.

4. Making an extension cord.

5. Repairing or making an electrical iron cord.

The fifth unit extending over a period of twelve weeks or remainder of the term is devoted to the study of the major problems connected with the planning and building of a house:

1. Selection of a site.

2. Style and design as applied to houses.

3. Brief study of the genealogy of the American home.

4. Study of types of houses.

5. Factors that determine style of house to build.

6. Thorough study of a number of desirable plans for five and six room houses.

7. Present trends in home building.

8. Class visits to a few selected and well-planned houses.

9. Visits to houses under construction.
10. Advantages and disadvantages of different kinds of building materials.
11. Study of building codes and their purposes.
12. Value of insulation in building.
13. Study of different types of heating systems.
14. Plumbing and plumbing fixtures.
15. Electrical circuits, outlets and fixtures.
16. Interior materials, finish, and hardware.
17. Built-in features.
18. Economy in planning and building.
19. Constants and variables in connection with planning and building.
20. Methods of financing.
21. Study of legal documents, deeds, and abstracts.
22. Study of specifications and their purpose.

Augusta, Wisconsin. H. C. Rose writes in the Industrial Arts and Vocational Education magazine (25, page 292) that industrial arts for girls can claim:

1. Natural interest of a large percentage of the students.
2. Practical values which are not covered by other courses.
3. A positive contribution to the objectives of secondary education.

Rose states further:

> There is little doubt of the importance of the

> industrial world. With ever-increasing mechanical developments, many of our everyday problems of living will be influenced by science, industry, and the arts and crafts. Students must be able to adjust themselves quickly and intelligently to changes coming through industry. They therefore need an understanding and knowledge of equipment and materials of production, and a grasp of the principles of design.
>
> That the industrial arts courses which should be fundamental in the giving of this training are still occasionally looked upon as special subjects or as educational fads is to be deplored.
>
> Too great an emphasis has been placed on mere handwork and the production of interesting objects, with little thought about the wealth of valuable related and scientific information that should be taught in close relationship with the manual processes.

The course offered by Rose extended over a two-semester period. The first semester, the girls learned many simple but useful processes in woodworking, wood finishing and upholstering. The second semester was called general mechanical drawing and study of house arrangement. The students also studied construction and maintenance of mechanical and electrical equipment. For their final project, they chose a small home and planned it to their liking.

Clayton, Missouri. S. F. Hall, (10, page 159) industrial arts teacher at Clayton, Missouri, offered a typical course to high school girls:

> The interests of girls are different from those of boys, in that the experiences of girls should enable them to become more effective in the modern home. Thus a course for girls should embody instruction in the use of tools which are commonly found in the home, or which are useful to the women in the home; also the

construction, operation, care and maintenance of the various types of mechanical appliances and apparatus, some of which are found in practically all homes of today.

The instruction should include instruction concerning the varieties of wood used in furniture construction, as well as in floors and interior trim; the various kinds of finishes, together with some practical work experience in simple repairs, and refinishing pieces of furniture. Girls are also interested in knowing something about domestic architecture, home furnishings, and equipment. Problems in art metal and wood carving may be introduced to provide opportunities for design, in addition to the development of manipulative skill.

Areas of Instruction

1. Home Mechanics.
   1. Electric system of the home.
   2. Water-supply system.
   3. Miscellaneous repairs and adjustments.

2. Woodwork.
   1. Benchwork, small tools, hand machines.
   2. Wood-carving.
   3. Wood-turning.

3. Finishing.
   1. Care of floors and furniture.
   2. How to repair and renew finishes.

4. Metal Craft.
   1. Copper, pewter, silver.

5. Planning.
   1. Sketches, simple working drawings.

Albemarle, North Carolina. Troxler and Wilson, (32, page 184) instructors in home economics and industrial arts at the Albemarle High School report an exchange unit in which home economics girls and industrial arts boys exchanged places for a six-weeks period. The instructors state:

> Although six weeks was found to be too short a time to accomplish all that had been planned, the exchange of classes turned out to be profitable and enjoyable to both students and teachers.

