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FACTORS RELATING TO TEACHING OF PRACTICAL ARTS ACTIVITIES IN THE ELEMENTARY SCHOOLS OF MICHIGAN

by
Duane G. Chamberlain

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of the requirements for the degree of
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Committee in charge:

Professor Ralph C. Wenrich, Chairman
Dr. Frank W. Dalton
Assistant Professor Robert S. Fox
Assistant Professor Wilbert J. McKeachie
Associate Professor G. Max Wingo

Abstract

FACTORS RELATING TO TEACHING OF PRACTICAL ARTS ACTIVITIES IN THE ELEMENTARY SCHOOLS OF MICHIGAN

by

Duane G. Chamberlain

In purpose this study seeks to isolate and investigate factors relating to teaching of practical arts activities in self-contained classrooms of the elementary schools of Michigan. What circumstances prevail which prevent or hinder greater utilization of practical arts activities in the achievement of the objectives of elementary schools of Michigan? Its ultimate aim is to assist classroom teachers, administrators, and teacher trainers (1) to locate and eliminate or alleviate factors which inhibit utilization of practical arts work in the elementary grades (1 through 6), and (2) to locate and promote factors which contribute to effective use of practical arts in the elementary grades.

Factors affecting the use of practical arts activities were approached statistically through data supplied by two groups of teachers from schools in Michigan organized on the self-contained classroom basis. These groups were (1) elementary classroom teachers who do use practical arts activities, and (2) elementary classroom teachers who do not use such activities. The data, provided through questionnaire and interview, were statistically manipulated to test whether there is a difference in the degree to

which these factors are present in each of the two teaching situations represented by the teachers.

Factors investigated were grouped under eight general headings, viz., training or educational, personal, public relations, teaching load, supervision, economic, disturbance, and physical.

A summary of the findings relating to these factors is listed below.

1. Practical arts is usually taught by classroom teachers who have more general professional training and more college training in industrial arts.

2. In general, personal characteristics and experiences of teachers play no role in the practice and use of practical arts activities in the elementary grades.

3. Practical arts activities are practiced more often in communities where parent and press attitude is seen by teachers as favorable to their use.

4. Individual teaching load does not appear to be a factor in the use of practical arts activities in self-contained classrooms of the elementary school.

5. Classroom teachers use practical arts activities more when encouragement is forthcoming from their immediate superiors. A neutral or hands-off policy is more often accompanied by little or no utilization of practical arts.

6. A rigid daily program of studies imposed by the administration does not adversely affect the use of practical arts as learning experiences.

7. Teachers who use practical arts activities as a phase of learning experiences in their classrooms usually receive higher salaries.

8. Costs of instructional supplies are greater in classrooms where practical arts activities are utilized as a part of the instructional program.

9. Noise and untidiness resulting from certain practical arts activities should be regarded as factors inhibiting the use of practical arts activities in the elementary classrooms of Michigan.

10. Classroom size (floor area) does not play a role in the use of practical arts activities in the elementary schools of Michigan. However, activity space is more frequently available in the classroom or building when such work is practiced.

11. Classroom acoustics do play a role in the use of practical arts activities.

12. Equipment such as tables for constructional activities, work benches, hand tools, and storage cabinets are present more often in classroom situations where practical arts are utilized. Certain other equipment items appear to play no role in the use of these learning experiences.

From the findings it is concluded that teachers, administrators, and teacher trainers can and should take positive action to promote greater use of practical arts activities at the elementary school level. Their combined efforts can alleviate many of the limiting circumstances such as inadequate teacher training, indifferent administrative and parent attitude, insufficient financial support and related influences tending to retard the use of practical arts as learning experiences.

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CHAPTER I

INTRODUCTION

Practical Arts in Elementary School Organization

Practical arts at the elementary school level may be viewed both as a subject matter area and a method of learning. The subject matter of practical arts finds its source in the knowledge and skills associated with the home, community, farm, industry, and business. Its method is that of self-expression and self-activity through doing simple but appropriate operations and processes selected from these same sources.

The objectives of practical arts are essentially those of general education, i.e., the development of the whole child physically, emotionally, and mentally. Satisfactory development of the child requires that attention be given to those aspects of his environment that may have meaning for him. Elements of experience taken from the home, community, farm, and other practical arts areas provide excellent opportunities for growth and development because they are alive and real to the learner. Today we view school as life, and since life is lived as a whole, the good school recognizes learning as a unitary process.

Authorities are now generally agreed that effective and efficient teaching at the elementary school level involves the use of experience or activity units which cover broad areas and integrate many fields of work. Practical arts activities have a significant place in this integrated program because they meet recognized needs of the pre-adolescent child. Children of elementary school age need objective, concrete experiences of the type provided by the practical arts if they are to grasp many of the abstract concepts of traditional subject matter. Native impulses to activity, to creative expression, and to investigation are all met and advanced through the planning and manipulation inherent in practical arts.

Though the need for practical arts activities at the elementary school level is fully acknowledged by leading educators and adequately trained teachers in all sections of the United States, it does not, unfortunately, follow that such need is being met in actual practice.

The failure of many, perhaps most, elementary schools to provide children with sufficient opportunities for practical arts learning experiences is much more obvious than are the reasons why it has not been done. In searching for these reasons, it is necessary to recognize that there are two different approaches or methods through which practical arts work is made available to children.

One approach is through a separate general shop or laboratory, supervised by a specializing teacher, where

such work is practiced at regular intervals by the various grades more or less independently from regular classroom activity. This plan is well suited to and commonly used by schools operating under the platoon or the departmental type of organization.

In the other approach, practical arts work functions within the classroom, under the direction of the regular classroom teacher. The work is carried on with somewhat limited equipment but is usually integrated closely with areas of other subject matter. This plan is most commonly utilized in schools operating under the self-contained classroom (one-teacher) type of organization.

