THE ROLE OF INDUSTRIAL ARTS IN
CAREER EDUCATION

THESIS

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

Charles C. Pinnell, B. S.
Denton, Texas
December, 1977

This study seeks to provide a descriptive analysis of the role of industrial arts in career education.

The criteria used as a basis for comparison of industrial arts and career education are (1) clarification of terminology, (2) historical trends in the development of both programs, (3) basic program philosophies, (4) curriculum content, (5) objectives and goals sought by each curriculum, and (5) legislation affecting industrial arts and career education.

Career education is more extensive than industrial arts. Industrial arts cannot assume full responsibility for a comprehensive program of career education; however, industrial arts can be involved in activities which will help the student select a meaningful occupation related to industry.
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CHAPTER I

INTRODUCTION

The industrial arts learning activities are an important part of the public school program and of the education of the student. The purpose of the industrial arts activities is to give the student a background of our industrial society.

Career education plays an equally important role in the educational process of the student. It involves the student in everyday life decisions, and helps him to become a better informed citizen in his community.

Industrial arts, originally called manual training, was first introduced into the United States in 1880 through the efforts of Calvin M. Woodward who established a manual arts training school in St. Louis, Missouri, in connection with Washington University (3, p. 36). Industrial arts was called manual training until the early 1900's (3, p. 240). Teachers began placing less emphasis on arts and crafts and more emphasis on the study of industrial problems, materials and processes. As a result, many educators started using the term industrial arts instead of manual training or manual arts (9, p. 4). Today industrial arts is found on all levels of education, from kindergarten through higher education.
Career education is being presented to students at all levels of education. Career education seeks to remove the barriers between education and work by emphasizing preparation for work as a major goal of American education at all levels--from elementary through the secondary schools and universities, colleges, and technical schools.

Statement of the Problem

This study seeks to provide a descriptive analysis of the role of industrial arts in career education.

Purpose of the Study

The purpose of the study is twofold:
1. To develop the role of industrial arts in career education.
2. To analyze the research relevant to industrial arts and career education.

Limitation of the Study

This study is limited to analysis of relevant literature and research concerning industrial arts education and career education and their working relationship.

Sources of Data

The data for this study are obtained from books, magazines, literature obtained from various education agencies, government data, and material from the Dallas Independent School District.
Background and Significance of the Study

The purpose of this study is to identify the role of industrial arts in career education. The United States Office of Education implemented criteria and guidelines for funding industrial arts education shortly after the Vocational Education Act of 1963. According to Bohn, five types of industrial arts methods which contributed to career education were identified. The five methods contributing to career education are (a) self and career awareness, (b) career orientation and exploration, (c) career exploration and beginning specialization, (d) career specialization, and (e) adult and continuing education. These five methods include all aspects of career guidance and preparation in the educational spectrum from kindergarten to adult and continuing education (4, pp. 43-44).

The American Industrial Arts Association defined the "Purposes of Industrial Arts Education" in keeping with the new thrust of career information in 1969 as follows: "Develop in each student an insight and understanding of industry and its place in society," and "discover and develop student talent in industrial-technical fields" (1, p. 4). Vice-President Spiro T. Agnew emphasized the need for the restoration of manual arts "to their rightful place of esteem" (16, p. 9). It is believed this study will provide information that will identify the role of industrial arts in career education.
Definition of Terms

1. "Industrial arts" as used in this study is defined as follows:

   . . . those education programs which pertain to the body of related subject matter, or related courses, organized for the development of understanding technical, consumer, occupational, recreational, organizational, managerial, social, historical, and cultural aspects of industry and technology including learning experiences involving activities such as experimenting, designing, constructing, evaluating, and using tools, machines, materials, and processes which provide opportunities for creativity and problem solving and assisting individuals in the making of informed and meaningful occupational choices (15, p. 32243).

2. "Career education" as used in this study is defined as follows:

   . . . the total effort of public education and the community aimed at helping all individuals to become familiar with the values of a work-oriented society, to integrate these values into their personal value systems, and to implement these values into their lives in such a way that work becomes possible, meaningful, and satisfying to each individual (14, p. 1).

3. "Role" is interpreted to mean industrial arts is a part of career education.

4. "Analysis" means a separating or breaking up of any whole into its parts so as to find out their nature, proportion, function, relationship (17, p. 53).

Recent and Related Studies

There have been numerous studies concerning career education, industrial arts, and the role of industrial arts in career education. Sidney P. Marland, Commissioner of
Education, in 1970, developed the term "career education," and in 1971, Marland speaking before the convention of the National Association of Secondary School Principals in Houston, Texas, first "charged the educational community with the task of bridging the gap between the world of work and education" (18, p. 1). "Career Education Now" was the title of that speech, and the United States Office of Education and the National Institute of Education which was created in 1972, have supported the concept of career education.

In 1974, the United States Office of Education appointed Kenneth Hoyt as Associate Commissioner of Career Education, and he became head of the Division of Career Education within the Bureau of Occupational and Adult Education. In 1974, President Gerald Ford signed the Education Amendments Bill which included a section on career education. This bill established new policies for career education within the United States Office of Education. It created an Office of Career Education whose director "reports directly to the Commissioner of Education," and also provides "funds under the guidelines of the Office of Career Education" (18, p. 2).

In 1972, the Ohio State Board of Education published Ohio's Career Continuum Program. This program was to familiarize the student to a "galaxy of occupations" from kindergarten through high school (8, p. iv). The aim of
this curriculum program was to "focus on careers, as a means of lending reality and a sense of purpose to education," and to end "educational fragmentation of subject matter and illustrate relevance of subject matter to the world of work" (8, p. v).

On January 28, 1973, a study entitled Career Development In Nevada was issued by the Nevada State Department of Education. The findings of this study were that courses in various subject areas are planned with "little coordination towards a student's singular life aim," and courses are planned on the basis of "predetermined requirements," such as, school, district, state, or college (7, p. 25).

The Texas Education Agency in 1972 completed a report entitled "Career Education K-12: The World of Work." The conclusions of this report were that in order for students to make "meaningful career decisions, they will need information about the world of work, an understanding of themselves, and assistance from parents, teachers, administrators, and counselors" (13, p. 16).

In August, 1968, the Texas Education Agency completed a study entitled "Career Development: A Paradigm." This publication was prepared to "present a positive model for career education," and to summarize the "first years progress of pilot projects" on career education conducted in the school districts of Abilene, Levelland, Petersburg, and Spearman during the 1967-1968 school year (12, p. 6).
In Arizona, career education began in 1971, when the Arizona State Legislature appropriated nearly $2 million to implement pilot projects throughout Arizona. During the 1971-1972 school year thirteen career pilot projects were in progress, and one year later the Arizona State Legislature appropriated $3.8 million for funding twenty career education projects (2, p. 1). In November, 1972, a Career Education Task Force was created whose primary purpose was to "develop a plan for the implementation of career education in Arizona through 1980" (2, p. 1). This Task Force established the following six objectives:

1. Develop a state career education matrix which will be flexible, concise, understandable, and locally-owned.
3. Develop a review and evaluation system for all locally-developed career education materials.
4. Provide guidelines and direction for continuation proposals from each state project.
5. Develop appropriate career education information materials for community leaders throughout the state.
6. Complete fourteen one-day workshops, one in each geographical area of the state (2, p. 1).

The Dallas community approved a $67 million bond containing funds for career education, and in 1971, Skyline Center became reality. B. J. Stamps, Assistant Superintendent for career education in the Dallas Independent School District states the options students have at the Skyline Center are as follows:
1. To enter the world of work immediately upon graduation from high school with a saleable skill.
2. To continue his education at a trade, technical, or community college.
3. To continue his education at a university or professional school (11, pp. 82-83).