Activities for the girls included:

1. Information about planning and building a house.
2. Refinishing furniture and floors and upholstery work.
3. Making small wood objects using hand and power tools.
4. Making small metal objects.

Austin, Texas. Weldon Brewer (2, page 17) has offered handicraft subjects since 1937, open to girls only. Brewer comments:

> The handicraft classes, open to girls only, are the most popular classes in the industrial department. We try to teach the girls worthwhile craft, which may grow into a hobby or which may develop the ability to fix things that pretty up the house. The course is fully accredited by the state department of education.

Wailuku, Territory of Hawaii. D. R. Glick, (9, page 420) principal at the Iao school, describes an exchange unit in home economics and industrial arts:

> The unit extended for one quarter. The girls were taught the names, uses and care of household tools, simple household repairs, refinishing, and how to make simple wood projects.
>
> The boys gained a wholesome respect for domestic work and its importance to home life. The girls, likewise, learned to appreciate man's manual contribution to the home.

Louis V. Newkirk (19, page 71) suggests the following content for a practical mechanics course for girls:

I. General.
   1. Replace broken glass in window or door.
   2. Study the methods of controlling heating plants.
   3. Repair defects in a plastered wall.
   4. Frame a picture.

II. Electrical.
   1. Detect and replace a blown fuse.
   2. Assemble or repair the attachment cord of a home electrical appliance.
   3. Hook up bells and buzzers.
   4. Wire an extension cord for an electric lamp.
   5. Read the meters for gas, water, and electrical service.
   6. Give first aid to a person who has received an electrical shock.
   7. Install a radio set.

III. Drawing.
   1. Read a working drawing.

IV. Woodworking.
   1. Use simple woodworking tools.
   2. Install a screen in a window or door.
   3. Use corner plate, corner brace, mending plate, and corrugated fasteners to strengthen a weak joint.
   4. Use glue for general repair.
   5. Select and use the different types of nails and screws.

V. Finishing.
   1. Apply paint to new or old surface.
   2. Apply stain, filler, and varnish on new wood.
   3. Refinish furniture or woodwork.
   4. Wax floors.

VI. Metalwork.
   1. Sharpen knives.
   2. Repair cooking utensils by soldering or riveting.
   3. Clean and tin a soldering copper.

VII. Plumbing.
1. Repair a leaking compression faucet.
2. Repair a fuller faucet.
3. Repair a flush tank.
4. Clean a drain trap.

VIII. Auto Mechanics.
1. Lubricate the car.
2. Take proper care of cooling system.
3. Clean and test spark plugs.
4. Test battery, fill with distilled water, and clean the terminals.
5. Repair a leak in an inner tube, mount tire on rim, and inflate.

IX. Concrete.
1. Cast an article from concrete, using wet or dry mix.

R. E. Brown (3, page 51) in a research study at Oklahoma Agricultural and Mechanical College recommends the following content for a home mechanics course for girls.

I. The Automobile.
1. Washing and polishing the car.

II. General Metal.
1. Sharpening a knife.
2. Sharpening and adjusting a pair of scissors.
3. Repairing a garden hose.

III. Electrical Work.
1. Repairing an extension cord.
   a. Lamp.
   b. Iron
2. Put in a house fuse.
3. Repair an electrical iron. (Replace heating element.)

IV. Mechanical Drawing.
1. Make simple furniture drawings.
2. Do lettering or printing.
3. Make house plans.

V. Woodwork.
1. Make several small projects so that girls will learn to use the common woodwork tools.

a. Cutting board or cake board.
b. Towel rack.
c. Handkerchief box or sewing cabinet.
d. Corner shelves.

2. Repairing and rescreening screen door.
3. Regluing loose joints in furniture.
4. Upholstering chair seats.
5. Repairing upholstery.