The plans are not mutually exclusive, and consequently may be observed in modified forms in the same school. Neither can we say that one is better than the other, because each possesses certain peculiar advantages. It is generally recognized, however, that the classroom approach is predominant in the United States.

Studies by Baker, Beckett, Haws, and others give support to the view that practical arts activities are more often provided through classroom approach. In a 1935 study, Baker[1] found that 70 per cent of the prominent industrial arts educators included in his study favored

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[1]William R. Baker, "Industrial Arts in the Integrated Program in the Elementary Grades" (Unpublished Master's Thesis, Geo. Peabody College, 1935), p. 89.

the approach through the classroom teacher. A year later Beckett stated in a California study:

> Of the 12 (larger) school systems heard from, none offers any special industrial arts course or employs any special teachers in the elementary school, yet, every questionnaire returned indicated that, hand work activities are conducted with their social studies program of general education.[1]

In 1945 Haws[2] found that over 90 per cent of recent graduates of Ohio State University surveyed were carrying on industrial arts work in one-teacher organizations.

The Need for this Inquiry

According to many writing in the field, practical arts work has not found its deserved place in our elementary school curriculum of studies. Though practiced in many of our better schools, including laboratory schools, there is evidence from a number of sources that the work is lagging.

G. S. Duncan, in an address before the American Industrial Arts Association of the N.E.A. in 1950, stated:

> The program of practical arts activities for the elementary grades is lagging. There are very few crafts and industrial arts departments, other

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[1]Percy Robert Beckett, "Industrial Arts in the Activity Program of Elementary Education" (Unpublished Master's Thesis University of Southern California, 1936), p. 96.

[2]Robert W. Haws, "The Emerging Role of Industrial Arts in the Experience Curriculum of the Elementary School." (Unpublished PhD. Dissertation, Ohio State University, 1945), p. 91.

> than some laboratory schools, that are available for elementary children, hence if the children are to have these activities they must come via the classroom teacher.[1]

Adams comments in the preface of Edwina Fallis' book, The Child and Things:

> Educators have talked for many years of the learning values of motor activities, especially for young children who are just setting out to learn the ways of the world in which they are to take their places.... In spite of this understanding, there is still relatively little experimentation or actual work with materials in our schools outside the shops and laboratories which are set up chiefly for older children.[2]

Trow, approaching the need for more motor learning from the psychologist's viewpoint, says, "In most schools, however, more opportunities are needed for learning by doing, that is, for perceiving space-time patterns from within."[3]

Hornbake found in a 1943 study reaching forty-five of the forty-eight states that there is a "general lack of development of industrial arts at the elementary school level."[4]

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[1]G. S. Duncan, Backgrounds of Training for Elementary Teachers in the Area of Practical Arts. A report to the American Industrial Arts Association of the N.E.A. St. Louis, Missouri, July 3, 1950.

[2]Olga Adams (in Foreword of) Edwina Fallis, The Child and Things (New York: World Book Company, 1940), p. iii.

[3]William Clark Trow, Educational Psychology (Boston: Houghton Mifflin Company, 1950), p. 396.

[4]Lee R. Hornbake, "Industrial Arts in the Elementary School: A Study of Contributions with Emphasis Upon a Specific Program" (Unpublished PhD. dissertation, School of Education, Ohio State University, 1943), Abstract of Study.

Because practical arts work is underdeveloped and lagging in many of our elementary schools, an inquiry directed to the purpose of discovering the factors involved in its use, with particular emphasis on limiting factors or circumstances, seems desirable and necessary.

The Problem

This study seeks to isolate and to investigate factors relating to teaching of practical arts activities in self-contained classroom of the elementary schools of Michigan. What circumstances prevail which prevent or hinder utilization of practical arts activities in the achievement of the objectives of elementary schools of Michigan?

Delimitation of the Field of Investigation

The investigation is limited to elementary schools organized on a self-contained classroom basis, not because practical arts can be taught only in schools so organized, but because the unique nature of the problems facing the utilization of practical arts activities in such schools render it a special problem. Further, it is true that such organization is predominent in Michigan and the nation.

The area from which participating schools were selected was limited to thirty-four counties in the southern half of the Lower Peninsula of Michigan.

Data were supplied by elementary classroom teachers in grades one through six of these schools.

It was obviously impracticable to include all factors relating to teaching of practical arts activities in elementary schools. Some, without doubt, are unknown; others, such as the teaching philosophy which pervades a school, are of an intangible nature which do not readily lend themselves to measurement. Only those factors bearing directly on the problem which could be reasonably approached through information and facts known to the classroom teacher were included.

Definition of Terms

Definition of several terms used regularly throughout this study is given to aid in uniformity of interpretation on the part of the reader.

Practical Arts finds its origin in the work of the home, the community, the farm, industry, and business and, as practiced in the elementary grades, provides manipulative experiences in the use of common tools, materials, and processes inherent in such activities as crafts, handwork, cooking, sewing, duplicating, and gardening. Practical arts activities as learning experiences may be ends in themselves, and/or they may serve to vitalize and motivate learning in other subject matter areas.

Self-contained classrooms are those with one teacher primarily in charge of all pupils for the whole school day. Special teachers may give help providing it

is in the regular classroom. Occasional exceptions may be made in the case of physical education and instrumental music.

An elementary teacher is one who teaches one or more of the grades one through six in a regular classroom.

Factors are those elements or circumstances within the community and school which play a role in the practice and use of practical arts activities. Factors may be either positive or negative depending on whether they promote or limit such activities.

Objectives of the Study

The primary objective of this investigation is to isolate and investigate factors that may influence the teaching of practical arts activities in the elementary grades.