Dallas has also implemented career education in the middle school grades. The publication entitled *Occupational Investigation* describes the curriculum that was developed and implemented in the middle schools of the Dallas Independent School District during the 1976-1977 school year. According to Nolan Estes, General Superintendent of the Dallas Independent School District, the *Occupational Investigation* curriculum was developed for "underachieving eighth grade students" (5, p. 1). The purpose of the occupational investigation program is to provide an awareness of various occupational options, and to motivate students to "build an educational background that will increase their chances of achieving in a vocational program with their interests and abilities" (5, p. 3).

In 1973, Robert Kile (6) made a study of "A Descriptive Approach to the Development and Implementation of Career Education in the Dallas Independent School System." This study revealed widespread job dissatisfaction among students leaving secondary schools, and also, recommended that an in-depth study be made to determine an appropriate career education curriculum for grades one through eight,
and in addition that curriculum material in other subjects should be integrated into career education.

Isaac J. Russum (10), in 1973, completed "A Study of Contemporary Industrial Arts Education and Industrial Technology Education Programs," which determined that industrial arts should place greater emphasis upon technical and related studies, and also the future growth in industrial arts depends directly upon the change and development in industry.

Organization of the Study

Chapter I consists of an introduction and a statement of the problem. It includes purpose of the study, limitations of the study, sources of data, background and significance of the study, definition of terms, recent and related studies, organization of the study, and chapter bibliography.

Chapter II consists of a history and philosophy of industrial arts, objectives and goals of industrial arts, legislation affecting industrial arts, and chapter bibliography.

Chapter III consists of a history and philosophy of career education, concepts of career education, career education in the elementary, middle, and high schools, and chapter bibliography.

Chapter IV includes the role of industrial arts in career education, a comparison of objectives and goals between industrial arts and career education, a comparison
on the orientation to the world of work between industrial arts and career education, and chapter bibliography.

Chapter V includes the summary, findings, conclusions, and recommendations.
CHAPTER BIBLIOGRAPHY


CHAPTER II

INDUSTRIAL ARTS

Terminology was a major problem in the historical background of industrial arts. In the past the terms manual training, manual arts, and industrial arts have been used interchangeably to mean either the same or different educational areas (4, p. 240). According to Melvin Barlow,

> There were no hard and fast lines representing the end of one primary era of terminology and the beginning of another. However, it should be noted that the term "manual training" was generally used after 1876; "manual arts" first appeared and drew support beginning about 1894; and "industrial arts" began finding acceptance around the year 1910. Each term was supposed to have a meaning all its own. Manual arts gave improved design concept to manual training, and industrial arts represented a further refinement of purpose and direction (4, p. 240).

Industrial arts education began with the acceptance of the concept of work as education. During the latter part of the eighteenth and the early part of the nineteenth centuries Johann Heinrich Pestalozzi and Philip Emanuel von Fellenberg of Switzerland implemented the concept of work as education (1, p. 24).

In 1830, the School of Trades and Industries was established in Moscow, Russia, by Della Vos. Its primary purpose was to train engineers and technicians (4, p. 38). During this same period of time a "system of educational handwork
was being developed in the Scandinavian countries, to be known as Scandinavian Sloyd" (12, p. 2). Otto Salomon developed sloyd courses which were common in Sweden and Norway by the middle nineteenth century. In 1866, the sloyd method of education was recognized by law as a part of the public elementary school program in Finland. Instruction concentrated upon the making of articles useful in the home, generally of wood--although other materials were also used (4, pp. 485-486).

These concepts influenced by an expanding American industrialization, developed into a type of educational workshop which was known as manual training. Events leading up to manual training in the United States began in 1855, with the establishment of the St. Louis Manual Training School when the trustees of Washington University established the O'Fallon Polytechnic Institute. The Institute conducted evening classes for apprentices and journeymen, which included classes in mathematics and drawing (4, p. 34).

Calvin M. Woodward began his teaching career at Washington University in 1865, and one year later he became principal of O'Fallon Polytechnic Institute. Two years later Woodward became Dean of the Engineering Department, when O'Fallon Polytechnic Institute became part of Washington University (4, p. 34). In 1870, Calvin Woodward decided that the engineering students should be able to construct models made of wood to illustrate certain mechanical principles. He established a woodshop where work was carried out under his supervision. Woodward realized the
importance of combining theory and practice. According to Woodward "It is the best aid towards securing a wholesome intellectual culture, and it is the only means for making that culture of practical use" (19, p. 256). Because of Woodward's leadership and the support of other prominent educators, manual training came to be the first shop type education in United States schools.

According to Barlow the three most prominent educators who developed industrial arts in the United States were as follows:

John D. Runkle, who was inspired by the Russian exhibit at the Centennial Exposition in 1876; Calvin M. Woodward, who developed preliminary ideas between 1872 and 1878, and who, with the assistance of business men and industrial leaders in St. Louis, founded the Manual Training School in 1880; and Gustav Larsson, who came to Boston from Sweden in 1886 to start a sloyd school (4, p. 486).

Larsson was principal of the Sloyd Training School in 1919, and is credited with the fundamental ideas relating to the training of teachers of industrial arts. He did not believe the training of industrial arts teachers was any different from other teachers; only subject matter was different (4, p. 190).

In 1870, John D. Runkle, President, Massachusetts Institute of Technology, introduced practical training to engineering students. His ideas were as follows:

1. separate instruction shops from construction shops.
2. provide only one kind of work in each shop.
3. provide as many work stations and tools for each station as a teacher can reasonably handle in one instruction period.
4. graduate the instruction in each shop according to the difficulty of the operation (4, p. 38).

Runkles believed that a skill could be reasonably achieved within a minimum amount of time. However, he did not define "reasonable" or "minimum amount of time."

During this same period of time Calvin Woodward began his first experiments (students constructing wooden models to illustrate certain mechanical principles) with manual training at the college level (4, p. 34). In 1880, Calvin Woodward established the first manual training school in the United States. This school was known as The Manual Training School of Washington University (4, p. 36).

During the last half of the nineteenth century machine production was rapidly replacing hand methods in industry, and many manual training instructors believed that handcraft skills would soon be lost. The manual training curriculum included "woodworking, mechanical drawing, and metalworking, in that order of acceptance" (12, p. 4).

Charles A. Bennett was very concerned with the loss of hand skills due to the advancement of the machine age. He was a writer, editor, and publisher in the field of manual arts, and in 1919, wrote a book called The Manual Arts (5). Bennett reasoned that five categories of work would represent the fundamentals of civilization, and therefore he
selected graphic arts, the mechanic arts, the plastic arts, the textile arts, and the bookmaking arts. He justified his selection on subject matter. Bennett became known as the father of the manual arts movement (12, p. 5).

In 1904, Charles Richards, editor of *The Manual Training Magazine* made the following statement:

Have we not come to the time when a change is urgently needed in the term applied to constructive work in the schools? Is there a manual training teacher in the country who does not increasingly feel the need for a more explicit and dignified title for his professional work? In short, is it not time that the term Manual Training, never fully expressing the meaning of school handiwork, has now come to be thoroughly inadequate and even misleading?

It is no longer merely a question of improving an indefinite title, but of replacing one that is inappropriate and incorrect in its implication. The old term is now not only vague, it has become misleading as an indication of the aim and character of our work.

Now that we are beginning to see that the scope of this work is nothing short of the elements of the industries fundamental to modern civilization, such a term becomes at once a stumbling block and a source of weakness.

