A STUDY TO DETERMINE THE NATURE AND SCOPE OF INDUSTRIAL ARTS ACTIVITIES IN THE ELEMENTARY SCHOOLS OF WEST TEXAS

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A STUDY TO DETERMINE THE NATURE AND SCOPE OF INDUSTRIAL ARTS ACTIVITIES IN THE ELEMENTARY SCHOOLS OF WEST TEXAS

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CHAPTER I

INTRODUCTION TO THE STUDY

Many past as well as present educators, such as Herbart,[1] Scobey,[2] and others, have recognized the importance of integrating the study of all the elements of society in the curriculum of schools. One element that possibly affects modern man most of all is the rapidly developing scientific-technical culture. To be able to adjust and live successfully in the modern world, a child must have a broad first-hand understanding of the materials of industry along with all of its ramifications.

It is hoped that this study will provide information and ideas for teachers in their formidable and challenging task of helping youngsters to understand more about the world as it is and how they may live better and more contentedly in a technological society.

Statement of the Problem

This was a study to ascertain the nature and scope of industrial arts activities in the elementary schools of West Texas.

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[1]John Frederick Herbart, cited in Arthur F. Payne, Methods of Teaching Industrial Subjects (New York, 1926), p. 8.

[2]Mary-Margaret Scobey, Teaching Children About Technology (Bloomington, 1968), p. 1.

Purpose of the Study

The purposes of the study were as follows:

1. To ascertain the nature and scope of current industrial arts activities in the elementary schools of West Texas.

2. To determine how the elementary classroom teachers and principals of West Texas value the inclusion of industrial arts activities in their respective schools.

3. To study the curriculum guide and printed materials from one outstanding elementary school system in the United States recognized for its utilization of industrial arts type activities at the elementary level.

4. To ascertain what industrial arts areas and activities the elementary teachers use to enrich and supplement the curriculums of the elementary schools of West Texas.

Limitations

The limitations of the study were as follows:

1. The study was limited to information and data obtained from questionnaires completed by elementary classroom teachers and principals of schools located in the West Texas area, Figure 1, page 3.

2. The study was further limited to information and data relating to industrial arts activities at the elementary level obtained from one outstanding school system

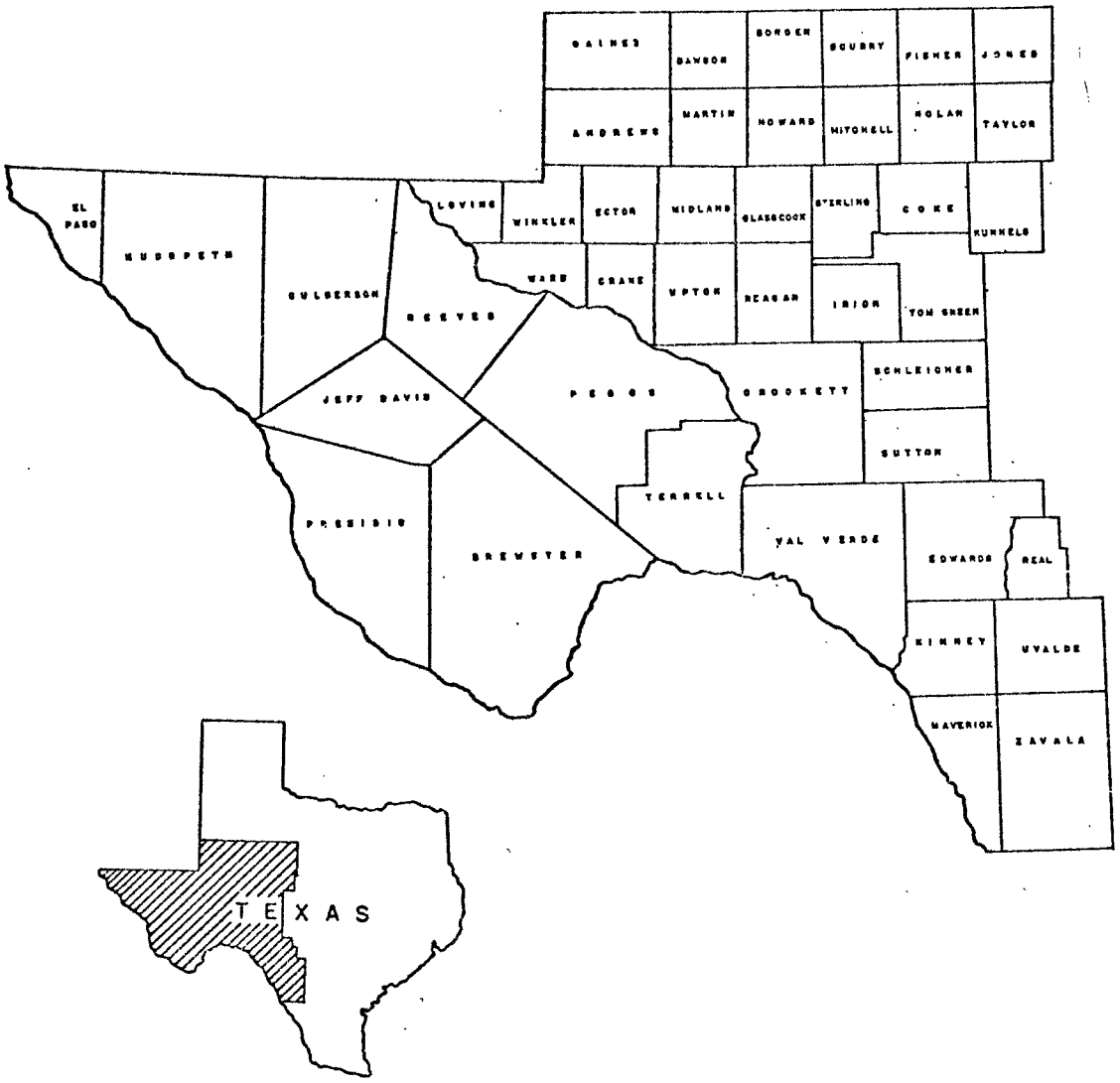

Fig. 1--West Texas Area

in the United States, which included industrial arts on the elementary level.

3. The study was also limited in that data and information were requested only from elementary classroom teachers with two or more years of teaching experience.

Sources of Data

The information and data for the study were obtained in the following manner:

1. A part of the information and data was obtained from questionnaires completed by the elementary classroom teachers, Appendix B, and principals, Appendix C, in the West Texas area, Figure 1, page 3, concerning industrial arts activities in their schools.

2. Some information was secured from printed materials and curriculum information developed by one outstanding school system in the United States selected by a representative of the American Industrial Arts Association as a school that included industrial arts type activities at the elementary level.[3]

3. Professional publications and literature in the field of industrial arts and elementary education were studied for information concerning industrial arts at the elementary level.

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[3]Letter from Edward Kabakjian, Executive Secretary, American Industrial Arts Association, January 6, 1970.

Procedures of the Study

In collecting data and information for the study, a letter explaining the purpose of the survey, Appendix A, was prepared and sent to one hundred elementary school principals of the West Texas area, Figure 1, page 3, inquiring whether or not they would participate in the survey. The elementary schools were selected by a random sampling of all 367 elementary schools located in the West Texas area. A self-addressed card was enclosed to record a "yes" or "no" response and included a space for the name of an elementary classroom teacher who would participate. Sixty-nine principals responded to the letter. Of these, thirty-one, or 44.9 per cent, indicated that they and one teacher in the school would participate in the study. There was no follow-up request sent to principals who did not respond. Questionnaires were prepared and sent to both the principal and one classroom teacher in each participating school. All thirty-one principals completed and returned the questionnaires, and twenty-four of the thirty-one elementary teachers completed and returned their questionnaires.

The questionnaire for the elementary principals was designed to secure their opinions in regard to the value of industrial arts activities in their school programs. The questionnaire further sought to determine the extent and method of including industrial arts in the school curriculum.

The questionnaire prepared for the elementary classroom teachers was designed to obtain information and data concerning the nature and scope of industrial arts activities in their respective instructional programs. It also sought their opinions and recommendations regarding other desirable industrial arts subject-matter areas and activities which could be used to enrich their present programs. These questionnaires furnished the bulk of the data and information from which conclusions and recommendations were drawn.

Definitions of Terms

For the purpose of the study, the following terms have been defined:

1. Elementary school--a public school which includes grades one through six.

2. Elementary school curriculum--Scobey defines the elementary curriculum as "the vehicle devised to translate the purposes of the elementary school into activity."[4]

3. Elementary classroom teacher--a teacher employed by a public school system to teach elementary subject-matter areas with the possible exception of special areas such as music and art.

4. Elementary principal--the highest ranked administrative official in an elementary school.

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[4]Scobey, Teaching Children About Technology, p. 16.

5. Industrial arts activities--those activities related to subject-matter information and handiwork which involves some of the tools, materials, processes, and products of industry and their effect and influence on the home and community life of the child.

Organization of the Study

Chapter I of the study presents the statement of the problem, purpose of the study, limitations of the study, sources of data, procedures for collecting the data, definition of terms, organization of the study, background and significance of the study and related studies.

A study of the development of industrial arts is presented in Chapter II. Special emphasis is placed on the philosophy of some educators from early to modern times concerning industrial arts type activities in elementary education.

Information and data obtained from one outstanding elementary school of the United States were studied and are treated in Chapter III.

Chapter IV presents the information and data secured from questionnaires sent to elementary classroom teachers and principals of the West Texas area.

The summary, findings, conclusions, recommendations, and further related studies are presented in Chapter V.

Background and Significance of the Study

Industrialism is one of the most predominant characteristics of the present society.[5] To better understand this aspect of culture and to be able to adjust and live in this rapidly changing society, it is essential that youths have experiences relating to industry and opportunities therein.

In the study of the history of man, it can be seen that the roots of industrial education are buried deep in historical antiquity. According to Payne, the ancient Jews were among the first to realize the social value of manual training.[6] The ancient Talmud, the book of traditional laws of the Jews, clearly points out the motive for providing some form of manual training for their sons. In the Talmud it is stated: "He who does not teach his son a trade prepares him to be a robber. As it is your duty to teach your son the law, teach him also a trade."[7]

Comenius, the most famous educational writer of the seventeenth century, when writing on the education of children from six to twelve years old recognized the need for training in the mechanical arts. He said, "They should

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[5]American Vocational Association, A Guide to Improving Instructions in Industrial Arts (Washington, 1968), p. 9.

[6]Arthur F. Payne, Methods of Teaching Industrial Subjects (New York, 1926), p. 4.