Growing out of this major objective are certain secondary aims directed toward practical application of the results of the inquiry. It is hoped this investigation will:

1. Assist public school administrators, supervisors, and teachers to locate difficulties tending to impede more complete utilization of practical arts subject matter, methods, and techniques as a means of furthering growth and development of elementary school children.

When located and recognized, it is assumed that some of these limiting factors can be eliminated.

2. Assist administrators and teachers to identify and to promote factors in their school communities which contribute to effective use of practical arts activities in the elementary grades.

3. Aid teacher trainers in evaluating certain phases of their training programs and make possible a better advisory service to the areas which they serve.

CHAPTER II

HISTORICAL AND PSYCHOLOGICAL BASES FOR PRACTICAL ARTS IN ACTIVE LEARNING

This study is based on two assumptions; (1) there has been and still is a need for practical arts activities in the elementary grades, and (2) this need is not being adequately met in present day practice. In this chapter the historical development of this need through men and educational movements is traced. The psychological foundation for practical arts as practiced within the larger framework of the activity or experience curriculum is briefly treated with specific attention to support which is afforded by the organismic version of Gestalt psychology.

Primitive Learning

The education of primitive, pre-literate people everywhere has been associated directly with the practical arts of subsistence and life. They learned by doing. The meager arts known were practiced by the young with a fierce intensity born of the will to survive. They learned actively as they lived, taking their truths from nature, and until the coming of language and accompanying disciplines,

there was, indeed, no opportunity or need to resort to the more passive methods of memorization or drill.

In such societies, where education and living were one, there was no serious gap between childhood and adulthood. Children, during their early years, participated in serious adult activities in a manner impracticable in modern industrial societies. Their training was in no sense artificial nor unreal, a fact which made it unnecessary for them to face "one of the greatest crises in a (modern) child's life; the discontinuity between what is expected of it as a child and what is expected of it as an adult."[1]

Although the use of activity and the practical arts in the informal training of the young is as old as man himself, the forces that recommend and activities their use in formal education have been evolving and gaining momentum through the centuries. Many men and educational movements have successively contributed to the knowledge of how children develop, how they learn, and what their unique needs may be. Both men and educational movements have pointed persistently, if at times sporadically, toward the need for real life situations involving activity

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[1]Ruth Benedict, "The Educative Process--A Comparative Note," Mental Health in the Classroom, Thirteenth Yearbook of the Department of Supervisors and Directors of Instruction (Washington, D.C., 1940), p. 122.

and objective material in the formal educative process of the young.

European Developments

Advancing civilization, bringing forth language, literature, philosophy, and other disciplines made necessary systematic training to the end that the young might learn in relatively few years what society had learned over many generations. Systematic training in the expanding skills, arts, and disciplines soon forced a separation between living and training, and with the advent of schools, passive learning involving memorization and drill became the commonly accepted practice. Active learning was relegated to the background in favor of passive acceptance of facts, informations, and "truths." Woody speaks to this point.

> Indeed, passivity of mind was a virtue; independence of mind, critical questioning of "truth" a sin. Heresy was condemned and punished; unquestioning faith, praised and rewarded.[1]

Passivity of learning continued to be the accepted rule and practice through the Middle Ages and into the Renaissance and Reformation. Educators were primarily concerned with acquisition of classical subject matter and with efforts to inculcate proper religious attitudes

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[1]Thomas Woody, "Historical Sketch of Activism," The Activity Movement, Thirty-third Yearbook of the National Society for the Study of Education, Part II (Bloomington, Illinois: Public School Publishing Co., 1934), p. 10.

in the young. Butts notes the lack of practical, realistic elements in the education of the Middle Ages.

> The concern for the development of the individual and for his preparation to engage in the society in which he would live outside the church was notable by its absence.[1]

Educational theorists of the Renaissance such as da Feltra, Rabelais, Montaigne, Bacon, and Erasmus showed concern for individuality and harmonizing education with nature, but actual school practice displayed wide variance with theory. The subject matter was classical studies, and the tools of learning were memorization, drill, and whippings--a legacy which matured through four centuries and continues as a factor in educational practice today.

This classical ideal in education cannot be overlooked as a force limiting the practice and use of valuable learning activities in present day schools. The power of tradition is strong, and even in the face of indisputable evidence supplied by modern psychological research as to how efficient and effective learning takes place, it is not uncommon to find teacher disciples of this passive, bookish learning of the past, practicing their arts on unhappy children.

Comenius, a scholar and educator of the late Renaissance, was one of the first to rebel against the passive,

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[1]R. Freemen Butts, A Cultural History of Education (New York: McGraw-Hill Book Company, Inc., 1947), p. 196.

bookish methods of the early European school. He saw clearly the need for activity in the education of the young and advanced the then startling concept that words and things should be taught together because children learn from the concrete. Comenius was among the first to see the value of practical arts in formal education. "Learn to do by doing" was one of his cardinal principles, and in referring to the types of instruction which should be found in his Vernacular-School for children between the ages of six and twelve, he said:

> They should 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.[1]

Seeing child activity and experience as a principal means of learning, Rousseau further advanced the concept of active learning. His insistence that education should grow out of native interests and curiosity pointed the way to the use of practical arts in the education of the child. In manual activities and tool processes he saw utilitarian and spiritual values as well as educational values leading to planning and reflection.

He set the stage for study of the child by pointing to several periods of development through which

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[1]John Amos Comenius, The Great Didactic, (Edinburgh: R. & R. Clark, Limited), Chap. XXIX, p. 421.

children grow to maturity. Each of these periods, he declared, required appropriate and differing methods and activities. Rousseau's teachings, including his concern for the natural development of the child, had direct influence on, and is reflected in the work of Basedow, Pestalozzi, Fellenberg, Heusinger, and Froebel who activated many of the principles he so sturdily pronounced.

Basedow, as the first notable follower of Rousseau, taught that early training should be connected with "motion and noise" and advocated the use of practical arts for social reasons and as incentives to book learning.