Behind every other subject in the curriculum is a body of ideas of fundamental meaning and importance. The industrial arts which stand for one of the most vital phases of modern civilization, throw away their claim to recognition by masquerading under a term at once inappropriate and misleading. Such a term is both an obstacle to the full and free development of our work and to its recognition and appreciation on the part of the public.

In the hopes of enlisting consideration and discussion, the writer proposes the term suggested above, Industrial Arts. Such a term indicates a definite field of subject matter (13, pp. 32-33).

Richards pointed out the need for a change in terminology, but in so doing he did not furnish a new method of instruction and a new curriculum to accompany the new name.
John Dewey was the first to propose that industrial arts be subject matter and a teaching method. However, Frederick Gordon Bonser has been credited with the original definition and clarification of the purposes of industrial arts. Bonser's definition of industrial arts is as follows:

The industrial arts are those occupations by which changes are made in the forms of materials to increase their values for human usage. As a subject for educative purposes, industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes (6, p. 15).

Bonser's interpretation of industrial arts was manufacturing. That is, the changing of materials into useful products by means of careers and or jobs related to manufacturing. The concept of industrial arts continued to unfold as other leaders attempted to place it at all levels of education. Industrial arts became increasingly industrial, with attention given to the machine processing of materials.

According to Walter B. Waetjen "Industrial arts is the exploration of the tools, processes, and materials of industry. Of equal importance is the exploration and development of an important factor in human behavior: the concept of self" (17, p. 167). Waetjen believed that how a person perceives himself has a great influence on his total learning process. If the student's experiences tend to support his own image of himself as successful he tends to remain receptive to subsequent experiences. If the student
has negative experiences which tend to contradict or destroy his self-concept, he tends to reject additional training. This definition is general and individual ideas and industrial arts education programs may vary.

Gordon O. Wilber omits the theory of self-concept and emphasizes industrial technology for the total school program. According to Wilber industrial arts is those "phases of general education which deal with industry--its organization, materials, occupations, processes, and products--and with the problems resulting from the industrial and technological nature of the society" (18, p. 2). Wilber believes that the processes of industry and how industry relates to society are the most important part of industrial arts education. He places more emphasis on business of industry and less on the individual which participates in industry.

Delmar W. Olson defines industrial arts by relating human behavior to learning. He states that man should "reflect on the control he has created for himself over his natural environment," and that the subject of industrial arts is the source of technology; that is, how man has learned to use technology. Olson believes man should "develop his own native aptitudes for having better ideas with materials," and that technology should go beyond tool skills (12, p. v).
Carl Gerbracht and Frank E. Robinson cite four objectives in which industrial arts helps youth.

1. Understand the people and the things around them through study of industry or the way things are made and the work of the people who make them.
2. Develop valuable skills of tool use, repair, maintenance, and product analysis.
3. Compare individual abilities with those of others; try different kinds of work and decide upon a vocation.
4. Have experiences leading to hobbies (9, p. 2).

Gerbracht and Robinson stress the importance of industrial arts in aiding young people to decide upon a career. They also point out that industrial arts educational skills can be used in leisure time.

F. Coit Butler cites the importance of the industrial arts laboratory where work is achieved in an environment similar to the occupation it represents. "The really important skills, knowledge, habits, and attitudes can be learned in a work-like environment, not in a standard classroom setting" (7, p. 4).

Also human relations play a very important part in the industrial arts laboratory as well as in the world of work. Having students relate to other students as well as to themselves is equally important in industrial arts.

In an industrial arts laboratory, it is necessary to sensitize students to the concept of mutual dependency. This concept appertains to all societies; however, it has special reference to highly industrialized societies. The organization of our society makes us mutually dependent upon other people for the satisfaction of our needs.
The highly important role that human relations play in the psychological life of pupils, industrial arts teachers should want to provide activities which not only portray the industrial matrix of society but also yield rich inter-personal contacts. Conceivably, to classmates, for in the process many appraisals are relected to the demonstrator (17, p. 167).

Values, self-concept, and abilities also play important parts in the individual and in industrial arts education. How one perceives himself, his abilities, and his attitude toward work and society are also formed into industrial arts.

Unless boys and girls have the opportunity to explore, experience, and perceive the industrial world in which they live, they will not behave in socially accepted ways as citizens of such a society. As a learner goes through his daily experiences, he formulates numerous attitudes toward the world, the people of the world, and himself. These attitudes toward himself become differentiated from other attitudes to form an integrated concept of self. The self-concept could be defined as being the views a person has of his abilities, personal traits, and physique; his values; and his feelings about himself, particularly in relation to other people (17, p. 166).

Perhaps the major justification of industrial arts lies in the success of the student. That is, everyone needs the feeling of success and industrial arts gives each student the opportunity to succeed.

So far as the need for a feeling of success is concerned, there is probably no other school offering which comes so near to making it possible for all students to attain a fair measure of success as industrial arts. Ideally, each member of the class will be solving a different problem; and if planning and guidance have been wise, each will be working on something within his ability to complete successfully. A pupil's objective is not to keep up with the rest of the class or to make as good a project as the boy at the next work station, but is rather to accomplish successfully the task that he has set.
for himself with the help and advice of the teacher (18, pp. 24-25).

According to Gordon O. Wilber it is possible for each student to be successful and promote the feeling of making progress. Industrial arts could be justified on this basis alone (18, p. 27).

Objectives and Goals of Industrial Arts

Industrial arts cannot be an isolated, separate subject because the techniques and processes with which it is concerned are a part of man's life. These techniques and processes have been dependent upon society, and in turn have affected human relations. Thus, the study of industrial arts education contributes to the study of man's activities in a particular social setting and cultural environment which man created to some extent through the invention of tools and processes.

According to the American Council of Industrial Arts Supervisors the objectives of industrial arts education are as follows:

1. To develop in each student an insight and understanding of industry and its place in our society.
2. To discover and develop student talents in industrial/technical fields.
3. To develop problem-solving abilities related to the materials, processes, and products of industry.
4. To develop in each student skill in the safe use of tools and machines (2, pp. 4-5).

Perhaps the ability to think can well be regarded as the central purpose of industrial arts education. Industrial
arts provides experiences and information dealing with the world of work and occupational opportunities in industry. These experiences and information develop career awareness and provide career exploration experiences.

Industrial arts assists in the discovery and development of personal aptitudes, interests, creative technical problem-solving abilities, self-reliance, sound judgment, resourcefulness. These provide for the student's personal needs for living in a technological society. These are reflected in the goals of industrial arts as stated by William J. Micheels and John R. Lindbeck.

I. Industrial arts provides an effective means for training wise consumers.
II. Industrial arts develops an appreciation of design, materials, and workmanship.
III. Industrial arts promotes an understanding of industry and the value of the worker.
IV. Industrial arts provides a means for developing valuable leisure activities.
V. Industrial arts provides an opportunity for guidance through occupational exploration.
VI. Industrial arts provides experiences for learning and perfecting manipulative skills.
VII. Industrial arts develops desirable habits of analysis, planning, safety, cooperation, and accuracy.
VIII. Industrial arts promotes learning and understanding through manipulative experience.
IX. Industrial arts develops creative thinking abilities (11, p. 91).

Perhaps Gordon Wilber stated the "real" meaning of industrial arts education. "Industrial arts is for all in our society, because all must learn to adapt to a world of industry and technology. All members of our society must
deal with, purchase, maintain, or consume the products of our industrial world" (18, p. 20). Industrial arts provides information on how to live successfully in our industrial society.