VI. Painting and Refinishing.
1. Varnishing furniture and floors.
2. Painting woodwork and furniture.
3. Removing scratches from furniture.
4. Cleaning and polishing furniture.
5. Painting interior walls.
6. Painting a porch floor or ceiling.

VII. Plumbing.
1. Repairing faucets. (Replacing washers.)

VIII. General Mechanics.
Instruction in the operation and maintenance of the common mechanical and electrical devices of the home.
1. Electric iron.
2. Electric washing machine.
3. Electric sweeper.
4. Sewing machine.
5. Electric fan.
6. Lawn mower.

St. Paul, Minnesota. L. H. Harnsberger (12, page 335) offers the following industrial arts course to girls:

> The girl of today expects and is different in many ways from the girl of yesterday. If this be true, then her education must be different in many respects and must involve those subjects that will develop those desired differences.
>
> The Central High School of St. Paul has undertaken to give some of the needed instructions to prepare these girls for the lives they have to live by offering a course in industrial arts, which supplies certain information that can be classified as educational 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. A liberal amount of supplementary information is given, including facts about tree growth, lumber manufacturing, cabinet woods and veneers, seasoning, and lumber defects. Special emphasis is placed upon wood finish, stains, staining, varnishing, refinishing, painting, and enameling with the necessary auxiliary information.

The course requires one forty-five minute period per day for forty weeks and earns one credit. It is regarded as an advanced subject and is given in the third or fourth years. The course has become very popular and taxes the shop capacity for the two periods that can be alloted to the subject. The daily average attendance is forty to forty-eight.

Lawrence, Kansas. H. S. Preston (22, page 33) writes of an industrial arts course for girls in the Industrial Education magazine:

There is considerable difference of opinion relative to the place of such a course in the curriculum, as to whether it should be in the senior high school or in the junior high school. The senior high school advocates believe that the subject belongs to them because too much time elapses between junior high school and the time when the girl will have a home of her own to care for, thereby permitting the training acquired to be partially obsolete or forgotten by the time it is needed. The junior high school followers admit the force of this argument, but counter with the statement that if the girls do not receive their training in junior high school, many of them will drop out of school before having an opportunity to take the subject in high school.

The following plan might solve the difficulty. All junior high school girls would be required to enroll in a six-weeks or nine-weeks course in home maintenance. Then in senior high school, the subject would be elective, the course to run a full semester. All are thereby given some training in this field, with a provision for advanced training for those interested.

In the development of a course of study for this subject, there is a wealth of material to work upon. There are so many possibilities that one hardly knows where to begin and where to stop. A considerable amount of the work done by boys in their home mechanics classes can be successfully done by the girls. The following outline offers suggestions as to suitable projects and topics of study:

1. Drawing.
   a. Read a working drawing.
   b. Make an isometric sketch.
   c. Make a working plan.
   d. Draw a floor plan.

2. Metalwork.
   a. Tin a soldering copper.
   b. Sharpen scissors and kitchen knives.
   c. Solder a utensil.

3. Plumbing.
   a. Adjust and use a pipe wrench.
   b. Clean a drain trap.
   c. Protect pipes from freezing.
   d. Replace washer in faucet.
   e. Shut off water.
   f. Read water meter.

4. Finishing.
   a. Refinish piece of furniture.
   b. Study the common wood finishes.
   c. Remove spots from furniture.

5. Woodwork.
   a. Plan and make simple project.
   b. Make a picture frame.
   c. Repair a piece of furniture.
   d. Repair a screen-sash.

6. Electricity.
   a. Rules of safety.
   b. Read an electric meter.
   c. Connect light-socket.
   d. Repair extension cord.
   e. Detect and replace burnt-out fuses.

7. Auto Mechanics.
   a. Read and understand dash panel.
   b. Remove, repair and remount tire.
   c. Clean out the gas line.

d. Safety rules of the road.
e. Check oil, gas, water, air, and battery.