[7]Talmud, cited in Arthur F. Payne, Methods of Teaching Industrial Subjects (New York, 1926), p. 4.

learn the most important principles of the mechanical arts, both that they may not be too ignorant of what goes on in the world around them, and that any special inclination toward things of this kind may assert itself with greater ease later on."[8]

Basebow believed that "education is acquired through the physical and motor activities, as well as mental activity."[9] He also believed that this could best be accomplished through "learning by experience, with real materials in real situations to satisfy a real need."[10]

Herbart, one of the greatest contributors to methods of teaching, introduced one of the basic principles of teaching industrial arts activities. He wrote the following:

> The materials of instructions if they are really and vitally necessary to produce the development of the child's mind and nature, must be selected from life as it now is, and as it affects the child, and comes within his experience.[11]

Bonser and Mossman revealed their intense interest in industrial arts type activities in their co-authored book

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[8]John Amos Comenius, cited in Charles A. Bennett, History of Manual and Industrial Education (Illinois, 1926), p. 38.

[9]John Bernard Basebow, cited in Arthur F. Payne, Methods of Teaching Industrial Subjects (New York, 1926), p. 7.

[10]Ibid.

[11]John Frederick Herbart, cited in Arthur F. Payne, Methods of Teaching Industrial Subjects (New York, 1926), p. 9.

entitled Industrial Arts for Elementary Schools. Their research and writings influenced early American educators' thinking in the importance of the role of industrial education in elementary school activities. They believed that "no other phase of school work has such great possibilities for bringing about this unity of schools and life experiences as the industrial arts when taught with proper regard to the broad relationships of its problems and its contents."[12]

Wilber realized the problem of educating boys and girls in an industrial and technical society. He made the following statement in his book entitled Industrial Arts in General Education:

> Children and adults are now living in a civilization that has surrounded itself with mechanical devices which must be understood and used. At the same time, industry through increasing centralization has been removed from the everyday experience of the average individual. This complexity makes difficult a comprehension of the organization, products, processes and occupations in industry. Hence, it becomes a function of the schools to give every student an appreciation and understanding of our industrial civilization as a vital segment of American life.[13]

Although Wilber's book was not primarily concerned with elementary education, his philosophy added weight to the concept

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[12]Frederick G. Bonser and Lois Coffey Mossman, Industrial Arts for Elementary Schools (New York, 1928), p. 75.

[13]Gordon O. Wilber, Industrial Arts in General Education (Scranton, 1948), p. 1.

of enriching the elementary curriculum with industrial arts activities.

The foregoing philosophy of some educators from ancient to modern times is indicative of the attention that has been directed toward the development and education of the whole child. Their devoted interest has been primarily to prepare the child to understand and live intelligently in the world around him. Scobey, in her book entitled Teaching Children About Technology, sums up the thinking of many educators regarding modern challenges in education and the significance of industrial arts type activities in the general education of youth. She stated:

> In all relationships of people and things children are intimately involved, either as immature individuals moving through day-to-day activities or as potential leaders of the future. Providing the kind of education that will help children cope with the social, economic, and political aspects of modern inventions is one of the greatest challenges to modern education.[14]

This study, if found to be of value, should provide information to assist elementary classroom teachers and principals in providing more effective learning experiences for students. It should also provide means of enriching and integrating the elementary curriculum with worthwhile industrial arts type activities.

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[14]Scobey, Teaching Children About Technology, p. 2.

Related Studies

It appears that no recent studies have been made concerning industrial arts activities in the elementary schools of the West Texas area; however, a number of related studies have been made in other parts of Texas and other states. Related studies are as follows:

Leeth conducted a study in 1958 entitled "A Study to Determine the Need for Enriching the Elementary Curriculum in the Fort Worth Public Schools." Leeth studied the curriculums of elementary schools of the Fort Worth Independent School District, printed materials prepared by other schools of Texas and other states, and conducted a survey of elementary classroom teachers and principals to determine their opinions toward including industrial arts activities in the elementary curriculum. The findings indicated that industrial arts activities are of value and a tentative curriculum guide should be developed for industrial arts activities on the elementary level in the Fort Worth Public Schools.[15]

In 1952 Thompson completed a study entitled "Classroom Teachers' Viewpoints of Elementary Industrial Arts." He surveyed elementary teachers in Bloomington, Illinois, and

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[15]James C. Leeth, "A Study to Determine the Need for Industrial Arts Activities for Enriching the Elementary Curriculum in the Fort Worth Public Schools," unpublished master's thesis, Department of Industrial Arts, North Texas State University, Denton, Texas, 1958.

other selected schools. The study revealed a series of findings, which include the following:

1. Industrial arts activities should be practical and meet the needs of children in creative thinking and in the development of skills.
2. The usual classroom is not adequate for teaching industrial arts. A special equipped room is needed.
3. The scope of activities now used in classrooms is broad and incorporates a variety of media.

Thompson further concluded that industrial arts enrichment activities could be correlated with many academic areas.[16]

Gunther completed an experimental study in 1931 entitled "Manipulative Participation in the Study of Elementary Industrial Arts." Gunther's experiment involved equated groups of elementary students who were taught industrial arts by the conventional textbook-lecture method and by the activity-oriented method. The study revealed that the groups taught by the activity method learned faster and with a higher rate of materials learned than those taught by the conventional method.[17]

Pershern conducted a study in 1967 entitled "The Effect of Industrial Arts Activities on Science Achievement and

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[16]Frank W. Thompson, "Classroom Teachers' Viewpoints of Elementary Industrial Arts," unpublished master's thesis, Illinois State Normal University, Normal, Illinois, 1952.

[17]Theresa Charlotte Gunther, "Manipulative Participation in the Study of Elementary Industrial Arts," unpublished doctoral dissertation, Department of Philosophy, Columbia University, New York, 1931.

Attitudes in the Upper Elementary Grades." In this study two science units, electricity and machines, were taught to "intact" classes in the fourth, fifth, and sixth grades by two methods--traditional and experimental (supplemented by industrial arts activities). His findings indicated that significantly greater achievement was produced by the experimental method in two units for two of the three grades. There was no significant attainment in the remaining comparisons. Students and teachers favored the experimental method.[18]

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[18]Frank R. Pershern, "The Effect of Industrial Arts Activities on Science Achievement and Attitudes in the Upper Elementary Grades," unpublished doctoral dissertation, Texas Agricultural and Mechanical University, College Station, Texas, 1967.

CHAPTER II

THE DEVELOPMENT OF INDUSTRIAL ARTS IN THE UNITED STATES

In a review of the history of the United States, it is readily apparent that world affairs and social-economic changes are inseparable from technical and industrial development. With the beginning of the American Industrial Revolution in the nineteenth century, major changes began taking place in western societies. Within a few decades, the United States changed from a predominantly agrarian society to an industrial nation.[1] From Eli Whitney's first mass production of the musket parts to the technological wonder of landing a man on the moon required only a short span of some 170 years.

As a result of these rapid and astounding advances in technology, a new way of life has emerged. From the leisure days of the horse and buggy, when thirty miles or less was considered a good twelve-hour journey, it is now routine to drive that distance in an automobile in thirty minutes or less. It is also possible to board a comfortable jet

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[1]Harold W. Faulkner, American Political and Social History (New York, 1952), p. 53.

airliner and fly halfway around the world in twelve hours. Up to the middle of the nineteenth century, several weeks or months were required to communicate from one coast of the United States to the other. In contrast, it is now possible to dial a few numbers on a telephone and in a few seconds talk to a person next door, across the country, or around the world.

With rapid and revolutionary changes extending into every facet of society, educators have been constantly challenged to stay abreast of industry and provide an education suitable to meet the needs of youth. Beginning in the early part of the nineteenth century, many educators realized the need for industrial education in the schools. Among those contributing to the growth of this concept were Froebel, Herbart, Salomon, and Ziller.[2] Their contributions in written works and teachings focused attention to the necessity of including industrial education in the school curriculums.

The American industry, from its beginning, has had an insatiable need for "educated labor."[3] The early apprentice programs provided a substantial number of workers, but fell short of meeting the needs of industry. With the decline of

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[2]Melvin L. Barlow, History of Industrial Education in the United States (Peoria, 1967), p. 25.

[3]Ibid., p. 33.

the apprentice system, industrialists and educators recognized that industrial education for the masses was a national necessity.[4] In 1879 Calvin Woodward took up the challenge and backed by prominent industrialists and educators established the St. Louis Manual Training School of Washington University. This was the first practical approach to the idea of manual training for secondary schools.[5] Woodward's philosophy of the new venture was expressed on a plaque over the entrance to the building.

> Hail to the skillful cunning hand!
> Hail to the cultured mind!
> Contending for the world's command,
> Here let them be combined.

He explained manual training as follows:

> The object of the introduction of manual training is not to make mechanics. I have said that many times, and I find continued need of repeating the statement. We teach banking, not because we expect our pupils to become bankers; and we teach drawing, not because we expect to train architects or artists or engineers; and we teach the use of tools, the properties of materials, and the methods of the art, not because we expect our boys to become artisans. We teach them the United States Constitution and some of the Acts of Congress not because we expect them all to become congressman. But we do expect that our boys will at least have something to do with bankers, and architects, and artists, and engineers, and artisans; and we expect all to become good citizens. Our great object is educational: other objects are secondary. That industrial results will surely follow, I have not the least doubt; but they will take care of themselves. . . . Every object

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[4]Roy W. Roberts, Vocational and Practical Arts Education (New York, 1965), p. 56.

[5]Barlow, History of Industrial Education, p. 36.

> of attention put into the schoolroom should be put there for two reasons--one education, the other economic. Training, culture, skills come first; knowledge about persons, things, places, customs, tools, methods comes second. It is only by securing both objects that the pupil gains the great prize, which is power to deal successfully with the men, things, and activities which surround him.[6]

Woodward's Manual Training School was popular in St. Louis, with students competing for admission. Graduates from the school proved to be successful in their occupations and were sought out by industry. When all of the results had been studied, it appeared that the school achieved its goals and helped to pave the way for the introduction of industrial type training in the public schools.[7]

Concurrent with Woodward's introduction of the new curriculum at Washington University, John D. Runkle, President of the Massachusetts Institute of Technology, was concerned with a curriculum for engineers. His records revealed that students who had prior practical experiences were usually more successful in their life's work than those who had entered directly from the common schools. After observing a Russian educational exhibit at the Centennial Exposition held in Philadelphia in 1876, he became interested in their system of providing work experiences in educational programs.

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[6]Calvin M. Woodward, cited in Delmar W. Olson, Industrial Arts and Technology (Englewood Cliffs, N. J., 1963), p. 3.

[7]Barlow, History of Industrial Education, p. 36.

In this system he saw the beginning of a method to incorporate the fundamentals of practical work with the technical program at Massachusetts Institute of Technology. Runkle believed an outstanding feature of the Russian plan was that "art was fundamental to it."[8]

Soon after Runkle returned from the Centennial Exposition, he submitted a recommendation to the Institute to construct a number of "instruction shops" in which practical mechanics could be taught to engineering students. These shops were approved in August, 1876. The three principal objectives of the new program were first, to provide engineers with shop work; second, as elective courses for professional students; and third, to provide a new school for grammar school graduates who wished to pursue an industrial career rather than scientific engineering. In speaking of the new venture, he said:

> . . . I believe that this discipline could be made a part of general education, just as we make the sciences available for the same end through laboratory instructions.[9]

As the manual training programs progressed in the high schools, many educators feared the academic standards of the schools would be impaired. Among outspoken critics of the

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[8]Ibid.