Legislation Affecting Industrial Arts

The Smith-Hughes Act of 1917 was the first legislation to provide funds for industrial-vocational type education. Senator Hoke Smith of Georgia introduced to the United States Congress in 1915 a bill

... to provide for the promotion of vocational education; to provide for cooperation with the States in the promotion of such education in agriculture and the trades and industries; to provide for cooperation with the States in the preparation of teachers of vocational subjects; and to appropriate money and regulate its expenditure (4, pp. 61-62).

About three months later Georgia's Representative Dudley M. Hughes introduced a bill concerning the same type of legislation

... designed to prepare workers for the more common occupations in which the great mass of our people find useful employment. As here used it means that form of education whose controlling purpose is to give training of a secondary grade to persons over fourteen years of age for increased efficiency in useful employment in the trades and industries, in agriculture, in commerce and commercial pursuits, and in callings based upon a knowledge of home economics (4, p. 62).

Thus, the Smith-Hughes bill became law in 1917.

Federal funding for subjects called industrial arts began during President John F. Kennedy's administration.
In his first Message to Congress pertaining to education, President Kennedy asked the Secretary of Health, Education, and Welfare

... to convene as advisory body drawn from the educational profession, labor, industry, and agriculture, as well as the lay public, together with representatives from the Departments of Agriculture and Labor, to be charged with responsibility of reviewing and evaluating the current National Vocational Acts, and making recommendations for improving and redirecting the programs (10, pp. 12-13).

During the next two years the President's Panel of Consultants on Vocational Education developed recommendations which would provide federal funding for vocational programs previously administered by the Smith-Hughes Act of 1917. In December, 1963, President Lyndon B. Johnson signed the Vocational Education Act of 1963, which "broadened and extended vocational education, authorized a major increase in funds for the program, and shifted emphasis to that of serving individuals" (10, p. 56). Funds could be used to meet any training needs except occupations requiring a college degree. The Vocational Education Act of 1963, provided training to the following people: "(a) those enrolled in high school, (b) out-of-school youth in need of training for employment, (c) adults seeking to upgrade themselves in their occupations, and (d) others who have academic, socio-economic, or other handicaps" (10, p. 56).

John W. Gardner, Secretary of Health, Education and Welfare, and Martin Essex, Ohio's State Superintendent of
Public Instruction, organized the Advisory Council on Vocational Education in 1967 to review the Vocational Education Act of 1963. The Advisory Council issued a report called *Vocational Education: The Bridge Between Man and His Work*. This report stated the following:

Contemporary social and technological forces make it clear that the Nation must sharpen its ability to provide vocational preparation for persons who are entering the labor force for the first time, and also for those persons who are members of the labor force, both the employed and unemployed. The scope of vocational education is sufficiently broad to encompass these requirements. Included within the total context of vocational education needs are a number of special groups of persons.

In addition to a basic educational commitment to provide vocational preparation in the mainstream of public education there are three major areas of concern.

First, starting early in the student's formal education he must learn more about work, its dignity, and his relationship to the occupational world. Actual work experiences need to be included as an integral part of the student's educational program.

Second, the subject matter of the school and vocational requirements need to be realigned so that education becomes more meaningful in terms of its occupational potential. This involves a high degree of flexibility and a definite movement toward individualization of instruction.

Third, the hard-core content of vocational education—the part that makes a person employable—must be adjusted to accommodate a wider range of occupational opportunity and larger number of students.

The renaissance in education must develop new relationships between the school and the community at large to the end that education, with its vocational component, reaches into every facet of the community to provide youth and adults now not being served (1, pp. 24-25).

The Advisory Council on Vocational Education made several recommendations. The five major ones are as follows:
1. all federal vocational acts under the Office of Education by incorporated into one act.
2. more control of funds by the Commissioner of Education.
3. increased funds and emphasis on post secondary schools.
4. more sharply drawn and defined guidelines.
5. emphasis on exemplary programs for career information (1, pp. 20-25).

After reviewing the Advisory Council's report, Congress passed the Vocational Education Act of 1968. This Act made provisions for the use of federal funds for counseling and vocational guidance. In 1971, Sidney P. Marland, United States Commissioner of Education, and Robert Worthington, Associate Commissioner of Adult, Vocational and Technical Education, met in Washington, D. C. with industrial arts leaders and discussed the various industrial arts educational programs and how such programs could relate to career development and occupational adjustment (3, p. 104). The industrial arts leaders suggested changes in industrial arts programs that would lead to eligibility for federal funds under the Vocational Education Act of 1968.

In 1969 the American Industrial Arts Association redefined the purposes of industrial arts education in keeping with the new thrust of career education. Two of the purposes were to "develop in each student an insight and understanding of industry and its place in society," and to "discover and develop student talent in industrial-technical fields" (2, p. 4).
To define the role of industrial arts in career education, an ad hoc committee on criteria and guidelines for funding industrial arts was established in 1971 (14, p. 36). The Ad Hoc Committee's recommendations were presented to President Richard M. Nixon. In June, 1972, President Nixon signed the Education Amendment Act of 1972 (Public Law 92-318), which provided federal funding for industrial arts. The Vocational Education Act of 1963 was amended to include industrial arts in the definition of vocational education (14, p. 36).

The role of industrial arts as part of vocational education was published in the Federal Register as follows:

Industrial arts education programs means those education programs which pertain to the body of related subject matter, or related courses, organized for the development of understanding about the technical, consumer, occupational, recreational, organizational, managerial, social, historical, and cultural aspects of industry and technology including learning experiences involving activities such as experimenting, designing, constructing, evaluating, and using tools, machines, and processes which provide opportunities for creativity and problem solving and assisting individuals in the making of informed and meaningful occupational choices; (2) which the Commissioner has determined, pursuant to § 102.4(b) (5), will accomplish or facilitate one or more of the purposes of the first sentence of section 108(1) of the Act.

(5) Industrial arts education instructional programs with objectives specified in subparagraph (1) of this paragraph shall be designed to:

(i) Assist individuals in the making of informed and meaningful occupation choices. In order to accomplish or facilitate this purpose, such programs shall:
(a) Provide occupational information and instruction pertaining to a broad range of occupations, including training requisites, working conditions, salaries or wages, and other relevant information;

(b) Provide exploratory experiences in shops, laboratories, and observations in business or industry to acquaint students with jobs in the occupations included in this purpose;

(c) Provide guidance and counseling for students enrolled in the industrial arts programs under § 102.4 (b) (5) of this part to assist them in making informed and meaningful choices in selected occupational fields; and

(d) Employ industrial arts teachers who have qualifications as provided in the State plan pursuant to § 102.38; or

(ii) Prepare individuals for enrollment in advanced or highly skilled vocational or technical education programs. In order to accomplish or facilitate this program, such programs shall:

(a) Provide individuals with occupational information and exploratory experience for enrollment in such programs;

(b) Provide occupational information and exploratory experiences directly related to current practices in industry, and

(c) Be conducted in an institution approved by the State Board of Vocational Education and by industrial arts teachers and guidance and counseling personnel who have qualifications as provided in the State plan pursuant to § 102.38.

(j) Industrial arts youth organizations. Industrial arts education programs may provide for students to participate in club activities as an integral part of the instruction which are offered as indicated by § 102.4 and which are supervised by industrial arts personnel (16, p. 32243).

A report issued by the Educational Testing Service points out the importance of industrial arts education. Industrial arts is the number one subject among males in high school, and home economics and secretarial work rank as the most popular subjects among females (15, p. 1).

H. H. London points out how the industrial arts curriculum has progressed over the years. Emphasis on the individual's
choice of occupational investigation has been incorporated into the industrial arts curriculum.