8. General.
   a. Glaze a sash.
   b. Adjust shade-roller.
   c. Adjust door-hinges.
   d. Repair garden hose.
   e. Simple upholstery repair.
   f. Care of heating devices.

The Proposed Course Outline. Each area of this outline is divided into two parts as suggested by Wilbur (33, page 57): "manipulative" and "related subject matter." The material included is based on subjective thinking and the findings in Chapter II and the preceding part of this chapter. The following is a proposed course of study for an industrial arts course for girls, two semesters in length, and may be arranged by the teacher to insure effective instructional order.

I. Woodworking.

1. Manipulative.
   a. Learn use of simple woodworking tools.
   b. Make simple projects that will enable student to use tools and become acquainted with various woodworking procedures.
   c. Finishing and refinishing methods and practices.
   d. Repairing furniture.

2. Related Subject Matter.

a. Learn names of tools used.

b. Study of furniture design, furniture of periods and construction.

c. Consumer knowledge of how to buy furniture wisely.

d. Kinds of woods used in furniture, reasons for their use, and sources and procurement of lumber.

e. Advantages and disadvantages of various finishes and finishing methods.

f. Care of furniture.

g. Study of veneers and their use.

II. Electrical.

1. Manipulative.

a. Make extension cords, repair damaged cords on appliances.

b. Detect and replace a blown fuse.

c. Wire bells and buzzers.

2. Related Subject Matter.

a. Knowledge of meaning and uses of electrical terms.

b. Brief study of electric motors and their maintenance.

c. Study of conductors and non-conductors.

III. Mechanical Drawing.

1. Manipulative.

a. Make simple drawings and sketches.

b. Make simple house plans.

2. Related Subject Matter.

a. Learn to read blueprints.

b. Study of types of houses and purposes of each.

c. Brief study of building codes and their purpose.

d. House planning.

e. Study of building materials and advantages and disadvantages of each.

IV. Automobile Mechanics.

1. Related Subject Matter.

a. Knowledge of general maintenance.

b. Study of trouble-shooting.

c. Study of fundamental principles of an automobile.

d. Common reasons for car not starting.

e. Methods of washing, cleaning, and polishing.

V. Household Mechanics.

1. Manipulative

a. Repair leaky faucet.

b. Sharpen knives.

c. Clean a drain trap.

d. Replace broken glass in window or door.

e. Upholstering and repair of upholstery.

f. Lubrication and care of most common electrical devices.

g. Care and repair of garden hose.

h. Care and use of files and stones.

i. Heating fuels and plants and methods of controls.

j. Methods of ventilation.

2. Related Subject Matter.

a. Study of various plumbing fixtures.

b. Adjustment and cleaning procedures used in household appliances.

c. Consumer knowledge of what to look for in buying all kinds of household devices and appliances.

VI. Crafts and Hobbies.

1. Manipulative.

a. Make projects in wood-carving.

b. Make small leather projects.

c. Make small plastics projects.

d. Make simple projects of art copper.

e. Make linoleum block prints.

2. Related Subject Matter.

a. Knowledge of woods suitable for carving.

b. Knowledge of source, production, and kinds of leather.

c. Uses and kinds of plastics, and the place of plastics in the industrial world.

d. Value of knowing a craft or having a hobby.

VII. Safety Instruction.

1. Related Subject Matter.

a. Safety practices in the use of tools and machines.

b. Safety practices in the use of home devices and electrical appliances.

c. General safety practices of the home.

The units of instructional material presented are not in complete form or detail. Teachers using the outline are expected to select and use their own methods and instructional devices. If time is available for one semester only, the instructor may choose those areas he considers most important.

Summary. In making a course of study, it is necessary to choose pupil experiences and activities which will best achieve the objectives of the course. Practically all the schools offering industrial arts courses to girls have based their courses upon home mechanics, with mechanical drawing and sketching the secondary area covered. The other subject mentioned most was instruction in the selection of a house.