[9]Charles A. Bennett, History of Manual and Industrial Education, 1870 to 1917 (Peoria, Illinois, 1937), p. 321.

new innovations was E. E. White, President of Purdue University. Bennett quoted him as saying "the doctrine that the public schools should cover the whole domain of education saps the very foundation of the public school system, puts a magazine under it, and then lays a train out to fire it."[10]

Probably the most prominent opponent of manual training in the high schools was William T. Harris, Superintendent of Schools in St. Louis. After observing an exhibit of school work from the St. Louis Manual Training School and the School of Mechanical Arts of the Massachusetts Institute of Technology, Bennett quoted him as saying:

> All will rejoice that the matter of fitting for one's vocation in life is to become a matter of schooling rather than apprenticeship. Intelligent skill will supplant mere "knack." Valuable time will be saved for general studies. Educated workmen from manual-training schools will furnish overseers that can teach as well as boss their subordinates. It is not necessary, as some think, to introduce manual training in the common school. What we want is the manual-training school side by side with the high school as an independent institution for the preparation of youth for their vocation.[11]

Advocates for manual training in the high schools were just as strong in their beliefs. Felix Alder, in an address presented at the National Education Association annual convention in Madison, Wisconsin, had this to say:

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[10] Ibid., p. 360.

[11] Ibid., pp. 362-363.

> . . . The business of the public school is not to educate operatives, any more than it is to educate merchants, or clergymen, or physicians. The schools are designed to supply those elements of general culture which are necessary to all men and women alike. . . . I shall plead for it [industrial education] then, as now, simply because of its broadening, humanizing effect; because it quickens into activity certain facilities of human nature which too commonly lie dormant; because instead of the present one-sided development, it is a step further in the direction of that all-sided development which is the ideal in education.[12]

Three years later at the Chicago Convention of the National Education Association, a definite breakthrough was made in the argument for industrial education in the public schools. At this time Francis A. Walker, President of the Massachusetts Institute of Technology, presented a paper entitled "Manual Education in Urban Communities." In this paper he pointed out that "the city boy needs manual training to make up for the lack of certain experiences which the country boy enjoys. . . ."[13] He also recommended shopwork for boys in grammar school, for he said:

> One thing seems reasonably well established, namely, that carpentry and wood turning are the arts which most advantageously begin with grammar-grade

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[12]Charles A. Bennett, History of Manual and Industrial Education, 1870 to 1917 (Peoria, 1937), p. 364, citing Felix Alder, The Journal of Proceedings and Addresses of the National Education Association, Madison, Wisconsin, 1884.

[13]Bennett, History of Manual and Industrial Education, pp. 367-368, citing Francis A. Walker, The Journal of Proceedings and Addresses of the National Education Association, Madison, Wisconsin, 1887.

> pupils. Work in these lines is sure to interest scholars and parents.[14]

Following this turning point, other educators acclaimed the manual training concept. Among the most notable advocates were Nicholas M. Butler,[15] President of the New York College for Training Teachers, and James MacAlister,[16] Superintendent of the public Philadelphia Manual Training School.

By the close of the nineteenth century it was evident that the value of industrial training in the public schools had won a prominent place in the regular school curriculum. Controversy still exists today, primarily involving methods of instructions and what should be included in the curriculum.

According to Bennett, industrial subjects on the elementary level were first introduced in Boston during the early part of 1870. This was accomplished as a result of religious and social workers insisting that some practical instructions be given in the public schools. With the help of other interested persons, an experimental school for boys was founded which eventually pointed the way toward the establishment of manual training at the elementary level.[17]

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[14]Bennett, History of Manual and Industrial Education, 1870 to 1917, p. 368.

[15]Ibid., p. 369.

[16]Ibid., p. 375.

[17]Ibid., p. 402.

Closely following the Boston experiment, Robert Swan, Headmaster of the Winthrop School in Boston, pressed the General Court of Massachusetts to legalize sewing and other industrial subjects. Under this law, towns and cities could establish and maintain industrial schools under the direction of their school committee. The act permitting the establishment of these schools specified certain regulations which encouraged locating the schools in or near the public schools. The act included the following regulations:

> . . . that nothing in this act contained shall authorize the school committee of any city or town to compel any scholar to study any trade, art, or occupation without concent of the parent or guardian of such scholar, and attendance upon any such school shall not take the place of the attendance upon public school required by law.[18]

With this modest beginning, farsighted educators began to see the real values in manual training in the public schools.

In 1902 the distinguished educator John Dewey published a book entitled The Child and the Curriculum and the School and Society. In this book Dewey expressed his views on real life learning activities. He stated:

> No number of object-lessons, got up as object-lessons for the sake of giving information, can afford even the shadow of a substitute for acquaintance with the plants and animals of the farm and garden acquired through actual living among them and caring for them. No sense-organs in school, introduced for the sake of training, can begin to compete with the alertness and fulness of sense-life that comes through daily intimacy

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[18] Ibid., pp. 402-403.

> and interest in familiar occupations. . . . When the school introduces and trains each child of society into membership within such a little community, saturating him with the spirit of service, and providing him with the instruments of effective self-direction, we shall have the deepest and best guaranty of a larger society which is worthy, lovely, and harmonious.[19]

It appears that Dewey was giving impetus to the growing awareness among educators that the old methods of education were obsolete and newer methods of educating the child must be initiated to keep pace with the changing social structure. On manual education in the primary grades Bennett quotes Dewey as saying:

> The problem of the elementary school today is, I conceive, to make the life of the school more real; more an epitome of the kind of thinking, feeling, and doing that obtains in real life; more a reflection of the real life outside the school walls. . . .[20]

Since the beginning of the twentieth century, the term "industrial arts" has been used to designate industrial type training in both elementary and secondary public schools. To clarify the meaning of the term for future reference, it is important that the origin and meaning be identified. Throughout the nineteenth century, terms such as "manual training," "manual arts," and "industrial education" were sometimes used interchangeably to describe industrial type training in the public schools. This led to some confusion

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[19]John Dewey, The Child and the Curriculum and the School and Society (Chicago, 1902), pp. 11, 29.

[20]Bennett, History of Manual and Industrial Education, p. 452.

among laymen as well as among educators. It was not until early in the twentieth century that Charles R. Richards, in an editorial published in the Manual Training Magazine, suggested that the term "industrial arts" be substituted for the term "manual arts." He expressed his view in the following manner:

> We are rapidly leaving behind the purely disciplinary thought of manual training. . . . Now we are beginning to see the scope of this work is nothing short of the industries fundamental to modern civilization.[21]

Expanding the concept of the term "industrial arts," Charles A. Bennett, in his book entitled History of Manual Arts and Industrial Education, stated the following:

> While the term "industrial arts" was first used to designate work that developed as a reaction against the formalized courses inherited from Froebel, the term has become so popular in the United States of America that it is coming to include all instruction in handicrafts for general education purposes, whether formalized or not. Its meaning is essentially the same as the term "manual arts" though its connotations are different. In the term industrial arts, the "industrial" is emphasized; while, in manual arts, the "arts" is historically the distinctive word and, in the term manual training, "manual" is the important word.[22]

It was not until after World War I, however, that a full definition of the term "industrial arts" and its meaning were forthcoming. Bonser and Mossman in their book,

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[21]Ibid., p. 453, citing Charles R. Richards, Manual Training Magazine.

[22]Bennett, History of Manual and Industrial Education, p. 455.

Industrial Arts for Elementary Schools, defined industrial arts in this manner: "The industrial arts are those occupations by which changes are made in the forms of materials to increase their value for human usage." They further explained industrial arts for educational purposes as "a study of the changes made by man in the form of materials to increase their values, and of the problems of life related to these changes."[23] The basic thinking behind these objectives has withstood the test of time. The objectives are still used and emulated with many variations by modern writers and educators.

Advancing their philosophy and belief in the value of industrial arts at the elementary level, Bonser and Mossman said, "The elementary school devotes its efforts to those elements of study which are of common value to all persons without consideration of sex or future occupation."[24] They also stated the following:

> All must know how to read, write, and use the general processes of numbers; all need to know the more permanently important facts and meaning of geography, history, literature, and science as they enter into the daily life and intercourse. Is there not also a body of experience and knowledge relative to the industrial arts which is of common value to all, regardless of sex or occupation? If so, this should properly make up the content of the industrial arts as a study for the

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[23]Frederick G. Bonser and Lois C. Mossman, Industrial Arts for Elementary Schools (New York, 1928), p. 5.

[24]Ibid., p. 20.

> elementary school to that degree in which elementary school children have the capacity for it.[25]

Bonser and Mossman, through their early efforts, influenced the thinking of educators in regard to the importance of industrial arts activities at the elementary school level. Through their efforts industrial arts in the elementary schools gained meaning and purpose.

In more recent years, Louis V. Newkirk, in his publications and teaching, has bridged the gap between the old and the new. It may be said that he constructed his philosophy and ideas on the foundation laid by Bonser and Mossman and added building blocks of new ideas and techniques. In his book entitled Integrated Handwork for Elementary Schools, industrial arts is defined as a separate and distinct subject-matter area; whereas industrial arts activities at the elementary school level are thought of as handiwork "integrated" with all the common subject-matter areas.[26]

Gordon O. Wilber, in his book Industrial Arts in General Education, defined industrial arts as "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 technical

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[25]Ibid., pp. 20-21.

[26]Louis V. Newkirk, Integrated Handwork for Elementary Schools (Boston, 1940).

nature of society."[27] Wilber's work does not indicate an interest for any one particular grade level or as a special subject but as an integrated part of general education. He pointed out that the various interpretations and definitions of general education, when reduced to basic meaning, reveal three purposes: "(1) to transmit a way of life, (2) to improve and reconstruct a way of life, and (3) to meet the needs of individuals."[28] Wilber's work clearly adds emphasis to the feeling among educators that the industrial arts can be an important contributor to the education of the whole individual.

Emanual E. Ericson, an eminent educator, writer, and authority on industrial teacher education, was a staunch advocate of industrial arts activities in all levels of school life. In his book entitled Teaching the Industrial Arts, he emphasizes goals according to age level. In speaking of current elementary school trends, Ericson stated:

> In elementary schools, including the first six grades, little or no formal work is now carried on in separate industrial-arts classes. Here the manipulative work is done in close coordination and integration with the total school program of the school.[29]

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[27]Gordon O. Wilber, Industrial Arts in General Education (Scranton, Pennsylvania, 1948), p. 2.

[28]Ibid., p. 3.

[29]Emanual E. Ericson, Teaching the Industrial Arts (Peoria, Illinois, 1956), p. 282.