Industrial arts deals with industry, where a third of the work force is employed. Years ago most of the work carried on in industry was done by hand, with each worker performing all of the operations required to complete a job or task. In contrast, today most of the work in manufacturing is done on a mass-production basis, with different workers performing different assignments. Many operations are automated. Even in the construction industry and the service and repair trades, considerable specialization is the rule. So, if the industrial arts program is to explore and reflect industry as it is carried on today, it must utilize mass-production techniques in terms of specialized work assignments in occupations in manufacturing, construction, and the service trades and industries. For this purpose, the individual project method of teaching will not do. While it is appropriate to develop creative interests and abilities, and to interpret the village crafts of the handicraft era, it is not adequate for developing an understanding of modern mass-production and specialization (10, p. 155).

Prior to 1973, industrial arts was primarily recognized as a part of general education. Industrial arts curriculum offered opportunities for "exploring various vocational areas and for instruction in leisure time activities and home-repair skills" (8, p. 295). According to Calfrey Calhoun industrial arts curriculum has included a variety of subjects such as "woodworking, drafting, metalworking, plastics, graphic arts, power mechanics, and electronics" (8, p. 296). Calhoun further states the four levels of industrial arts instructional subject units offered at the middle and high school levels are "introductory, basic, intermediate, and advanced" (8, p. 296).
After the federal legislation for industrial arts to become a "federally reimbursed field of vocational education, the curriculum was expanded to include transporation, construction, graphic communication, and American industry" (8, p. 296). The basic intent of the industrial arts curriculum is to meet the individual's needs and to offer students the opportunity to decide on an occupation related to industry.
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CHAPTER III

CAREER EDUCATION

While there is some difficulty in establishing the beginning of the career education movement, the emergence of career education in the Office of Education is easy to identify. In January, 1971, speaking before the International Conference on Education, United States Commissioner of Education, Sidney P. Marland, stated the following:

Career education is designed to give every youngster a genuine choice, as well as the intellectual and occupational skills necessary to back it up. Career education is not merely a substitute for "vocational education" or "general education," or "college-preparatory education." Rather, it is a blending of all three into an entirely new curriculum. The fundamental concept of career education is that all educational experiences—curriculum, instruction, and counseling—should be geared to preparation for economic independence, personal fulfillment, and an appreciation for the dignity of work. Career education will eliminate the artificial separation between things academic and things vocational. Three factors will distinguish career education from traditional vocational education: It will be offered as part of the curriculum of all students; it will permeate the entire spectrum of a youngster's education, from kindergarten through high school; and it will offer a much wider range of occupational choices than are now available in regular vocational education programs. . . . Career education will begin as early as kindergarten through revised curriculums that relate reading, writing, and arithmetic to the varied ways by which adults earn a living. . . . As a youngster advances into junior high school, he will select three of fifteen occupational "clusters." . . . By senior high school, he will concentrate on one cluster, developing sufficient skill in a specific
occupation to qualify for a job. All students will have an opportunity to enjoy actual work experience during their high school years through cooperative arrangements with business, industry, and public institutions and agencies. Yet each student's program will retain sufficient flexibility to enable him to switch to a related occupation later with a minimum of additional training. In addition, each student in a career education program will always retain option of going on to higher education (6, pp. 3-4).

From 1971 through the present time the United States Office of Education has supported the concept of career education. According to Marland, career education is a philosophy of education, it is a commitment to the proposition that education is to prepare people for useful and productive employment and personal fulfillment through work.

According to Kenneth B. Hoyt, Associate Commissioner of Education, and Chief of the Division of Career Education within the Bureau of Occupational and Adult Education, career education is as follows:

...the total effort of public education and the community aimed at helping all individuals to become familiar with the values of a work-oriented society, to integrate these values into their personal value systems, and to implement these values into their lives in such a way that work becomes possible, meaningful, and satisfying to each individual (3, p. 1).

According to R. N. Evans, "career education is the total effort of the community to develop a personally satisfying succession of opportunities for service through work, paid or unpaid, extending throughout life" (3, p. 1).
Those who have defined career education seem to agree that (a) career education has to do with preparation for work, but that (b) it involves more than training for job skills, and (c) it should be experienced by all students, and that (d) it is the responsibility of other institutions as well as the educational system.

Career education calls for an occupationally oriented curriculum and instructional program from kindergarten through high school, with emphasis on awareness and appreciation of the world of work, followed by exploratory experiences leading to career decisions, and ultimately to a useful skill (3, pp. 2-3). For many years the educational system concentrated on teaching the three R's and the development of citizenship, and moral and spiritual values. With the advent of career education and the realization that career development is a life-long process, the educational system is also responsible for developing career awareness and the appreciation for the world of work (4, p. 150). A well-planned program of career education at the elementary level provides an opportunity for early self-evaluation and a gradual awareness of work opportunities which will assist a student in making decisions concerning preparation for his future.

According to Kenneth Hoyt the following concepts should be incorporated into the career education curriculum.
1. Preparation for successful working careers shall be a key objective of all education.
2. Every teacher in every course will emphasize the contribution that subject matter can make to a successful career.
3. "Hands-on" occupationally oriented experiences will be utilized as a method of teaching and motivating the learning of abstract academic content.
4. Preparation for careers will be recognized as the mutual importance of work attitudes, human relations skills, orientation to the nature of the workaday world, exposure to alternative career choices, and the acquisition of actual job skills.
5. Learning will not be reserved for the classroom, but learning environments for career education will also be identified in the home, community, and employing establishments.
6. Beginning in early childhood and continuing through the regular school years, allowing the flexibility for a youth to leave for experience and return to school for further education (including opportunity for upgrading and continued refurbishing for adult workers and including productive use of leisure time and the retirement years), career education will seek to extend its time horizons from "womb to tomb."
7. Career education is a basic and pervasive approach to all education, but it in no way conflicts with the other legitimate education objectives such as citizenship, culture, family responsibility, and basic education.
8. Career education is for all individuals—very young children and the adults of the community, the intellectually able and the mentally handicapped, males and females, those who will attend college and those who will not, the economically affluent and the economically disadvantaged, and those from rural and those from urban settings.
9. Career education seeks to help individuals become familiar with the wide variety of work values now present in society. It imposes no single standard form of work values on any individual, but seeks to help each individual adopt some set of work values which will be personally meaningful.
10. Career education is vitally concerned with helping individuals implement their own personal work values. To do this demands that in addition to
wanting to work, individuals must also acquire the skills necessary to work, and having done this, must then find work that is both meaningful and satisfying to them. Thus jobs, in a generic sense, are not career education's goal. Rather, work as productive activity that holds personal meaning and satisfaction for the individual is the ultimate goal of career education (3, pp. 22-23).

Career Education In The Elementary School

Career education for the elementary school should be based upon the needs and abilities of the students. Students should become alert to people who work and to become curious about careers and prepare for the investigation of careers which is to occur during the middle school years. According to the Texas Education Agency, "Awareness of the world of work is considered to be the overall goal of career education in the elementary school" (9, p. 9). Field trips into the community, students playing different workers roles, workers coming into the classroom to explain their jobs, serve to make students aware of various careers (9, p. 9).

Career education in the elementary school seeks a balance view of work and its relationship to life. It accepts and promulgates the following assumptions:

1. At least some people must work if society is to survive.
2. All work needed by society is honorable.
3. Any worker who performs such work well is honorable.
4. Work that is enjoyed by some people is disliked by other people.
5. No one has the right to impose his work likes and dislikes on others.
6. A career is built from a succession of jobs which tend to lead each individual from those jobs which are personally less satisfying toward those which bring more satisfaction.

7. Generally, those workers who are trained, experienced, and productive find their work satisfying, and they will always be more in demand than their opposites.

8. Almost everything the school teaches can be helpful in at least one type of career.

9. Going through school with no consideration of the types of careers in which one might be interested causes one to miss much of the value in school.