Pestalozzi, too, rejected the methods of the past and attempted to make "sense impression" the basis for all learning. It was his "object teaching" method which had the greatest influence in advancing active learning both in Europe and the United States where it was introduced through the Oswego Movement in 1860. This theory of "object teaching," including as it did, the element of real experience with many objects of natural interest, opened wide the door to manipulative learning experiences of many descriptions.

Though Pestalozzi firmly believed in practical, manual activities as a method of learning, personal as well as political circumstances prevented only limited use of such work during his long career as a teacher.

Mulhern expresses this view clearly:

> Pestalozzi saw that knowledge itself could be acquired by doing. The needs, problems, and activities of children in their everyday life he recognized as most useful in developing their intelligence and judgment. So important did he consider practical activities and the training of children in practical skills that he would have developed a plan to that end had he had the opportunity to do so. Fellenberg and Froebel filled that gap in his work. Pestalozzi saw in such practical training not only a means for improving the life of the poor, but an educational device, psychologically sound.[1]

As a theorist who practiced his theories, Pestalozzi dealt the classical ideal in education, with its methods of passive learning and harsh discipline, a severe blow from which it has never entirely recovered though the struggle does continue. Younger contemporaries such as Fellenberg, Heusinger, Herbart, and Froebel were directly or indirectly influenced by his concept of learning, and each, in his own way, made unique contributions to the rising theory of active learning.

Heusinger, noted for his theory of the "impulse of activity" and its utilization in the general education of children through manual activities, made a direct contribution to the methods instituted by Pestalozzi and is believed to have had considerable influence on the later kindergarten movement of Froebel. Heusinger advocated the use of a variety of materials such as cardboard, wood,

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[1]James Mulhern, A History of Education (New York: The Ronald Press, 1946), p. 366.

metal, clay, and wax in the implementation of his "impulse of activity" theory.

Froebel continued the assault on the formalized intellectualism which had marked the education of the past by making self-activity, or doing, the very center of educational practice. He believed the educational process must involve motor expression or remain relatively unproductive.

His "occupations," or activities of the child, as listed by his translator, Hailmann, bear an amazing resemblance to the practical arts activities utilized as learning experiences in many effectively organized elementary classrooms today.

> ....the making of simple wooden utensils; the weaving and binding of mats for the table and floor; the binding of books and the ruling of slates and practice paper,...the care of the garden,...the care of pigeons, chickens, ducks, etc., ...the use of pasteboard in the making of stars, wheels, boxes, napkin rings, card baskets, lamp shades, etc.,...the whittling of boats, windmills, water wheels, etc.,...the making of chains and baskets from flexible wire; modeling with clay; drawing and painting, and many other things.[1]

Froebel stressed the use of practical, manual activities as an integral part of the learning process, and we note an almost uncanny understanding of a modern

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[1]Friedrich Froebel, The Education of Man, trans. W. N. Hailmann (New York: D. Appleton and Co., 1897), p. 39.

principle of psychology in his recognition of the unitary nature of human learning.

> Again, to learn a thing in life and through doing is much more developing, cultivating, and strengthening than to learn it merely through verbal communication of ideas. Similarly, plastic material representation in life and through doing, united with thought and speech, is by far more developing and cultivating than the merely verbal representation of ideas.[1]

Froebel's name is thoroughly identified with the kindergarten movement; however, many of the pedagogic principles he enunciated are applicable to other educational levels, and in spite of the fact that they were stated over a century ago remain in accord with the teachings of modern psychology. His view that the growth of the child must come from within through self-activity, and his recognition of the need for motor expression, social participation, and learning by doing are today accepted as axiomatic by competent educators and teachers of vision everywhere, though, unfortunately, not universally practiced.

Herbart's contributions to the ideal of active learning were largely in the field of psychology, and conceding that most of his principles did not stand the searching tests of later psychological research, he did advance the cause of education through his negation of faculty psychology and its pedagogical counterpart,

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[1]Friedrich Froebel, Op. cit., p. 279.

formal discipline. His doctrine of interest as a means in education and his doctrine of correlation have been contributions of continuing significance and today serve as important psychological bases for practice and use of practical arts activities in the elementary grades.

Froebel's teachings, especially his principle of motor expression, led directly to the sloyd or manual training movement which aimed to develop the native capacities of the child through manual operations with tools and materials. Proponents of the program early took the view that manual training was a separate subject and organized this work into a body of content which was to take its place along with other subject matter of the curriculum.

Early European sloyd, designed to bolster lagging home industries, was economic in origin and purpose. Later practice, known as educational sloyd, was considered general education and was based soundly in sense impression and the concept of active learning though it did rely on faculty psychology.

This new movement, paced by Uno Cygnaeus of Finland, Otto Salomon of Sweden, and Victor Della-Vos of Russia, had special significance because, for the first time, practical arts became dignified with an actual subject matter content; it now possessed in its own right a content centering around a variety of materials and

tool processes, and as such, placed added pressure on the passive, literary concept of learning which had so long dominated European education.

The manual training idea along with many of the teachings of Pestalozzi and Froebel were introduced into the United States during the latter half of the nineteenth century by way of American educators travelling abroad and a steady flow of emigrants from continental Europe.

Developments in the United States

Early colonial elementary schools were concerned principally with instruction in the 4 r's (reading, writing, arithmetic, and religion), and, as the sense realism of Comenius and other educators of the seventeenth century had not found its way to the schools of the New World, the educational method continued to be memorization and drill accompanied by severe discipline.

Meager influence of Pestalozzian principles appeared in this country early in the nineteenth century in some texts and pedagogical treatises, but it was not until the latter half of the century that real progress could be noted in the use of the active concept of learning. Several educational movements, following in rather rapid succession, focused the attention of American educators as well as the public on the more effective learning methods

and techniques of Pestalozzi, Froebel, Cygnaeus, and others.