A growing number of educators are studying and experimenting with ways and means of interpreting, redefining, and clarifying the new concepts of industrial arts as it relates to the child in a fluid and changing culture. During an EPDA Institute for Elementary School Industrial Arts (K-6) held on the campus of North Western State College at Natchitoches, Louisiana, in 1969, Mary-Margaret Scobey made a presentation entitled "A Clarification of the Emerging Concept of Industrial Arts." She stated:

> Industrial arts is the field of study, or body of knowledge, skills, attitude and activities related to man's way of changing raw materials for increasingly sophisticated needs of daily life. It seeks interpretation of technical products and their influence upon society.[30]

She went on to say that "in the elementary school, industrial arts is a phase of general education providing opportunities for children to observe, study, experiment and work with materials, tools, machines and processes through which man has adapted his physical environment to serve his needs."[31] This is in keeping with her philosophy and goals, as stated in her book Teaching Children About Technology, where she recommends that activities in the elementary curriculum should be aligned and ". . . closely integrated

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[30]Mary-Margaret Scobey, "A Clarification of the Emerging Concept of Industrial Arts," a paper presented at the EPDA Institute for Elementary School Industrial Arts, Summer, 1969, Northwestern State College, Natchitoches, Louisiana, p. 1.

[31]Ibid.

with all the principles of general education."[32] She recommends the following experiences to be included in the curriculum that will help students adjust successfully to an explosive and complex technological culture. Experiences should be provided that will

1. Augment understanding of industry and industrial processes through which man changes the resources of his natural environment to increase his well being.
2. Develop appreciation of the importance of industrial products and industrialization within modern and economic life.
3. Develop tastes and judgment of a potential consumer.
4. Build understanding of world sources and of basic materials that provide resources for modern living and the need to conserve them.
5. Help in the discovery of personal aptitudes and abilities that may have significance in determining life interests and occupationally related sensory perceptions.
6. Use tools, machines and materials to create useful articles or artifacts which are authentically designed and well made.
7. Develop understanding and appreciation of the place of the worker in industry and society.
8. Provide understanding of the influence that industrial processes have on the changes in social, political, and economic institutions within our society.[33]

Another approach to clarifying and changing the concepts of industrial arts in elementary education is through educative programs for elementary classroom teachers. E. Arthur Stunard made a presentation during the 1967 Summer Institute of Technology for Children. In his presentation

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[32]Mary-Margaret Scobey, Teaching Children About Technology (Bloomington, 1968), p. 24.

[33]Ibid.

entitled "Effecting Change Through the Elementary Classroom Teacher: Institute Phase," he emphasized the importance of the elementary classroom teacher's role in effecting change. He stated:

> If education for children is to have a bright outlook today, it must be through our elementary classroom teachers. The elementary classroom teacher must feel a need for curriculum change, and, in a final analysis, be one to initiate new learning techniques.[34]

He further stressed the need for pre-service and in-service training for elementary teachers to prepare them to assume the major responsibilities for implementing the new programs.

From the early formative days of manual training to the present, modern concept of industrial arts has required a tremendous amount of time, planning and dedication of many people. All are important. The progress that has been made is astounding, yet formidable tasks still lie ahead. The total picture of the development of industrial arts in the United States cannot be viewed in its entirety from the pages of a short research paper. It would require volumes of materials to give credit where credit is due. In this study only those persons who have pioneered new movements and those who linked the movements together have been

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[34]E. Arthur Stunard, "Effecting Change Through the Elementary Classroom Teacher: Institute Phase," a paper presented at the 1967 Summer Institute of Technology for Children sponsored by the Division of Vocational Education Trenton, New Jersey, 1967.

briefly discussed. Chapter III of this study will include new trends and movements in industrial arts at the elementary school level as well as personalities involved.

CHAPTER III

AN EMERGING NEW CONCEPT OF INDUSTRIAL ARTS AT THE ELEMENTARY SCHOOL LEVEL

Early educators believed that handiwork in the elementary schools, if properly utilized, could improve instruction by adding interest and excitement to an otherwise dull and lifeless learning process. Pestalozzi,[1] Froebel,[2] Dewey,[3] and other early educators believed that by including activities in the schools relevant to life itself youngsters would become more aware of the world around them and learn to adjust more readily to a changing social structure. Those educators who pioneered the early far-reaching innovations in education, though far ahead in anticipating the needs of their times, could not have guessed the eventual dimensions and urgency of the present need to explore new ways, new ideas and new bold approaches to educate an exploding population in this modern day highly sophisticated and technical society.

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[1]Melvin L. Barlow, History of Industrial Arts in the United States (Peoria, Illinois, 1967), p. 22, citing Herman Krusi, Pestalozzi: His Life, Work and Influence, p. 152.

[2]Friedrich Froebel, The Education of Man (New York, 1887).

[3]John Dewey, The Child and the Curriculum and the School and Society (Chicago, 1902), p. 35.

In searching for a modern school program exemplifying the spirit of those early pioneers in constructive innovative education, the aid of the executive staff of the American Industrial Arts Association was requested to locate such a school. In response, the Everett A. McDonald, Jr., Comprehensive Elementary School, located at Warminster, Pennsylvania, was recommended as having been designed and constructed to offer an exemplary experimental program at the elementary level, grades kindergarten through six.[4] This chapter is primarily concerned with the McDonald School's new "on-looking" innovative ideas and the relationship and responsibility of industrial arts activities in achieving the objectives of the program.

The educational philosophy of the Centennial Schools of the consolidated townships of Warminster, Southampton, and Ivyland Burrow is inseparable from that of the Superintendent of Schools, Everett A. McDonald.[5] From the date he was invited to join the new system in 1954 to the present, the direction he has given the Centennial Schools has been his ". . . over-riding concern that every child receive the best education possible." During the dedication ceremony of

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[4]Letter from Edward Kabakjian, Executive Secretary, American Industrial Arts Association, January 6, 1970.

[5]Everett A. McDonald, Jr., Comprehensive Elementary School, brochure presented at Dedication Ceremony, Warminster, Pennsylvania, April 16, 1969, [unnumbered pages].

the McDonald Elementary School in May, 1968, it was noted that "the remarkable facilities in this new building for handicapped children reflect his [McDonald's] conviction that local schools have an obligation to serve all of their children--not just those who are 'convenient' to educate."[6] Under the able guidance of McDonald, the Centennial Schools have kept pace with a ballooning enrollment of 1700 students in 1950 to 12,000 students in 1969.

In keeping with McDonald's philosophy, the McDonald Elementary School, constructed with the aid of grants under Title III of the Elementary and Secondary Education Act of 1965, is designed for comprehensive learning. It contains facilities for children with a complete range of educational abilities.[7] Included in the curriculum are classes for mentally retarded, physically handicapped, gifted, language disabled, and other normal children in grades kindergarten through six. Three learning centers comprise the nuclei around which the program revolves. These include the library, the auditorium-gymnasium, and a specially constructed and equipped room where "sensory" experiences form the core of the curriculum. The total plan is to provide the "maximum movement of each pupil from one educational classification

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[6] Ibid.

[7] Progress Report No. 1, A Report on the Planning and Construction of the Everett A. McDonald Elementary School, Warminster, Pennsylvania, March, 1967, [unnumbered pages].

to another--depending on the pupil's ability, interest, need, aptitude and his own educational growth and development."[8]

In addition to the three learning centers, the building includes forty classrooms, the Industrial Arts Center, the Instructional Materials Center, and a special Curriculum Project Center. Another unique feature of the school is the fifty by fifty foot swimming pool. The swimming program is included as a part of the regular school curriculum. The flexibility of scheduling and a wide variety of classroom activities make this facility ideal for exploring new methods of teaching. Figure 2, page 37, shows the floor plan of the school and illustrates the diversity of possible classroom activities.[9]

To understand the magnitude of this experimental project, it is important that a study of the curriculum be made. So that none of the essence and accuracy of the program be lost in paraphrasing and possible misinterpretation, the objectives of the McDonald Elementary School curriculum are presented here in their entirety. They are as follows:

A. To design a curriculum which will reflect the four areas of our curriculum model; namely: Information Content (Geography, History, Science, Mathematics, Spelling, Literature), Affective Content (Humanities, Expression, Creation, Responsibility, Self-actualization), Skills Content (Technical, Writing,

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[8] Ibid.

[9] Ibid.

Numbers, Language, Listening, Physical, Problem Solving, Perception, Memory), Recreation Content (Creativity, Reading, Theater, Television, Games, Discussion).

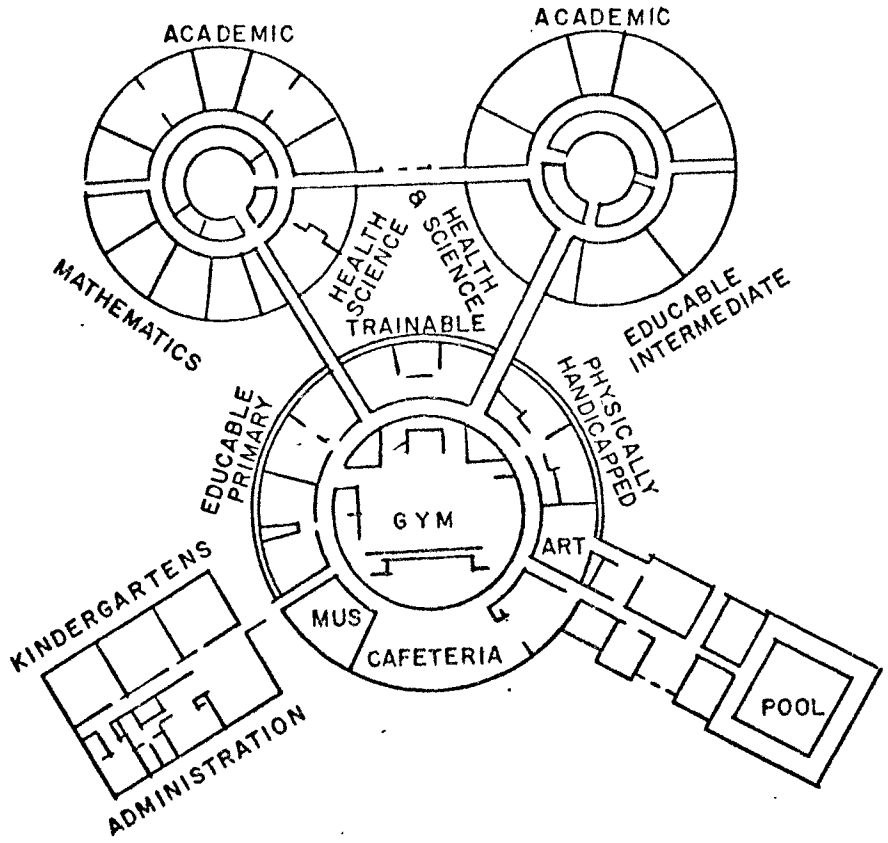

Fig. 2--Floor plan of the Everett A. McDonald Elementary School.

B. To compare the achievement of pupils involved in this curriculum to that of children exposed to the traditional curriculum.
C. To provide auditory and visual experiences in the "Special Experience" room and to study the effects of these experiences on the learning process and on the behavior of children.
D. To provide many of the same services and curriculum offerings to the parochial school, Nativity of our Lord, located in our district. These offerings

naturally would be adapted to their curriculum and many of the experiences would occur in their school in an environment which they are providing based on the ideas of the "Special Experience" room.