10. Postponing consideration of personal career plans until one is out of school virtually guarantees that the individual will begin work with no training and no experience and will be nonproductive, even in an "unskilled" job (3, pp. 73-74).

By incorporating career education activities within the curriculum and illustrating the practical applications of the material in the work situation, subjects become relevant and meaningful and take on additional interest for each student.

Career Education In The Middle School

Students in the middle school are faced with conflicts involving emotional, biological, sociological, and psychological developments. Questions arise such as, Who am I? Where am I going? Where do I fit in my environment? Students are faced with conflicting choices and they must decide which direction to take in society. Students begin to consider career choices at a vital, but confusing time in their lives. Middle schools have the responsibility and opportunity to
develop career education programs designed to help students make better decisions concerning themselves and careers. According to the Texas Education Agency, "Investigation is the primary goal of career education in the middle school" (9, p. 11). The middle school should provide students with opportunities to observe and study in a systematic manner a variety of careers. These careers are grouped in fifteen clusters. The Dallas Independent School District's Occupational Investigation curriculum guide lists the fifteen career clusters as follows:

1. Business and Office Occupations,
2. Marketing and Distribution Occupations,
3. Communications and Media Occupations,
4. Manufacturing Occupations,
5. Transportation Occupations,
6. Agri-Business and Natural Resources Occupations,
7. Marine Science Occupations,
8. Environment Control Occupations,
9. Public Service Occupations,
10. Health Occupations,
11. Hospitality and Recreation Occupations,
12. Personal Services Occupations,
13. Fine Arts and Humanities Occupations,
14. Consumer and Homemaking-Related Occupations, and

The careers in each cluster should be investigated by students and knowledge should be built upon the awareness of the world of work that began to develop in the kindergarten and elementary grades. The investigation should also serve as a bridge to the high school years of preparation for employment.

According to the Texas Education Agency the thrust of career education in the middle schools is threefold:
1. opportunities in the subject areas to investigate many of the major careers associated with each of these areas;
2. activities outside of organized instruction which can serve as investigative opportunities concerning careers--clubs, hobbies, sports, part-time jobs, school projects, and others;
3. counseling, testing, and educational planning, in terms of self concept, self awareness, and career choice (9, p. 11).

Students in middle school career education should be aware of the many concepts dealing with careers and career preparation. They should become aware of the interdependence of careers, and become particularly aware that the choosing of a satisfying career is not an overnight process. Choosing a satisfying career is a decision that evolves over a long period of time, during which there is ample opportunity for an assessment of personal interests and abilities and for exposure to a wide variety of occupational choices.

According to Kenneth Hoyt the objectives for the junior high school level of career education are as follows:

1. Every junior high school student should be able to explore his occupation interests and aptitudes from among the broadest possible range of occupational areas.
2. Every junior high school student should see clearly the relationships between the academic content he is being asked to master and his tentative occupational choices.
3. As many junior high school students as possible should acquire some real work experience.
4. Junior high school students should be provided with some basic vocational skills which they can use as building blocks in their later career education development.
5. Occupational choice options should be kept open for all junior high school students, while each should be simultaneously encouraged to make
tentative personal commitments to one or more broad occupational areas at some broad level of competence.

6. Junior high school students should be provided with sufficient knowledge about and experience in the various vocational education areas open to them at the senior high and post-high school levels so that these students can really choose among them.

7. Those students who express an intention to leave the formal educational structure, at least for a while, near the end of the junior high school years, should be provided with a set of salable vocational skills that they can use in obtaining employment.

8. Vocational exploration programs should be provided in such a way that academic learnings in traditional junior high school areas will be enhanced rather than de-emphasized (3, pp. 123-124).

Career Education In The High School

The high school program of career education rests upon the cumulative experiences the student has developed during the middle (occupational investigation), and elementary (career awareness) school years. The investigation and awareness objectives should continue to be implemented so that the high school student can increase in maturity and knowledge. That is, the curriculum should include concepts that would not have been understood by the younger student. Opportunities for investigating additional careers in depth should also be included in the high school career education curriculum (9, p. 14).

According to the Texas Education Agency the ultimate career goals of each student should be a "marketable skill that will enable him to enter the labor force should the
need or desire arise for him to do so," and the next goal should be the "student who desires to undertake advanced preparation, whether it be in a post-secondary technical school, college or university, or business school, should be equipped with the necessary prerequisites to undertake such additional training" (9, p. 14).

In the choice of a career an individual must have a clear understanding of himself, his aptitudes, abilities, interests, ambitions, limitations, a knowledge of the requirements and conditions of success, advantages and disadvantages, opportunities, and the prospects of different lines of work. Moullette made the following statement concerning career education:

Within career education, vocational education or career preparation is solidly built upon a foundation of orientation and exploration which prepares students for the advanced stages of education, training, and skill development (5, p. 15).

Today's society demands that the individual be better prepared than were his elders to engage in the world of jobs and careers. The student can no longer expect to learn a trade and relax with the attitude that his mastery of it will serve throughout his life. Retraining and reeducation are becoming essential elements in assuring one's continuing progress in the world of work. No matter how carefully the student plans his work life, it may be necessary for him to change careers. The student must learn to anticipate the probability of change, to be flexible in learning new
techniques and knowledge, and to be willing to move when occupational or geographical changes are necessary.

Occupational training and career preparation are certainly very important aspects in career education. However, career education seeks to provide students with the ability to succeed in our society in a way that goes beyond job preparation. According to Arizona guidelines, there are eight elements which are the keys to career education.

1. Career Awareness--Knowledge of the total spectrum of careers.
2. Self-Awareness--Knowledge of the components that make up self.
3. Appreciation and Attitudes--Life role . . . feeling toward self and others in respect to society and economics.
5. Economic Awareness--Perceives processes of production, distribution, and consumption.
6. Skill Awareness--Ways in which man extends his behaviors.
7. Employability Skills--Social and communication skills appropriate to career placement.

Perhaps the most important aspect of career education is that it aids students in understanding the world outside the classroom and how that world relates to what is being taught in the classroom. Career education is not taking time away from the three R's (reading, writing, and arithmetic), but actually reinforcing the importance of the basics by showing students why it is important to read, write, and compute in order to live in today's world.
President Richard M. Nixon, in his annual State of the Union Message to the United States Congress, stressed the importance of career education. Nixon said the following:

Career education provides people of all ages with broader exposure to and better preparation for the world of work. It not only helps the young, but also provides adults with an opportunity to adapt their skills to changing needs, changing technology, and their own changing interests. It would not prematurely force an individual into a specific area of work but would expand his ability to choose wisely from a wider range of options. Neither would it result in slighting of academic preparation, which would remain a central part of the educational blend.

Career education is not a single specific program. It is more usefully thought of as a goal—and one that we can pursue through many methods. What we need today is a nationwide search for such methods—a search which involves every area of education and every level of government. To help spark this venture, I will propose an intensified federal effort to develop model programs which apply and test the best ideas in this field.

There is no more disconcerting waste than the waste of human potential. And there is no better investment than an investment of human fulfillment. Career education can help make education and training more meaningful for the student, more rewarding for the teachers, more available to the adult, more relevant for the disadvantaged, and more productive for our country (7, p. 15).

The role of career information as proposed by the Vocational Education Act of 1968 was emphasized by Sidney P. Marland, United States Commissioner of Education, in 1970.

He stated the role or purpose of career education as follows:

Career education provides for a broad approach to preparation for citizenship; provides for job information and skill development; and also helps individuals develop attitudes about personal, psychological, social, and economic significance of work in our industry. It develops and festers vocational and recreational interests of
individuals to help prepare for a well rounded living in a world in which leisure time is increasing and greater opportunity for a self-expression through creative production is available (8, p. 2).