Home mechanics instruction is important, but shop teachers are obligated to offer the girl in industrial arts a much broader program in preparing her to live in the present industrial world. In the course of study suggested the writer included manipulative and related subject material in each area covered. General industrial information, consumer knowledge and safety were emphasized.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

When the United States was very young, with an agricultural economy, most inhabitants lived on farms or were connected with farms. Most of the things needed were grown or made at home. In less than one hundred years, the tremendous drive and inventive genius of the country converted the agricultural economy into the most fully developed industrial economy in the world. Changes in family living, customs, and attitudes have made necessary educational changes. The modern woman has more time, more opportunities, and a greater need for an education that will enable her to enjoy, appreciate, and utilize the industrial world.

Summary. The primary aim of the study is to corroborate the need for instruction in industrial arts for girls, to formulate objectives for such a course, and to propose a list of pupil activities and experiences which will enable the educator to achieve the purposes of the course.

An industrial arts course for girls will aid in achieving the aims of general education and should be an integral part of general education. Based upon the goals of general education and industrial arts and upon an intensive study

of recent literature, the following objectives are proposed:

1. Guidance and exploration in the following three aspects: educational, vocational, and avocational.
2. Consumer's knowledge and appreciation of good design, good workmanship, and an understanding of industrial methods.
3. Knowledge of factors involved in the selection, purchase, and upkeep of a home.
4. Knowledge of the care, repair, and maintenance of common electrical and mechanical devices of the modern home.
5. Knowledge of the construction, care, repair, and selection of furniture.
6. Ability to use simple hand and power machines, and the making of several projects in a diversity of materials.
7. Ability to read simple blueprints and other drawings and to make elementary sketches.
8. Knowledge of safety practices advisable in the use of tools, machines, and appliances, and of safety hazards common to the home in general.

As a medium for meeting the objectives advanced, a course of study is proposed; including the following areas:

1. Woodworking.
2. Electrical.

3. Mechanical Drawing.
4. Automobile Mechanics.
5. Household Mechanics.
6. Crafts and Hobbies.
7. Safety Instruction.

The course of study is intended for a period of two semesters in the high school. It is not complete, and the teacher is expected to furnish instructional details and methods of his own choosing.

Conclusions. Progressive educators are now aware of the fact that women and girls have need of training, instruction, and experience in the realm of industrial arts. An investigation of early courses of study for girls taking industrial arts shows that they are predominantly home mechanics courses. Only recently have teachers commenced the inclusion of other equally important areas.

Although educational leaders recognize the need for industrial arts courses designed specifically to meet the needs of girls, relatively little action has been taken.

Based upon the evidence presented in this study, a course in industrial arts should be a part of the education of every girl.

Recommendations for Schools. Although the course of study recommended in this study may not include all that is

necessary in an industrial arts course for girls, the writer is convinced that the outline would materially aid in providing a more adequate education for high school girls, and advocates its inclusion in the curricula of all schools where industrial arts experiences are not offered to girls.

Recommendations for Further Study. The fact that instruction for girls is a relatively new and undeveloped area in industrial arts makes many problems for further study readily apparent. One problem that should be worth while would be an analysis of the occupations in which women are commonly employed, to determine the work of a mechanical nature, and to determine the amount of industrial experiences the worker had in secondary school and its influence on the worker and her choice of a vocation. A survey of a representative group of women to determine the extent of their industrial knowledge would be valuable. Another problem would be a survey of cities over a specified population to learn the number and types of industrial arts courses offered to girls. Included in this could be a tabulation of opinions of industrial arts leaders and teachers concerning industrial arts for girls.

Most women are unaware of the complexity and vastness of our technological society and of the valuable information of that society that they should receive in the public

schools. Educators receive less help from individual women and from women's organizations than they would naturally expect. Shop teachers should realize that the task of providing this instruction will fall upon their shoulders. A new field of service is opening to those who are willing to accept the challenge. It should pay dividends to teachers and leaders who seek new methods of serving their communities.

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