E. To provide many of the same services and curriculum offerings in the Smethport Area School District located in Smethport, Pennsylvania. Again these offerings would be adapted to their curriculum. Consultative service and in-service training would be provided as well as funds for the duplication and creation experiences. Money is provided in the budget to remodel a room in one of their schools in which to provide many of the experiences. Some of their staff would be brought to our Center to assist in developing programs, and learning how to implement the programs in their own schools.

F. To establish a close working relationship with the Bureau of Curriculum Development in Harrisburg--particularly with the curriculum as it relates to anthropology.

G. To bring cross-cultural materials into the elementary grades--particularly in classes made up of different ethnic groups and different economic classes.

H. To prepare curriculum materials in cultural anthropology that can be used by the teachers without extensive preparation i.e., graduate study in anthropology.

I. To study the implications of using anthropology as an integral sequence of concepts in the social studies program of elementary children.

J. To study the effect of conceptual learning on the part of students via a media approach to learning.

K. To establish this Center, school, and total curriculum as a model for the county, state, and country to exemplify a modern-day program based upon careful research, and meeting the needs of today's pupils in a technical society.

L. To disseminate significant findings to other schools, agencies, and interested parties.[10]

Relying heavily on suggestions from Mary-Margaret Scobey in the area of social studies, Alexander Calder in

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[10]Progress Report No. 2, A Report on the Everett A. McDonald Elementary School, Warminster, Pennsylvania, August, 1967, [unnumbered pages].

metal sculpture, Gerald Oster in science, Hans Haacke in plastics and liquids, Joseph Cox in color and light, and other science-engineer-artists, the industrial arts program provides experiences which involves pupils in the use of a wide variety of tools, materials, and industrial processes.[11] The philosophy of industrial arts at the McDonald Elementary School is as follows:

> "To provide a richness of experience" is the primary focus of Industrial Arts at the McDonald School. The Industrial Arts Center is considered a laboratory where students are given an opportunity to explore and experiment with the technological and aesthetic aspects of their experiences in the classroom. The connotation of the traditional concept of a materials-oriented "shop" (e.g.: Wood Shop, Metal Shop) falls short of describing an area in the school where individuals or groups of students can engage in three-dimensional problem-solving and creative expression. We view education as different than skill acquisition: it should be dedicated to skill using, ultimately interrelating the higher levels of the cognitive, affective, and psycho-motor domains. The process approach to education advocated by Jerome Bruner is quite relevant here; his point is that children should learn science by behaving like scientists, rather than by learning only about the accomplishments of scientists. This, of course, is applicable to all fields of study, and toward this end the Industrial Arts Laboratory is a meaningful component in the elementary curriculum.
>
> In our highly technical contemporary society, citizens are increasingly dependent on mechanical and electronics systems and equipment. The Industrial Arts laboratory can offer students a chance to explore first hand the technological aspects of the subject matter described and researched in the classroom. The interrelationships among the various materials, processes, and crafts in every phase of industrial production can be adapted to the endeavors of the elementary student. When the student becomes involved in this kind of

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[11] Ibid.

activity, he experiences the same basic procedures in industry. . . .[12]

In keeping with the philosophy of industrial arts at the McDonald School, the objectives of the program point out the many beneficial values pupils are expected to receive. They are as follows:

1. The child will experience historical processes that have contributed to the development of our technology.
2. The child will experience a variety of current industrial methods including the line production technique, use of jigs and fixtures, and the interchangeability of parts.
3. The child will develop a critical and questioning attitude toward the quality of architecture, textiles, furniture, etc., within his environment.
4. The child will value craftsmanship, strive to improve his own craftsmanship abilities and develop sensitivity to the craftsmanship displayed by others.
5. The child will seek unique personal solutions to problems relating to industrial arts.
6. The child will develop an affection for materials and a respect for tools and machines.
7. The child will experience a variety of craft activities.
8. The child will develop meaningful perception of form, space, light, color, texture, and other important human insights.
9. The child will develop skill in using tools.
10. The child will explore and experience works produced by contemporary scientist-engineer-artists.
11. The child will be aware of the role of the industrial artist in our technological oriented society.
12. The child will develop respect for material and natural resources.[13]

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[12]McDonald Elementary School, Warminster, Pennsylvania, "Philosophy of Elementary Industrial Arts," mimeographed materials received from Donald Hoffman, Industrial Arts Specialist, McDonald Elementary School, Warminster Pennsylvania, February, 1970, [unnumbered pages].

[13]"Objectives of Industrial Arts for the Everett A.

This new approach in industrial arts is not concerned with the teaching of a "predetermined body of knowledge." Pupils usually come to the industrial arts laboratory by appointment to work on problems related to regular classroom activities. The industrial arts instructor is designated as a "specialist" and serves as a consultant and resource person to aid youngsters in working out solutions to problems and developing the skills necessary to achieve their objectives.[14] He also aids staff members in the acquisition of skills and familiarization with tools, processes, and materials so that they will be able to relate the technologies to the elementary curriculum. It is also intended that the staff utilize the facilities for the development of apparatus related to classroom activities. It could be said that in this program "a cyclical type of process evolves whereby the child participates in the planning, skill mastery, decision making, and construction or exploration while focusing on a particular industrial arts activity."[15]

The areas represented in the industrial arts program include plastics, wood, metals, ceramics, graphic arts,

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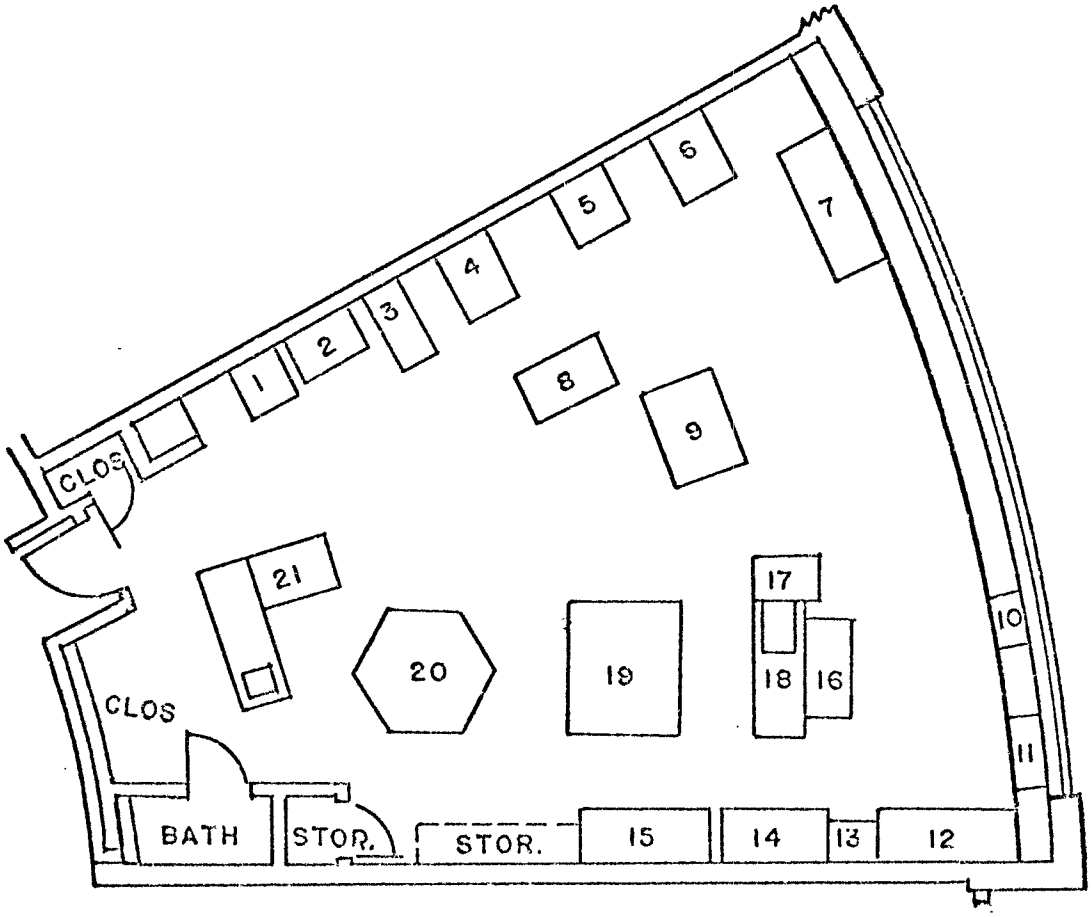
McDonald Elementary School," Warminster, Pennsylvania, 1970. (Mimeographed.)

[14]"Body of Knowledge," mimeographed material received from Donald Hoffman, Industrial Arts Specialist, McDonald Elementary School, Warminster, Pennsylvania, February, 1970, [unnumbered pages].

[15]Ibid.

drawing, sewing, electricity, and leather. Figure 3 shows the laboratory arrangement and placement of equipment in the Industrial Arts Center of the Everett A. McDonald Elementary



1. Kiln
2. Potter's Wheel
3. Scroll Saw
4. Drill Press
5. Band Saw
6. Belt and Disc Sander
7. Wood Lathe
8. Jointer
9. Circular Saw
10. Proof Press
11. Dymo-Form
12. Plastic Oven
13. Grinder
14. Hamilton Lathe
15. Tool Cabinet
16. Printing Press
17. Sewing Machine
18. Paper Cutter
19. Work Bench
20. Metal Work Center
21. Teacher's Desk

Fig. 3--Industrial Arts Center of the Everett A. McDonald Elementary School.

School.[16] The following list of projects in which students have recently been involved illustrates the potential of the industrial arts area for individual and group exploration, creativity, and experimentation.

1. Two fifth grade boys shaped the blossom of a flower from unfired ceramic clay; then used the vacuum forming process to make a display on which the parts of the blossom were painted and labeled.
2. Two sixth grade boys constructed a working model of a windmill.
3. Three sixth grade girls soldered copper wires to construct a model of the Eiffel Tower.
4. A Retarded-Educable class made their own perceptual training puzzles out of plexiglass.
5. A class of third graders, who were studying wild-life conversation in Science, and the influence of mass production in their Social Studies units about communication and transportation, mass produced bird feeders which they designed.
6. Two fifth graders built a relief model of landforms using Tri-wall cardboard, plastered with a mixture of perlite and cement, and then painted and labeled.
7. A second grade class constructed a store counter and shelving of Tri-wall cardboard.
8. Four fifth grade boys constructed an "Optical Illusion Box" using one-way mirrors, back lighting and rear view projection. The purpose of the box is to study the characteristics of light and how perception of light effects can be altered by such things as reflection, and refraction.
9. A Retarded-Trainable class mass produced simple rubber-band propelled paddle boats.
10. A class of fourth graders had an experience in line production by manufacturing two kinds of wooden animals.
11. Two boys constructed a weather station.
12. A small group of boys came in after school to build model cars which they designed and for which they

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[16]"Everett A. McDonald Comprehensive Elementary School Industrial Arts Center," mimeographed material received from Donald Hoffman, Industrial Arts Specialist, McDonald Elementary School, Warminster, Pennsylvania, February, 1970, [unnumbered pages].

constructed all parts including the stylized fiberglass and polyester bodies.