The Oswego Movement, instituted by E. A. Sheldon in 1860, was a direct importation of Pestalozzi's informal sense impression or object teaching techniques, which approached abstract concepts through oral instruction, and observation of concrete objects. Butts points to its effects on elementary education:

> As Pestalozzian methods of teaching were adopted to American practices, newer methods of teaching the three-R's appeared: more attention was given to the study of nature and concrete objects; the practical usefulness of geography, drawing, music, home economics, and industrial arts was recognized; and a psychological rather than a strictly logical organization of subject matter was designed to meet the learning needs of individuals.[1]

The Oswego Movement, which spread rapidly through the normal schools particularly in the mid-west, provided an impetus to newer and more effective methods of learning throughout the country, through misinterpretation in some quarters did slow the trend away from the traditional passive approach.

An even greater contribution to the cause of active learning and the use of manipulative experiences in the United States is found in the kindergarten movement of Froebel, which was instituted in a small way by German immigrants as early as 1850. Taught in German, these

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[1]Butts, op. cit., p. 501.

privately financed schools were based on the principle of self-activity but unfortunately included much of the mysticism of Frobelian "gifts." In 1873 under Superintendent W. T. Harris, the first public kindergarten was established in St. Louis. Thereafter the spread of the movement was most rapid, and with over 500 kindergartens in operation at the opening of the twentieth century, the principle of learning through play and self-initiated activities had taken firm hold on American educational practice.

Of particular concern to the use of practical arts in the elementary grades was the upward extension of the kindergarten idea. This was materially assisted by the arrival of manual training theories from Europe with their argument of mental improvement through manual activities--actually an application of Froebel's principle of motor expression to later grades and periods of child development.

J. D. Runkel and C. M. Woodward pioneered the Manual Training Movement in this country following an exhibition and demonstration of European practices at the Centennial Exposition at Philadelphia in 1876. However, it was Dr. Felix Adler, a forward looking educator and philosopher of this period, who most clearly outlined the basic philosophy of this movement.

> The salient features of the new experiment is that it introduces what may be called the <u>creative method</u> into school education. The system of teaching by object lessons has long been familiar to

> educators. It is proposed to improve upon this system by giving lessons in the production of objects. This step forward taken by Pestalozzi, when he summoned teachers to desist from the vain work of teaching the names of things, and to lead their pupils rather to a first-hand observation of things marked a new epoch in the science of pedagogy. At present, still another step must be taken, viz. from the mere observation to the production of things as a means of acquiring knowledge; and the taking of this step will mark another epoch in pedagogy. Froebel began to apply the principle of the creative method in his Kindergarten. But the Kindergarten system covers only three years of the child's life....[1]

Many grammar schools and a number of primary schools had installed manual training in their curriculum by 1900. Though this work, as taught, proved to be somewhat formal for use in the elementary grades, it did center increased attention on the educational values of manual activities and paved the way for later integrated practices in the use of practical arts activities.

Paralleling and, to some extent, interlocking with the manual training movement appeared the effort to utilize household arts as educational media. This school movement, while largely indigenous to this country, found support as early as the seventeenth century in the teachings of Comenius and later was incorporated as a regular practice in English schools where, according to Monroe,

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[1]Felix Adler, Princeton Review, March, 1883, quoted in Charles A. Bennett, History of Manual and Industrial Education, 1870 to 1917 (Peoria: Chas. A. Bennett Co., Inc., 1937), p. 417.

the processes were "simple and conducted by regular teachers in grade rooms."[1]

The movement in the United States originated in private schools chiefly in Boston, Philadelphia, and New York. The public schools of Boston assumed responsibility for some work in cooking and sewing in 1885, and the plan soon spread to other cities in the east. Monroe cites the use of household arts in ninety-five elementary schools as early as 1909.

Powerful support was accorded the utilization of practical activities in the elementary grades by John Dewey, philosopher and educator of the late nineteenth and twentieth centuries. Denying, as he did, the dualism of mind and matter, he held that knowledge and learning originated in and resulted from activity and experience. Verbal studies must be reinforced with active, practical experiences which have interest and meaning for the child. The occupations of the home and community he saw as appropriate learning experiences for the school, and these he made the center of the curriculum. In activities centering around construction, use of tools, sewing, preparing foods, gardening, and contact with nature he beheld opportunities for purposeful solution of problems recognized by the child as worthwhile. These activities were not

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[1]Paul Monroe, Cyclopedia of Education (New York: MacMillan Co., 1925), p. 320.

viewed as formal, utilitarian exercises but as cooperative and mutually helpful living experiences. Dewey stated:

> Aside from the fact that active occupations represent things to do, not studies, their educational significance consists in the fact that they may typify social situations. Man's fundamental common concerns center about food, clothing, shelter, household furnishings, and the appliances connected with production, exchange, and consumption. Representing both the necessities of life and the adornments with which the necessities have been clothed, they tap instincts at a deep level; they are saturated with facts and principles having a social quality.[1]

Thus Dewey pointed out that education had two sides, the psychological and the social, both of which must be given consideration in the development of the child. In occupations "represented by the shop-work with wood and tools; by cooking, sewing, and by the textile work"[2] he recognized a means for coordinating the two. Through practical arts he saw a method of introducing the more formal, abstract concepts of education.

> The fundamental point in the psychology of an occupation is that it maintains a balance between the intellectual and the practical phases of experience. As an occupation it is active or motor, it finds expression through the physical organs--the eyes, hands, etc. But it also involves continual observation of materials, and continual planning and

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[1]John Dewey, Democracy and Education (New York: The MacMillan Company, 1916), p. 234.