One of the first bills signed by President Gerald R. Ford was the Education Amendments of 1974. This legislation was significant in that the bill included a section on career education. This bill established two new policies for career education within the United States Office of Education. First, it created an Office of Career Education whose Director reports directly to the United States Commissioner of Education. Second, it provided funds under the guidelines of the Office of Career Education (10, p. 2).
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CHAPTER IV

THE ROLE OF INDUSTRIAL ARTS
IN CAREER EDUCATION

Career choice involves some of the most important decisions of a person's life. It does much to determine his standard of living and, even more importantly, his style of life and much of his happiness. A decision as important as this should not be left to chance or have no basis in education. Adequate career choice demands a series of choices, extending over a period of time, and industrial arts and career education have a vital role to play in facilitating these decisions and enabling them to be made on a rational basis. The following is from an article which appeared in The Dallas Times Herald on career education.

Early career planning is essential to the growing number of students who bypass college in favor of a job. Students should have practical exercises in the tasks of jobs that interest them. A student considering cartography as a career might survey and map his or her neighborhood; a prospective forest ranger might try to identify neighborhood trees. One interested in nursing might learn to use the blood pressure gauge and to take temperatures. Such hands-on experience is the only way young people can truly find out what work they might enjoy or be good at (1, p. D-8).

All communities have much in common. All have people; young and old; children and adults. All have places where
people work; both to make a living and to serve those who need whatever it is they do. All have or are part of a school system. The students attending the schools have a widely different set of interests, capabilities, and needs, but each of them has a need for experiences that will prepare them for productive and satisfying employment. Each needs to find out about the range of careers available to him, identify those in which he might be successful, and investigate the preparation they require. He then needs to acquire whatever is essential for job entry or for qualifying for additional training. Providing these experiences is the purpose of industrial arts and career education. According to Delmar W. Olsen:

Industrial arts provides an orientation to the ways in which people earn their livelihoods in occupations within the technology. It acquaints the student with the nature, qualifications, purposes, and values in such occupations and helps him to see possible opportunities for himself therein. Industrial arts offers opportunity for the student to get exploratory, try-out experiences in basic industrial occupations (7, p. 171).

Through a large variety of offerings, industrial arts and career education seek to make learning in school meaningful to the world outside and beyond the classroom. Working cooperatively with business groups the learning environment is constantly changing to keep pace with the rapid changing society and world. Within the industrial arts and career education programs emphasis is given to
education and occupational competence through contact with various learning strategies and learning environments that help prepare young people for their role in society.

According to Rex Miller the aim of industrial arts is to help each student understand himself and the world of work, and to be able to make a "realistic selection of occupational choice" (3, p. 136). Miller continues,

Youngsters are concerned about the role they will play in the world of work. They need guidance in selecting occupations with reference to needs, interests, and abilities. They need occupational information on requirements of job advancements, and the like. They often need try-out experiences to test dexterities and interests and to evaluate successes in industrial arts experiences. They need to see how job fields are related to school subjects. Industrial arts can help students explore areas of work, types of employment, working conditions, and other aspects of employment in order to plan their education in line with personal ambitions and qualifications (6, p. 136).

Industrial arts forms an important part of education; discovering aptitudes, promoting creativity, forming desirable work habits, developing favorable attitudes, establishing ideas, developing skills and character traits, and imparting knowledge of the tools, materials, processes, productivity and human relationships of industry. Thus industrial arts consists of instructional laboratory work centered around present industrial and technical life. Opportunity is provided for exploratory experiences facilitating the choice of an occupation.
Many industrial arts courses are valuable electives for students pursuing majors in other academic subject fields. Examples would include students in engineering, physics, or business who elect courses in machine shop, automotive, or general metals.

The student interested in several careers within a career field but undecided about a particular career, can begin developing a skill or skills applicable to more than one career. Once a definite career choice is made, preparation efforts can be directed toward a specific career.

The advantage of developing these skills even if a definite career choice has not been made is that students assure themselves of being able to get a meaningful job regardless of when they depart the formal educational system.

Industrial arts activities contribute to the meeting of certain needs of youth in the economic-vocational field. Youths have a basic need to feel that they are growing toward a position of economic independence and a place in the vocational scheme of things. An industrial arts program provides try-out opportunities where some of the important occupational fields may be sampled (9, p. 26).

Students will no doubt eliminate some careers they do not like. This is fine because it is just as important to find out what you do not like or prefer as it is to find what you do like. Taking from those careers offering the best job opportunities the student can further investigate
and determine which ones are best suited to his individual interests, abilities, aptitudes, and circumstances.

If possible, students should obtain actual or simulated work experiences in as many careers of interest to them as possible. This can be done through industrial arts laboratories such as the courses world of construction and world of manufacturing where students perform various construction and manufacturing jobs.

The World of Construction, is a study of man's managed-personnel-production system which produces constructed projects on a site. The World of Manufacturing, is a study of man's managed-personnel-production system which produces society's manufactured products in a plant. Both courses develop the general theme: "how to work efficiently with men, materials, tools, and techniques" (2, p. 91).

By getting these experiences, students can further validate their interests in a particular career or careers, or they may discover that they really do not like or have the aptitude and ability for a particular career. If the latter is the case, students should explore other careers until they find one or several applicable to their needs. After intensive investigation and exploration, students may be ready to make definite career choices. If so, they should focus upon specific preparation.

It is important that students are taught during the career awareness years that there are certain "employability traits" required for all careers. These include dependability, honesty, promptness, and initiative. Both career
education and industrial arts education teachers should devise exercises or other means of instilling these traits in each student. Such traits as dependability and promptness can be instilled by relating the importance of "regular school attendance" and completing "homework on time." Workers who are constantly late in getting to work or who show little initiative will not last long on the job. Students must understand the "why" behind these traits and also that they are not obtained overnight, but are the products of habit and self-discipline that come with performing these traits over long periods of time.

The objectives of career education and industrial arts are to develop an awareness of careers, understanding and appreciation for the dignity of work, and the personal and economic relationship of work. According to John V. Richards,

Industrial arts will still provide exploratory and career orientation experiences related to the industrial environment, will still provide occupational information, will continue to teach a body of subject matter related to the technical, social, and cultural aspect of industry, will continue to provide learning experiences with the tools, machines, and materials of the mechanized age. In addition, industrial arts can expand its role in career education, be more cognizant of its responsibility to up-grade low quality programs, and recognize that a quality industrial arts program has significant vocational education implications for many students. Indeed be aware that a good industrial arts program is vital to a successful vocational program--particularly so to the cooperative work-study programs which have proven to be among the more successful occupational education programs (8, pp. 9, 11).
The occupational emphasis in industrial arts will vary with the level of the program. In the elementary school industrial occupations are studied to reveal how people earn livings. In the secondary school study and activity are occupationally oriented and directed to the search and discovery of talents.

The "father" of career education and former United States Commissioner of Education, Sidney P. Marland compares the relationship of the goals of industrial arts and career education as follows:

Orientation to the World of Work
Industrial Arts--To develop insights and understandings of industry and technology in society. To identify and compare occupations and careers related to the course content.
Career Education--To make all education subject matter more meaningful and relevant to the individual through restructuring and focusing it around a career development theme.

Occupational and Educational Guidance
Industrial Arts--To identify interests and develop capabilities in technical and industrial fields related to the course. To select more realistic, yet tentative educational goals and occupational choices.
Career Education--To provide all persons the guidance, counseling, and instruction needed to develop their self-awareness and self-direction; to expand their occupational awareness and aspirations; and to develop appropriate attitudes about the personal and social significance of work. To provide services for placing every person in the next step in his development whether it be employment or further education.