13. Two fifth grade girls constructed a working model of a hydro-electric plant.[17]

It may be seen by the foregoing description of the industrial arts facilities and the program presented at the Industrial Arts Center of the McDonald Elementary School that the program is a departure from the usual conventional concept of industrial arts activities. The program seems to hold great promise in opening new horizons in the interrelation of the technologies with the life of the child, and unbounded possibilities of enriching the elementary curriculum with meaningful experiences.

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[17]Progress Report No. 4, A Report on the Planning and Construction of the Everett A. McDonald Elementary School, Warminster, Pennsylvania, January, 1969.

CHAPTER IV

DATA AND INFORMATION CONCERNING INDUSTRIAL ARTS IN THE ELEMENTARY SCHOOLS OF WEST TEXAS

In keeping with the purpose of the study, a questionnaire, consisting of questions designed to provide specific information regarding industrial arts programs in elementary schools of the West Texas area, was sent to the elementary principals. Their opinions concerning the value of industrial arts activities in their instructional programs and an analysis of the data received provided the following results.

The principals were asked to indicate if their school curriculum included industrial arts type activities. As shown in Table I, thirteen of the thirty-one principals

TABLE I

NUMBER OF ELEMENTARY SCHOOLS IN THE WEST TEXAS AREA INCLUDING INDUSTRIAL ARTS ACTIVITIES

Respondents	Number	Per Cent
Schools offering industrial arts activities	13	41.9
Schools not offering industrial arts activities	18	58.1
Total	31	100.0

responding to the question indicated that industrial arts activities were included in the curriculum. Thus, it was found that less than one half of the schools, or 41.9 per cent, offered industrial arts activities; eighteen, or 58.1 per cent, did not include industrial arts in their programs.

The manner in which industrial arts activities were offered in the various schools is shown in Table II. As

TABLE II

THE MANNER IN WHICH INDUSTRIAL ARTS ACTIVITIES ARE OFFERED IN THE ELEMENTARY SCHOOLS OF THE WEST TEXAS AREA

Activities	Number	Per Cent
Supplementing other subject areas	10	76.9
Taught as a separate area	3	32.1
Total	13	100.0

indicated by principals in ten schools, industrial arts activities were utilized to supplement other subject areas; in three of the schools, industrial arts was taught on the elementary level as a separate subject area.

In response to the question "If industrial arts type activities are included in your present program and taught as a separate subject, do you have qualified industrial arts

teachers on your staff?" all the respondents indicated that they did not have industrial arts teachers on their staff.

When the elementary school principals were asked to indicate what kind of facilities were provided for industrial arts activities, thirteen principals responded to the question. As shown in Table III, three, or 23.1 per cent,

TABLE III

KIND OF FACILITIES PROVIDED IN ELEMENTARY SCHOOLS OFFERING INDUSTRIAL ARTS ACTIVITIES

Facilities	Number	Per Cent
Separate classroom or laboratory	3	23.1
Regular classroom	10	76.9
Total	13	100.0

indicated that a separate classroom or laboratory was provided. In ten schools, or 76.9 per cent, industrial arts activities were conducted in the regular classroom.

The opinions of elementary school principals were sought in regard to the suitability of their present facilities for offering industrial arts activities. Table IV indicates the response of principals when asked if their present facilities were satisfactory. As shown, eleven, or 84.6 per cent, of the elementary school principals indicated

that their facilities were satisfactory; and only two, or 15.4 per cent, were unsatisfactory.

TABLE IV

THE OPINIONS OF ELEMENTARY SCHOOL PRINCIPALS IN REGARD TO THE SUITABILITY OF THEIR PRESENT FACILITIES FOR OFFERING INDUSTRIAL ARTS ACTIVITIES

Respondents	Number	Per Cent
Satisfactory	11	84.6
Unsatisfactory	2	15.4
Total	13	100.0

When asked "If you do not presently include industrial arts activities in your instructional program, do you plan to do so in the next three years?" four elementary school principals checked that they planned to add industrial arts to their instructional program. Table V shows that principals of thirteen schools, or 41.9 per cent, include industrial arts activities. Four, or 12.9 per cent, of the principals plan to include industrial arts in their instructional program within the next three years. This makes a total of seventeen elementary school principals, or 54.8 per cent, who will be including industrial arts activities in their programs within the next three years. Of the thirty-one elementary schools, thirteen, or 41.9 per cent,

of the principals had no immediate plans to include industrial arts in their programs. One principal was undecided.

TABLE V

NUMBER OF ELEMENTARY SCHOOLS IN THE WEST TEXAS AREA PLANNING TO INCLUDE INDUSTRIAL ARTS IN THEIR PROGRAMS IN THE NEXT THREE YEARS

Schools	Number	Per Cent
Industrial arts presently included	13	41.9
Do not plan to add industrial arts to the curriculum	13	41.9
Plan to add industrial arts to the curriculum	4	12.9
Undecided	1	3.3
Total	31	100.0

In response to a related question "In what manner do you plan to include them [industrial arts activities]?" four of the elementary school principals who planned to add industrial arts activities to their instructional program indicated their preference. Table VI shows that two of the principals planned to include industrial arts activities as supplementing other subject-matter areas, whereas only one of the principals planned to offer industrial arts as a separate subject-matter area. One elementary school principal was undecided.

TABLE VI

MANNER IN WHICH THE ELEMENTARY SCHOOLS PLAN TO INCLUDE INDUSTRIAL ARTS IN THEIR CURRICULUM

Schools	Number	Per Cent
Supplementing other subject-matter areas	2	50.0
Separate subject-matter area	1	25.0
Undecided	1	25.0
Total	4	100.0

Table VII shows the response to the question "In your opinion, do you consider industrial arts activities worthwhile in supplementing and reinforcing other subject-matter

TABLE VII

OPINIONS OF ELEMENTARY PRINCIPALS REGARDING THE DESIRABILITY OF SUPPLEMENTING OTHER SUBJECT-MATTER AREAS WITH INDUSTRIAL ARTS ACTIVITIES

Respondents	Number	Per Cent
Principals who considered industrial arts desirable in supplementing other subject-matter areas	27	87.1
Principals who did not consider industrial arts desirable in supplementing other subject-matter areas	4	12.9
Total	31	100.0

areas?" Of the thirty-one principals responding, twenty-seven, or 87.1 per cent, indicated that they considered industrial arts activities worthwhile in supplementing and reinforcing other subject-matter areas. Only four, or 12.9 per cent, did not consider industrial arts activities beneficial in supplementing other subject-matter areas.

In addition to the items on the questionnaire to be checked, the principals were asked to add opinions and recommendations regarding industrial arts at the elementary level. Two principals said they believed that industrial arts would be a great asset to students of any school. Another principal noted that his major problem was finding time to include industrial arts in a school day schedule. Still another wrote that any addition to his school curriculum would be at the expense of some other subject. One principal said that the interest in industrial arts had increased considerably since the local high school had gone into industrial arts so extensively the last three years. Finally, two principals expressed the opinion that industrial arts should certainly start with the upper intermediate grades.

The data and information obtained from questionnaires returned by twenty-four elementary classroom teachers of the West Texas area are presented in table form. All the teachers completed the questionnaires, but some did not

check certain items as being used or deemed desirable to include in their programs. The unchecked items are listed in Table VIII under the heading of "no response." The data in Table VIII concerning industrial arts activities being used or considered desirable to include in their instructional programs indicate that the most widely used activities

TABLE VIII

INDUSTRIAL ARTS ACTIVITIES PRESENTLY USED OR CONSIDERED DESIRABLE BY TWENTY-FOUR ELEMENTARY TEACHERS IN THE WEST TEXAS AREA SCHOOLS

Activities	Presently included	Not included but desirable	No response
1. Take students on study trips to homes and buildings under construction to study design and practical uses of tools and materials.	3	15	6
2. Construct scrapbooks of the different kinds of architecture in the area that students have studied.	4	14	6
3. Take students on study trips to local manufacturers of building materials such as a lumber mill, cabinet shop, brick factory, cement plant, plumbing shop, etc.	8	11	15
4. Have students secure samples of tools and materials used in the construction of homes of people they have studied.	6	10	8

TABLE VIII --Continued

Activities	Presently included	Not included but desirable	No response
5. Make models of homes and landscapes of the different people they have studied.	9	8	7
6. Make maps of the area being studied showing residential and industrial areas as well as transportation facilities.	8	8	8
7. Construct a model of a modern residential development project showing homes, landscaping, school, recreation facilities and utilities.	3	10	11
8. Take students on study trips to observe such local transportation and power facilities as the airport, railway terminal, bus depot, automobile showrooms, trucking and ship docks, steam power plant, electric power plant, oil well, oil refinery, road building equipment, and others.	9	11	4
9. Construct models of planes, ships, cars, trucks, and trains.	10	7	7
10. Construct a model bridge over a simulated river or ravine.	2	14	8
11. Use a sand table to construct a power dam on a river with emphasis on a hydroelectric power plant showing electricity distribution lines.	0	13	11
12. Collect materials and make candles for comparison with modern electric light.	3	10	11

TABLE VIII --Continued

Activities	Presently included	Not included but desirable	No response
13. Construct model of oil well drilling rig.	7	7	10
14. Make a chart of a fractional distillation plant for crude oil.	3	7	14
15. Prepare a display of authentic samples of crude oil products.	6	8	10
16. Construct a model of a multistage rocket and launch pad.	8	9	7
17. Make study trips to local communication facilities such as the telephone company, radio station, telegraph office, television station and newspaper office.	13	9	2
18. Construct telephone booth of cardboard or similar materials for interclass communications and simulated business calls.	2	10	12
19. Construct simple radios such as crystal set and telegraph key sets for radio listening and interclass communication.	3	12	9
20. Build model radar detection unit with chart illustrating its uses.	0	11	13
21. Make newsprint using old paper and simple process.	2	10	12
22. Make prints by such methods as linoleum block, silk screen, vegetables and other media	17	7	3

TABLE VIII --Continued

Activities	Presently included	Not included but desirable	No response
23. Study the composition of inks and different kinds of paper.	5	10	9
24. Construct a chart or graph illustrating the number of people employed in the various occupations within the community such as building trades, communications, food processing and distribution, transportation, etc.	5	9	10
25. Collect measurable data such as weather information over a period of time and construct charts and graphs to give meaning and understanding to the data.	12	5	7
26. Design pictures and scenes and emboss them in copper foil.	3	15	6
27. Pour plaster castings of such items as story book characters, animals and historical figures and events.	8	9	7
28. Weave baskets and mats of reeds and grass for use in the home.	6	12	6
29. Make articles of clay similar to those used by people being studied.	16	3	5
30. Construct objects of clay to develop manipulative dexterity, creativeness, and appreciation of esthetic values.	13	5	6
31. Construct marionettes and a stage, dress the marionettes similar to the clothes worn by the people being studied.	10	10	4