[2]John Dewey, The School and the Child (London: Blackie and Son Limited (no date), p. 81.

and reflection, in order that the practical or executive side may be successfully carried on.[1]

In Dewey the basic concept of education through self-activity received its fullest and most convincing expression. Though many have challenged Dewey's philosophy and others have disagreed with the purposes he set for education, there has been a universal acceptance that pupil-activity, spontaneous or teacher directed, is a most effective method of learning at the elementary school level.

The spread of the activity idea was slow in the early decades of the twentieth century. The Francis W. Parker School founded at Chicago in 1901 and the Junius L. Meriam School at the University of Missouri in 1904 were two outstanding experimental schools of this period. Both broke with the traditional concept of rigid subject matter and sought to bring life and school together through activities centering around practical arts work, field trips, observation, and other forms of self-expression.

The practices of these and other experimental schools bolstered with methodology borrowed from agriculturalists led rather directly to the "project or problem" method. This method, popularized by William Kilpatrick, was based on Dewey's principle that a complete act of thought results only from a felt need and the solution of a problem finds its origin in that need.

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[1]John Dewey, The School and the Child, pp. 81-82.

Kilpatrick maintained that the school should be a place where actual experiencing takes place; where proposeful activity takes place under conditions approximating those of real life.

Though by no means the exclusive media utilized in the project-problem method, practical arts activities have a prominent and necessary place in the implementation of this approach to learning. Such activities provide purposeful, realistic experiences capable of stimulating self-activity on the part of the pre-adolescent child. Whether it be making science equipment, weaving a Mexican rug, designing and sewing clothing for character dolls, planting and caring for a school garden, preparing simple foods, or writing and duplicating a grade newspaper, each problem situation carries its own intrinsic rewards.

We have traced the growth of the active concept of learning through several centuries culminating in the brilliant logic of John Dewey of our own times. The course of education has moved relentlessly through the years toward the use of the activity or experience curriculum with its practical arts activities, problem-project methods, units of work, and centers of child interest. Adequate grounds for acceptance of this active approach to learning can be found in the educational movements, theories, and practices of both past and present.

Psychology of Active Learning

Recent developments in the field of psychology further support the substantial nature and effectiveness of the experience curriculum. Within the last two decades the imported German Gestalt psychology and its American version, organismic psychology, have provided the activity movement with a theoretical basis. McGaughy points to two reasons for the rapid spread of this new psychology. He says:

> Since the introduction of the theory of organismic psychology in the United States, its acceptance has been very rapid, partly because it is consistent with the Dewey philosophy of education, but mostly because it fits in perfectly with the observed facts noted in school, in the home, and on the street as to how children learn.[1]

Crawford, who apparently regards "project" and "activity" as one and the same thing, supports McGaughy's view. He says:

> Project teaching is psychologically sound because it is organismic rather than mechanistic. It is in harmony with Dewey's philosophy of educating the whole child as a unit instead of a series of little pieces. It breaks the hold of the static traditional subject matter curriculum, in which the acquisition of little pieces of knowledge was supposed to constitute an education. It educates the whole child as a whole instead of by trying to put the parts together synthetically. The fundamental assumption of the Gestalt school of psychologies is that the whole is greater than the sum of its parts; that the parts derive their meaning and have their value only as they grow out of or depend on the whole. The project applies this

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[1]J. R. McGaughy, An Evaluation of the Elementary School (New York: The Bobbs-Merrill Company, 1937), p. 188.

> psychology by letting the child undertake to do something which he finds worth doing and letting the bits and fragments that formerly were thought of as education grow out of this total organismic undertaking.[1]

Organismic psychology supports the use of manipulative activities in its thesis that growth and development are a unitary process. The physical and the mental cannot be separated because the individual in his environment is a single unit.

Efficient learning necessitates viewing parts in their total relationship first, because the learner may know all the parts and not understand the whole. "A whole is more than the sum of its parts, and parts derive their properties from wholes."[2] Thus school learning situations which fuse many subject matter areas provide a more meaningful approach for the child. Once the child has been introduced to the total activity plan or experience unit, details assume meaning in the light of the whole activity, and reasons are discerned for reading, drill, memorization, and similar contributing elements.

Trow describes "learning by doing" in terms of the organismic concept of individuation:

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[1]Claude C. Crawford, How To Teach (Los Angeles, So. California School Book Depository, 1938), p. 402.

[2]R. H. Wheeler and F. T. Perkins, Principles of Mental Development (New York, Crowell Co., 1932), p. 18.

> One can learn to do something only by doing it. .... The point of view in the learner changes when he is participating. He is no longer looking at what is going on. He is within the structure; he is part of the pattern that is evolving. He may see and hear himself, but he must also kinesthetically feel himself in the "part." The part is an activity figure that is set off from, or individuated out of, the ground of the rest of the action.[1]

Organismic psychology further views much learning as goal-seeking. Effective learning depends on the strength of the goal or motive, i.e., if there is no purpose on the part of the learner there is no learning. It is not sufficient that the teacher know the pupil's need; the learning situation must bring awareness to the learner of this need. "Belonging" or knowledge of result is necessary. Wheeler notes:

> Mastering a task in an adequate and efficient fashion, for the sake of the knowledge and the use that the mastery of the task is to give the individual, should be the true measure of the learning process.[2]

Practical arts problems involving planning, construction, and ultimate utilization of the product carry in full measure their own intrinsic rewards as do many other activities associated with the experience curriculum. Basic child needs for activity and investigation provide the primary motivation in such constructional problems.

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[1]William Clark Trow, Educational Psychology (Boston: Houghton Mifflin Company, 1950), p. 395.

[2]R. H. Wheeler, "Climate and Human Behavior," Encyclopedia of Psychology, ed. by P. L. Harriman (New York: Philosophical Library), p. 81.