Skill Development
Industrial Arts--To develop the ability to use the tools and materials in construction experiences and to solve practical problems.
Career Education--To assure the opportunity for all persons to gain an entry-level marketable skill prior to their leaving school.
Technical Industrial Knowledge
Industrial Arts--To exhibit a knowledge of technical and industrial information and principles.
Career Education--To prepare all persons completing secondary school with the knowledge and skills necessary to pursue further education or to become employed (5, p. 1, 2).

Marland also points out the career clusters directly related to industrial arts. These clusters are "manufacturing, transportation, construction, and communications occupations" (5, p. 2).

According to Marland, industrial arts is the study of industry and man's technological development, which includes all elements of industry such as "occupations, materials, energy and power, processes, management, marketing, personnel, communication, services, finance, and research and development" (5, p. 2).

The role of industrial arts in career education was also summarized by Robert M. Worthington, Associate United States Commissioner for Adult, Vocational, and Technical Education in the following statement:

Industrial arts, as part of the total program of career education from kindergarten through higher education, provides unique opportunities for students to participate in representative experiences in industrial occupations. In addition, industrial arts education, coupled with guidance and counseling, offers excellent opportunities for students to engage in meaningful activities that will assist them in choosing and planning a career (10, p. 3).

Maley believes industrial arts cannot be the panacea for a total program of career orientation which is the
responsibility of all school subjects. However, industrial arts should be a comprehensive involvement in a broad study of industries for increasing the student's awareness of opportunities, conditions, contributions, and requirements associated with the world of work (4, p. 213).

Industrial arts teachers are members of a guidance team which includes counselors, administrators, and teachers in all subject areas. Each member has the responsibility to assist each student in search of knowledge and information required for a realistic career selection. However, the industrial arts teacher is sometimes in a better position to offer current occupational information concerning industrial and technical occupations than teachers in academic subjects because of personal experiences, education, and training. "Hopefully, within the framework of industrial arts, students will be able to select from occupational clusters of communications media, construction, manufacturing, and transportation" (3, pp. 206-207).
CHAPTER BIBLIOGRAPHY


CHAPTER V

SUMMARY, FINDINGS, AND CONCLUSIONS

Summary

This study of industrial arts and career education consists of five chapters and a bibliography. The purposes of the study were to analyze the research relevant to industrial arts and career education and to develop the role of industrial arts in career education. The differences and similarities of industrial arts and career education were determined on the basis of terminology, historical development of industrial arts and career education, philosophies upon which each curriculum is based, objectives and goals sought by each curriculum, and legislation affecting industrial arts and career education.

Data for the study were obtained from books, magazines, literature obtained from various education agencies, government data, and material from the Dallas Independent School District.

Chapter I is an introductory chapter and includes the statement of the problem, purpose of the study, limitation of the study, sources of data, background and significance of the study, recent and related studies, organization of the study, definition of terms, and a chapter bibliography.
A short history of industrial arts, and a brief description of career education and the importance of each was used as the introduction. The definition of terms includes those most often used in the study of industrial arts and career education, and terms associated with other closely related educational fields.

Chapter II provides a more detailed history on the growth and development of industrial arts from beginning to present. The effects of the Swiss and Russian systems, and the Scandinavian sloyd system of training upon the philosophy and objectives of industrial arts were discussed.

The history of industrial arts in the United States, the philosophy, goals and objectives, and legislation affecting industrial arts to the present day were also discussed. Also discussed was the impact of mass production and its effect upon the change in industrial arts curriculum.

Chapter III presents a study of career education from conception to recent congressional legislation. The philosophy, goals and objectives, concepts of career education, and the various programs in the elementary, middle, and high schools were also discussed.

The role of industrial arts in career education is presented in Chapter IV. A comparison between industrial arts and career education and how they relate to each other and the world of work were discussed.
Findings

Analysis of the data obtained in this study revealed the following:

1. In order for students to make meaningful career decisions, they will need information about the world of work, an understanding of themselves, and assistance from parents, teachers, administrators, and counselors.

2. Terminology was a major problem for early industrial arts programs.

3. Industrial arts began as a concept of work as part of general education.

4. Industrial arts has become increasingly technical in nature, with attention given to the machine processing of materials.

5. Industrial arts helps students develop human relations, self-concept, values, attitudes, and confidence.

6. Industrial arts helps individuals to adapt to our industrial society and to become better consumers of industrial goods, and to appreciate quality workmanship.

7. Industrial arts is the number one subject among males in high school subject matter.

8. One-third of the total work force is in industry.

9. Prior to 1973, industrial arts was primarily recognized as part of general education.
10. Industrial arts curriculum is designed to meet the individual's needs and to offer students the opportunity to decide on a career related to industry.

11. The industrial arts curriculum was expanded to include transportation, construction, graphic communication, and American industry; after federal legislation which included industrial arts in vocational education.


13. Career education is the preparation for work and involves more than training for job skills.

14. Career education is an occupationally oriented curriculum and instructional program.

15. Career education starts at kindergarten and extends throughout the individual's life and is concerned with helping individuals implement their own personal work values.

16. The United States Office of Education has established fifteen career clusters to be investigated by students, and knowledge should be built upon the awareness of the world of work.

17. Career education in the elementary school should emphasize an awareness of the world of work.

18. Career education in the middle school should be an occupational investigation of the world of work.
19. Career education in the high school and post high school should be occupational training and career preparation.

20. Career education has eight key elements which are career awareness, self-awareness, appreciation and attitude, decision-making skills, economic awareness, skill awareness, employability traits, and educational awareness.

21. Career education aids the students in understanding the world of work outside the classroom and how that world relates to what is being taught in the classroom.

22. Industrial arts can help students explore areas of work, types of employment, working conditions, and other aspects of employment in order to plan their education in line with personal ambitions and qualifications.

23. Career education clusters which are directly related to industrial arts are as follows: communications media, construction, manufacturing, and transportation.

Conclusions

With the findings of this study as a basis, the following conclusions are drawn:

1. Career education is much more extensive than industrial arts. Industrial arts cannot assume full responsibility for a comprehensive program of career education; however, industrial arts can be involved in activities which will help
the student select a meaningful occupation related to industry.

2. Industrial arts teachers are members of the guidance team which includes counselors, administrators, and teachers in other subject areas.

3. Career education must start with the individual receiving the best opportunity to understand himself in terms of his aptitude, capabilities, interests, mental and physical characteristics, as well as the other personal factors which relate to the individual's success and well-being. The educational system has a unique role to play in this process by providing the environment and programs which make these realizations possible.

4. Industrial arts, with its range of meaningful human involvement, is a natural setting for making a rich contribution to career education in the area of self-exploration.

Recommendations

In view of the findings and conclusions of this study, recommendations are made as follows:

1. Industrial arts teachers become acquainted with possible openings, required entry level skills, salaries, benefits, educational requirements, opportunities for advancement, and application procedures, and include this information in the industrial arts curriculum to aid the student in selection of a career related to industry.
2. Industrial arts teachers become familiar with the local and regional plants or companies which are potential employers in the fields related to the industrial technologies, and become acquainted with the personnel directors, plant managers, supervisors, and various employees. This information will aid the industrial arts teacher in advising his students on possible job openings and positions in industrial technologies.
BIBLIOGRAPHY

Books


**Articles**


Reports


Ohio State Board of Education, *Ohio's Career Continuum Program*, Columbus, Ohio, The Ohio State University, 1972.


Publications of Learned Organizations


Public Documents


Unpublished Materials


Newspapers