TABLE VIII --Continued

Activities	Presently included	Not included but desirable	No response
32. Practice speaking and writing words and phrases used in industry.	7	10	7
33. Construct mounting frames for insects and cages for live science and nature specimen.	12	4	8
34. Construct a see-through box with glass or plastic sides for observing an ant colony at work.	6	11	7
35. Make a complete purchase order for materials used in class projects using the correct description of items, size, and cost.	6	12	6
36. Assign class committee to make direct purchase of materials for class project.	5	11	8
37. Construct suitable science projects for experimentation, display and/or for science contest.	13	4	7
38. Construct cardboard and paper sculptures.	17	5	2
39. Carve soap into figures representing people and animals students have studied.	10	9	5
40. Construct useful and decorative items of leather.	4	13	7

were printing with various media, making useful articles of clay, constructing cardboard and paper sculpture, making study trips to local communication facilities and constructing different experimental projects related to science. Approximately one half of the elementary teachers reported that activities which involved collecting measurable data for use in constructing charts and graphs, making marionettes, constructing mounting frames for insects and live science specimen, and carving soap into figures representing people and animals would be desirable for enriching the elementary school curriculum. The data indicate that the other activities most frequently used by elementary teachers were making models of homes and landscapes, constructing maps, taking students on local trips to study transportation and power facilities, and constructing models of planes, ships, cars, trucks, and trains. None of the teachers used the construction of model radar units, nor did they use the sand table for constructing model power facilities. Only two teachers reported they used the construction of model bridges and the construction of model telephone facilities for students to make practice business and social calls. The information and data presented in Table VIII also indicate the activities that elementary teachers did not include in their instructional program but considered desirable to enrich their programs. As shown, 50 per cent or more of the

teachers were of the opinion that other activities, such as taking students on local trips to study building construction, constructing scrapbooks involving different kinds of architecture, constructing model bridges, model power facilities, making articles of leather, embossing pictures and scenes on copper foil, and constructing simple radio and telegraph sets, would be of value.

The elementary teachers were asked to respond to questions regarding the nature of industrial arts activities in their school curriculum. The data in Table IX show that twenty-one teachers, or 87.5 per cent, included industrial

TABLE IX

DATA CONCERNING THE NATURE OF INDUSTRIAL ARTS ACTIVITIES IN ELEMENTARY SCHOOLS OF THE WEST TEXAS AREA

Questions	Answers	
	Yes	No
Do you include industrial arts type activities in your instructional program to supplement and reinforce other subject-matter areas?	21	3
Do you teach industrial arts subject matter and activities as a separate unit apart from other subject areas?	2	22
Do you have an industrial arts consultant available to assist you in planning industrial arts activities for your instructional program?	2	22

arts type activities in one form or another to supplement and enhance their instructional programs, while only three, or 12.5 per cent, teachers checked that they did not use industrial arts activities. As shown in Table IX, only two teachers, or 8.3 per cent, indicated they taught industrial arts as a separate area. Regarding the availability of an industrial arts consultant, twenty-two teachers did not have assistance from industrial arts personnel.

Table X presents the opinions of the twenty-four elementary teachers regarding the value of industrial arts activities in their instructional programs and further improvements that could be made. As shown in Table X, fourteen, or 58.3 per cent, teachers considered their classroom satisfactory for including industrial arts activities in their instructional programs. Of the twenty-four elementary teachers only seven, or 29.2 per cent, were of the opinion that industrial arts activities should be taught as a separate subject. When asked if they considered it desirable to have assistance from an industrial arts consultant, sixteen, or 66.7 per cent, teachers were of the opinion that this service would be helpful. Twenty-three, or 95.8 per cent, of the teachers expressed the opinion that industrial arts activities can make other elementary subjects more interesting and meaningful to students. It is also shown in Table X that a majority of the teachers,

TABLE X

DATA CONCERNING THE OPINIONS OF ELEMENTARY TEACHERS IN REGARD TO THE VALUE OF INDUSTRIAL ARTS ACTIVITIES IN THEIR PRESENT PROGRAMS AND SUGGESTIONS FOR FURTHER IMPROVEMENTS

Questions	Answers	
	Yes	No
In your opinion, do you consider your classroom satisfactory for including industrial arts activities in your present instructional program?	14	10
In your opinion, would it be best to offer industrial arts at the elementary level as a separate subject taught in a specially equipped laboratory?	7	17
Would you consider it desirable to have an industrial arts consultant assist you in planning industrial arts activities for your program?	16	8
Do you feel that industrial arts type activities, if properly presented, can make other elementary subjects more interesting and meaningful to students?	23	1
In your opinion, would it be beneficial to prospective elementary teachers to include some industrial arts courses in their college study programs?	22	2

91.7 per cent, favored the inclusion of some industrial arts training for elementary teachers.

The data in Table XI show that 95.8 per cent of the elementary teachers and 87.1 per cent of the principals were of the opinion that industrial arts activities would be

TABLE XI

COMPARISON OF THE OPINIONS OF ELEMENTARY TEACHERS AND PRINCIPALS REGARDING THE VALUE OF INDUSTRIAL ARTS ACTIVITIES IN THE ELEMENTARY CURRICULUM

Questions	Teachers		Principals	
	Yes	No	Yes	No
Do you feel that industrial arts type activities can make other elementary subjects more interesting and meaningful to students?	95.8%	4.2%	87.1%	12.9%
In your opinion, do you consider the regular classroom satisfactory for including industrial arts activities in your present instructional program?	58.3%	41.7%	84.6%	15.4%

beneficial in supplementing and enriching other subject-matter areas. Table XI also reveals that 84.6 per cent of the principals as compared to 58.3 per cent of the teachers consider the regular classroom satisfactory for including industrial arts activities.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was made to (1) investigate the nature and scope of current industrial arts activities in the elementary schools of West Texas; (2) determine the opinions of elementary classroom teachers and principals concerning the value of industrial arts activities in their school programs; (3) study the curriculum of one outstanding elementary school in the United States recognized for its utilization of industrial arts activities at the elementary level; and (4) determine what industrial arts subject matter and activities the elementary teachers thought could enrich the curriculums of elementary schools. Further, and more specific, the study sought to answer the following questions regarding the status of industrial arts in the elementary schools of West Texas.

1. Are industrial arts type activities included in the school curriculum? If so, in what manner are these activities offered? Do they supplement other subject areas, or are they included as a separate activity area?

2. If industrial arts activities are included in the school programs and are taught as a separate subject, are qualified industrial arts teachers employed either full-time or part-time?

3. If industrial arts activities are included in the program, what kind of facilities are provided? Are they taught in the regular elementary classroom, or is a separate room or laboratory provided?

4. If industrial arts activities are not included in the programs, will they be introduced within the next three years? In what manner will they be introduced? Will they supplement other subject areas or be included as a separate subject area?

5. In the opinion of elementary principals and classroom teachers, are industrial arts activities considered worthwhile in supplementing and reinforcing other subject areas?

6. Would it be beneficial to prospective elementary teachers to include some industrial arts courses in their college study programs?

7. What is the nature of industrial arts activities included in elementary school programs of West Texas? In addition to activities now offered, what activities would be considered desirable?

The data and information used in the study were obtained from the following sources:

1. Research in the field of industrial arts concerning the history and development of industrial arts in the United States.

2. Information and data from the Everett A. McDonald Elementary School, Warminister, Pennsylvania.

3. Responses to questionnaires returned by elementary principals and classroom teachers in the West Texas area.

One hundred elementary schools were selected for the study by a random sampling of all 367 elementary schools located in forty-five counties of the West Texas area. A letter explaining the purpose of the study and a request to participate in the survey was sent to the principal of each of the selected schools. Included with the letter was a self-addressed card on which the principal was requested to record a "yes" or "no" response and the name of an elementary teacher in his school who would participate. Sixty-nine principals responded to the letter. Of these, thirty-one principals indicated that they would participate in the study. There was no follow-up request sent to principals who did not respond. Questionnaires were then prepared and sent to both the principal and one classroom teacher in each participating school. Thirty-one elementary principals and twenty-four teachers completed and returned the questionnaires. The information and data obtained in the West Texas area were studied, tabulated, and put in tabular form.

Findings

The survey of the West Texas area elementary school principals and classroom teachers revealed the following results:

1. According to the data, 41.9 per cent of the elementary school principals indicated that industrial arts activities were included in their elementary school curriculum.

2. Industrial arts activities were utilized by 76.9 per cent of the principals to supplement and enrich other subject areas.

3. The data indicated that 76.9 per cent of the industrial arts activities were conducted in the regular classroom. Of the thirteen principals who indicated that industrial arts activities were included in their curriculum, 84.6 per cent indicated that these activities were performed in the regular classroom.

4. Four schools plan to add industrial arts to the curriculum. This indicates that 54.8 per cent of the schools will be including industrial arts within the next three years.

5. Twenty-seven, or 87.1 per cent, considered industrial arts desirable in supplementing and reinforcing other subject areas.

6. The most widely used industrial arts activities were printing with various media, such as linoleum blocks, silk screen, etc., making articles of clay, cardboard and paper sculpture, making study trips to local communication facilities and constructing different experimental projects related to science.

7. Approximately 50 per cent of the elementary teachers include activities involving the collection of measurable data for use in constructing meaningful charts and graphs, making marionettes, constructing mounting frames for insects and live science specimen, and carving soap into figures representing people and animals about which students have studied.

8. Many frequently used industrial arts type activities included making model homes and landscapes, taking students on local trips to study transportation and power facilities, and constructing models of planes, cars, trucks, and trains.

9. None of the elementary teachers used the construction of model radar units, nor did they use the sand table for the construction of model power facilities.

10. Fifty per cent or more of the teachers were of the opinion that activities such as constructing scrapbooks of different kinds of architecture, taking students on study trips to observe building construction, constructing model

bridges and power facilities, making articles of leather, embossing pictures and scenes on copper foil, and constructing simple radio and telegraph sets would be of value if included in an elementary school program.

11. The data revealed that 87.5 per cent of the elementary teachers included industrial arts activities in their instructional programs.

12. The data indicate that 91.6 per cent of the teachers included industrial arts activities to supplement and enhance other subject areas.

13. The data show that 91.6 per cent of the teachers do not have qualified industrial arts personnel to assist them in planning activities for their instructional programs.

14. The study shows that 66.7 per cent of the teachers were of the opinion that industrial arts consultants would be helpful in planning activities for their school programs.

15. Twenty-three, or 95.8 per cent, of the elementary teachers were of the opinion that industrial arts activities could make other subject areas more interesting and meaningful to students.

16. Twenty-two, or 91.6 per cent, of the elementary teachers were of the opinion that some industrial arts training should be included in elementary teacher training programs at the college level.