The organismic concept of "pacing" holds that most efficient learning takes place when tasks or problems are within the "range of challenge." Learning tasks should be regulated to the level of the child's capacity. The degree of difficulty should be sufficiently great to challenge the child but not great enough to discourage him. Because individual abilities differ widely, large learning situations are necessary to provide a sufficient range of difficulty for all learners in a given group or grade. Experience or activity units with their possibilities for manipulative, as well as for less overtly active, approaches to learning permit "pacing" appropriate to the varying needs of children.

Transfer in the organismic view depends on whether or not the learner recognizes the new situation as similar. There is no limit to transfer of learning except in the frequency with which the pattern or figure occurs in life. Thus maximum transfer requires utilization of school learning situations which resemble conditions under which they may later be used. Because of their direct application to many out-of-school situations, practical arts activities afford rich opportunities for the child to learn things in the form and setting which they will be used. This is especially true when they are practiced in the larger orbit of the experience curriculum.

In this chapter the historical foundations and psychological bases underlying the use of practical arts activities in the elementary grades have been outlined. It is hoped that this brief treatment has verified in some measure the need for such activities as learning experiences for pre-adolescent school children.

The following chapter deals exclusively with factors at work in school situations which may retard or promote utilization of activities of a practical arts nature in elementary schools.

CHAPTER III

FACTORS AFFECTING THE USE OF PRACTICAL ARTS ACTIVITIES IN THE ELEMENTARY CLASSROOM

There are many factors or forces at work in and out of the modern school which affect the type and quality of learning experiences provided our children. Some are positive and salutary in effect; others are negative and retarding, but all need to be accounted for and reckoned with in the continuous effort to furnish an efficient and effective learning environment. Some factors must be regarded as limiting circumstances which block optimum realization of the desirable goals of the school. These need to be isolated and, if possible, eliminated. Others are known to be circumstances which promote advancement toward the goals of modern education. These need encouragement and support.

Though we educate the whole child and regard learning, particularly at the elementary school level, as a unitary process, it is entirely proper and even necessary that on occasion we separate or isolate one or more of the many areas of learning from the whole for purposes of investigation and inquiry.

Practical arts work, because it is relatively new as a method and area of learning in the elementary classroom, requires that consideration be given to certain of its unique elements if it is to be successfully practiced. At present, few of the conditions or factors which promote or limit its utilization in the classroom are known with any degree of certainty. Intelligent guesses and limited survey studies have been of assistance in revealing some of the factors affecting the use of these activities. More serious and exacting work, however, is required if practical arts is to be advanced to a place where it can function adequately in the curriculum of the elementary school.

Review of Related Literature

A search of the literature in this area revealed no statistical approach to the problem. Several survey studies dealt incidentally with "hindrances," "obstacles," and "difficulties." "Limitations" and "essential factors" were mentioned infrequently by several authorities in the general field.

Hawes made direct, though incidental, approach to the problem in a survey study reaching 167 graduates of Ohio State University and 42 teachers in an "unselected" group. His study investigated both one-teacher (self-contained) and departmental organizations with over 90

per cent of the respondents in the self-contained classroom group. He found:

> Eighteen items which respondents considered as hindrances to the provision of industrial arts experiences in their schools were mentioned 161 times by 82 per cent of the graduated and 60 times by 60 per cent of the unselected group who answered this part of the inquiry. The principal obstacles, in the order of frequency of mention, were: lack of space, materials, equipment, and time.[1]

Haws' listing of the items reported as "hindrances" provides an interesting array of reasons commonly advanced by teachers for not providing industrial arts experiences in the classroom.

Hindrances Reported	Number Reporting
Lack of equipment and tools	43
Lack of materials	44
Inadequate space	81
No time allotment	22
Teacher lacks skills	7
Teacher lacks self-confidence	6
No funds available	9
Large classes	5
Teacher lacks enthusiasm	2
Fear of administrator	1
Takes too long to get materials	1
Emphasis entirely on special classes	1
Industrial arts regarded as non-essential	8
Too much emphasis on fundamentals	6
Rigid authoritarian schedule	1
Atmosphere not conducive to the work	1
Too many requirements	2
Traditional school system	1

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[1]Robert W. Haws, "The Emerging Role of Industrial Arts in the Experience Curriculum of the Elementary School" (Unpublished PhD. dissertation, Ohio State University, 1945), p. 189.

The general picture presented by this list should be approached with some degree of caution for several reasons. In the first place, the respondents were, with few exceptions, college graduates with a minimum of six hours of specialized training in practical arts techniques and subject matter; a select group in which the training factor could scarcely be a serious limiting circumstance.

Secondly, Haws was of the opinion that the space factor was probably given undue emphasis because it had been suggested as an obstacle in the questionnaire supplied the teachers. Thirdly, numerous items were reported by but one or two respondents, which leaves some doubt as to their general application as limiting factors. Fourthly, an undetermined amount of rationalization must be expected in a survey technique which depends on individual opinion as to why practical arts is taught or not taught.

The factors exposed by a review of the literature fell into several rather well defined areas including educational, personal, public relations, economic, physical, noise or disturbance, and supervisory or administrative.

The amount of general and specialized training was rather consistently treated. Duncan, in a recent University of Missouri study with 267 elementary teachers reporting, found that, "Teachers who had done work beyond a master's degree were the most consistent uses of practical arts activities of any group analyzed on the basis of

general college education." And in relation to specialized training that "Special training in practical arts subjects had a direct bearing on the extent to which the teachers used these activities in their teaching."[1]

Beckett in a study at Long Beach, California, reported only 61 out of 181 teacher respondents made any attempt to fill out the list of tools needed to carry on their classroom industrial arts activities. In his opinion,

> ....the usual classroom teacher has insufficient knowledge of hand tools to select an acceptable equipment for industrial arts activities. That being the case, it seems quite obvious also that her efficiency in directing the use of such tools would be at least no greater than her ability to select them.[2]

An Oregon State College survey by Bernard concerning expressional handicraft in elementary schools placed deficiency in handicraft training on the part of classroom teachers as "The most serious difficulty...for this new type program."[3]

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[1]G. S. Duncan, "Practical Arts Activities Employed by Elementary Teachers and Their Desirability for Teacher Education" (Unpublished Ed. D. dissertation, University of Missouri, 1950), p. 258.