Conclusions

The conclusions drawn from the data and information presented in this study are as follows:

1. It appears that there is a growing trend toward greater emphasis upon the use of industrial arts activities in the elementary schools of the West Texas area.

2. The majority of the elementary teachers are using some industrial arts activities integrated with other subject areas; however, it appears that the teachers have not been provided with suitable training and assistance in the industrial arts area.

3. It would seem that there is a need for pre-service and in-service training for elementary teachers to acquaint them with skills and information necessary to meet the needs of youth in an industrial and technological environment.

4. A study of the curriculum of the Everett A. McDonald Elementary School shows the growing importance of industrial arts at the elementary level. If properly, utilized, it appears that industrial arts could become the medium through which many objectives for the education of the "whole child" could be realized.

Recommendations

In view of the data and information presented in this study, the following recommendations appear justified:

1. School administrators should study the programs of some elementary schools which successfully include industrial arts in the curriculum to determine if their students could be better served, educationally, by the inclusion of some industrial arts activities in their instructional programs.

2. West Texas school administrators should investigate the advantages and benefits of having industrial arts personnel assist in planning and implementing industrial arts activities in the elementary schools.

3. Workshops or in-service training programs should be initiated to teach the elementary classroom teachers more about industrial arts activities and how they could use these media to enrich other units of learning.

4. College administrators should conduct a thorough investigation of their elementary teacher training programs to determine whether they are serving the needs of the classroom teacher who must educate the youth of an industrial and technical society.

5. A thorough state-wide investigation of the nature and scope of industrial arts in the elementary schools should be undertaken.

6. A study of teacher training programs for elementary teachers should be made to determine their adequacy in training teachers to meet the needs of a modern school program in an industrial society.

7. A comparative study of elementary school programs in Texas and the United States should be made to determine if Texas is paralleling national trends in the utilization of industrial arts.

8. An analysis of state-adopted industrial arts textbooks to ascertain extent of coverage of technological problems and their effect on society should be made.

APPENDIX A

February, 1970

Dear Principal:

I am presently engaged in a master's degree program in the area of Industrial Arts at North Texas State University. My research study is concerned with industrial arts subject matter and activities that elementary teachers use to enrich and supplement the elementary school programs in West Texas. Additional purposes of the study are to determine the nature and scope of industrial arts in the elementary schools of West Texas, and to secure the opinions of the elementary principals and teachers in regard to the value of industrial arts type activities in their instructional programs.

Enclosed is a stamped, self-addressed card inquiring whether or not you are interested in participating in the study. Also, a space is provided for the name of a teacher in your school who will participate. I would prefer that the teacher have two years or more of teaching experience. If you indicate that you will participate, questionnaires requiring only yes or no responses will be forwarded to you and the elementary teacher in the near future.

All information and data you supply will be used for research purposes only, and names of persons and schools will remain anonymous.

Your cooperation will be greatly appreciated.

Sincerely,

Jack C. Crawford
2106 West Hickory
Denton, Texas

Enclosure

APPENDIX B

February, 1970

Dear Elementary Teacher:

The principal of your school has referred your name to me indicating that you will assist me in a study to ascertain the extent that industrial arts type activities are integrated in the curriculum of the elementary schools of West Texas. Another purpose of the study is to secure the opinions of elementary teachers in regard to the value of industrial arts type activities in their instructional programs.

Will you assist me in making this study worthwhile by completing the attached questionnaire? A stamped, self-addressed envelope is enclosed for your convenience.

All information and data you supply will be used for research purposes only, and names of persons and schools will remain anonymous.

Your cooperation will be greatly appreciated.

Sincerely,

Jack C. Crawford
2106 West Hickory
Denton, Texas

Enclosure

QUESTIONNAIRE

Mr.
Mrs.
Miss _____ Date _____

Name of School _____

School District _____

Grade level you are now teaching. (Check one.)

( ) First ( ) Third ( ) Fifth
( ) Second ( ) Fourth ( ) Sixth

Please check the subject-matter areas you are now teaching.

( ) Arithmetic ( ) Spelling and Writing
( ) Language Arts ( ) Others (Specify)
( ) Reading _____
( ) Social Studies _____

Following is a list of activities frequently included in the elementary curriculum. Will you please indicate the ones you are presently including in your program of instruction by placing a check mark (✓) in the appropriate column? If you are not including some of these activities but think they could possibly enrich your program, please indicate by placing a check mark (✓) in the last column. If there are activities not listed which you include in your instructional program or feel should be included, please list them and check in the appropriate column.

Activities	Presently included	Not included but desirable
1. Take students on study trips to homes and buildings under construction to study design and practical uses of tools and materials.		

Activities	Presently included	Not included but desirable
2. Construct scrapbooks of the different kinds of architecture in the areas students have studied.		
3. Take students on study trips to local manufacturers of building materials, such as a lumber mill, cabinet shop, brick factory, cement plant, plumbing shop, etc.		
4. Have students secure samples of tools and materials used in the construction of homes of people they have studied.		
5. Make models of homes and landscapes of the different people they have studied.		
6. Make maps of the area being studied showing residential and industrial areas as well as transportation facilities.		
7. Construct a model of a modern residential development project showing homes, landscaping, school, recreation facilities, and utilities.		
8. Take students on study trips to observe such local transportation and power facilities as the airport, railway terminal, bus depot, automobile showrooms, trucking and ship docks, steam power plant, electric power plant, oil well, oil refinery, road building equipment and others.		
9. Construct models of planes, ships, cars, trucks, and trains.		
10. Construct a model bridge over a simulated river or ravine.		

Activities	Presently included	Not included but desirable
11. Use a sand table to construct a power dam on a river with emphasis on a hydroelectric power plant showing electricity distribution lines.		
12. Collect materials and make candles for comparison with modern electric light.		
13. Construct model of oil well drilling rig.		
14. Make a chart of a fractional distillation plant for crude oil.		
15. Prepare a display of authentic samples of crude oil products.		
16. Construct a model of a multistage rocket and launch pad.		
17. Make study trips to local communication facilities such as the telephone company, radio station, telegraph office, television station and newspaper office.		
18. Construct telephone booth of cardboard or similar materials for interclass communications and simulated business calls.		
19. Construct simple radios such as crystal set and telegraph key sets for radio listening and interclass communication.		
20. Build model radar detection unit with chart illustrating its uses.		
21. Make newsprint using old paper and simple process.		

Activities	Presently included	Not included but desirable
22. Make prints by such methods as linoleum block, silk screen, vegetables, and other media.		
23. Study the composition of inks and different kinds of paper.		
24. Construct a chart or graph illustrating the number of people employed in the various occupations within the community, such as building trades, communications, food processing and distribution, transportation, etc.		
25. Collect measurable data such as weather information over a period of time and construct charts and graphs to give meaning and understanding to the data.		
26. Design pictures and scenes and emboss them in copper foil.		
27. Pour plaster castings of such items as story book characters, animals, and historical figures and events.		
28. Weave baskets and mats of reeds and grass for use in the home.		
29. Make articles of clay similar to those used by people being studied.		
30. Construct objects of clay to develop manipulative dexterity, creativeness and appreciation of esthetic values.		
31. Construct marionettes and a stage, dress the marionettes similar to the clothes worn by the people being studied.		

Activities	Presently included	Not included but desirable
32. Practice speaking and writing words and phrases used in industry.		
33. Construct mounting frames for insects and cages for live science and nature specimen.		
34. Construct a see-through box with glass or plastic sides for observing an ant colony at work.		
35. Make a complete purchase order for materials used in class projects using the correct description of items, size, and cost.		
36. Assign class committee to make direct purchase of materials for class projects.		
37. Construct suitable science projects for experimentation, display and/or for science contest.		
38. Construct cardboard and paper sculptures.		
39. Carve soap into figures representing people and animals students have studied.		
40. Construct useful and decorative items of leather.		
Please list other activities which you include in your instructional program or feel should be included. Place a check mark (✓) in the appropriate column.		

Please indicate your response to the following questions by placing a check mark (✓) in the appropriate space.

Yes No

( ) ( ) 41. Do you include industrial arts type activities in your instructional program to supplement and reinforce other subject-matter areas?

( ) ( ) 42. Do you teach industrial arts subject matter and activities as a separate unit apart from other subject areas?

( ) ( ) 43. In your opinion, do you consider your classroom satisfactory for including industrial arts activities in your present instructional program?

( ) ( ) 44. In your opinion, would it be best to offer industrial arts at the elementary level as a separate subject taught in a specially equipped laboratory?

( ) ( ) 45. Do you have an industrial arts consultant available to assist you in planning industrial arts activities for your instructional program?

( ) ( ) 46. If your answer to question forty-five is no, would you consider it desirable to have an industrial arts activities for your program?

( ) ( ) 47. Do you feel that industrial arts type activities, if properly presented, can make other elementary subjects more interesting and meaningful to students?

( ) ( ) 48. In your opinion, would it be beneficial to prospective elementary teachers to include some industrial arts courses in their college study programs?

APPENDIX C

February, 1970

Dear Principal:

I have recently received your affirmative reply to my request for your assistance in a study to determine the scope of industrial arts activities in elementary schools of West Texas, and to secure the opinions of elementary principals in regard to the value of industrial arts type activities in their elementary school programs.

Please complete the attached questionnaire by checking the appropriate spaces. A stamped, self-addressed envelope is provided for your convenience.

As stated in my letter of February 14, all the information and data you supply will be used for research purposes only, and names of persons and schools will remain anonymous.

I sincerely appreciate your cooperation in this matter.

Cordially,

Jack C. Crawford
2106 West Hickory
Denton, Texas

Enclosure

QUESTIONNAIRE

Mr.
Mrs.
Miss _____ Date _____

Name of School _____

School District _____

County _____ School Enrollment _____

Number of Elementary Teachers _____

Please indicate your response to the following questions by placing a check mark (✓) in the appropriate space.

1. Does your school curriculum include industrial arts type activities?

   ___ Yes
   ___ No

   In what manner are they included?

   ___ Supplementing other subject areas
   ___ Taught as a separate subject matter and activity area

2. If industrial arts type activities are included in your present program and taught as a separate subject, do you have qualified industrial arts teacher/s on your staff?

   ___ Yes
   ___ No

   How many full-time industrial arts teachers are on your staff?

   ___ One
   ___ Two or more

   How many part-time industrial arts teachers are on your staff?

   ___ One
   ___ Two or more

3. If industrial arts type activities are included in your program in any manner, what kind of facilities are provided?

___ Separate classroom or laboratory
___ Regular classroom

Do you consider this arrangement satisfactory?

___ Yes
___ No

4. If you do not presently include industrial arts activities in your instructional program, do you plan to do so within the next three years?

___ Yes
___ No

In what manner do you plan to include them?

___ Supplementing other subject areas
___ Separate subject taught in a special laboratory

5. In your opinion, do you consider industrial arts activities worthwhile in supplementing and reinforcing other subject-matter areas?

___ Yes
___ No

Please advance any additional opinions and recommendations in regard to industrial arts activities at the elementary level in the space provided below.

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