[2]Percy R. Beckett, "Industrial Arts and the Activity Program of Elementary Education" (Unpublished Master's thesis, School of Education, University of Southern California, 1936), p. 55.

[3]Francis M. Bernard, "Development of Expressional Handicraft in the Long Beach Elementary Schools" (Unpublished Master's Thesis, Oregon State College, 1941), p. 18.

Van Wyen,[1] after an investigation of industrial arts activities in five counties of Ohio reported that one-third of the teachers had no training in industrial arts.

Lane maintained that it is a misconception to believe all teachers are presently able to utilize practical arts activities in their teaching. He says,

> There is a popular fallacy that the average classroom teacher is quite competent in woodwork, metalwork, bookbinding, cooking and sewing, and if she balks at being assigned these instructional areas she is merely being disagreeable about it.[2]

Personal factors of teacher age, experience, and attitude are referred to directly or indirectly in several instances.

Duncan[3] concluded that "Practical arts appealed more to the youngest teachers, twenty to thirty years of age, than to other age groups." Concerning experience he found that "Teachers who had five or more years of teaching experience used practical arts activities more in their teaching than those who had less."

Bernard, in his status study of expressional handcraft, saw age and traditional type training as

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[1]Adrian Van Wyen, "The Program of Industrial Arts Activity in the Elementary Grades and Its Relation to the Training of Teachers" (Unpublished Master's Thesis, Kent State University, 1938), p. 48.

[2]Robert H. Lane, The Teacher in the Modern Elementary School (Boston: Houghton Mifflin Co., 1941), p. 345.

[3]Duncan, op. cit., p. 258.

adversely affecting the teacher's attitude toward integrated handwork activities. He writes:

> Some of the older, traditionally trained teachers....do not make use of the available materials for allowing the child to give free expression to his natural desires for hand work, and from this activity to incidentally teach the subject matter she has been traditionally trying to teach.[1]

Gustin and Hayes call attention to the importance of the public relations factor in the promotion of manipulative activities in the elementary classroom. "One of the essential factors in setting up an activity program is a sympathetic attitude on the part of school patrons."[2]

Fales implied the need for parent support for practical arts work when he said, "The book work concept of education...is still supported by many laymen and educators."[3]

The economic factor as a limiting circumstance was emphasized by Bernard. He wrote, "The limitations of the (expressional handwork) program may be conveniently placed in two divisions, viz. instructional and financial."[4]

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[1]Bernard, op. cit., p. 18.

[2]Margaret Gustin and Margaret L. Hayes, Activities in the Public School (Chapel Hill: The University of North Carolina Press, 1934), p. 20.

[3]Roy G. Fales, "Industrial Arts in General Education" (Unpublished Ed. D. dissertation, School of Education, New York University, 1947), p. 59.

[4]Bernard, op. cit., p. 19.

Perry, too, saw costs as an inhibiting factor after attempting to set up an integrated arts program for elementary grades at Greeley, Colorado. He concluded "That any program would have to be developed on a minimum expense basis."[1]

Fallis saw relief for insufficient equipment and supplies due to limited financial support in increased effort on the part of the teacher. She says:

> To provide the equipment and materials needed for constructive classroom activity has become a part of the teacher's job, for in most schools equipment and materials are inadequate.[2]

Loats, too, pointed to physical conditions as limiting circumstances. In a survey reaching 151 recent graduates of Ball State Teachers College he found:

> Lack of supplies and materials was the hindrance most often encountered in carrying out an activity program as indicated by 104 or 70.74 per cent of the 147 elementary teachers answering this part of the questionnaire. Lack of classroom space was the second most often encountered hindrance as reported by 103 or 70.06 per cent of the respondents. Lack of industrial arts classroom equipment was ranked third as the hindrance encountered by 94 or 65.94 per cent of the elementary teachers. Lack of time and lack of commonly used hand tools were ranked fourth as checked by 84 or 57.14 per cent of the teachers.[3]

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[1]Kenneth F. Perry, "A Diversified Arts Program" (Unpublished Master's Thesis, Columbia University, 1943), p. 45.

[2]Fallis, op. cit., p. 2.

[3]Henry Andrew Loats, "A Program of Industrial Arts for the Preparation of Elementary Teachers, Ball State Teachers College, Muncie, Indiana" (Unpublished PhD. dissertation, Ohio State University, 1950), pp. 112-113.

Bernard found the problem of supplies and equipment "difficult" in his study of the Long Beach area. To this point he wrote, "The problem of instructional supplies and equipment have been most difficult to handle."[1]

The teaching load factor was touched lightly by Loats[2] who reported that over one-third of the 151 teachers polled felt that too great a teaching load hindered them from carrying out an industrial arts activity program.

Factors of noise and untidiness are recognized in several instances. Perry concluded after his five year experimental program of integrated arts at Greeley, Colorado, "that the problem of noise control would be very difficult to handle."[3]

Gustin and Hayes recognized the noise factor in practical arts activities and suggested that:

> Teachers agree on a special time for the activity period, if activities such as hammering go on simultaneously in different rooms they will not disturb each other.[4]

Bernard saw untidiness resulting from handicraft activities as well as noise as limiting factors in the case of some teachers. He declared rather pointedly;

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[1]Bernard, op. cit., p. 19.

[2]Loats, op. cit., p. 113.

[3]Perry, op. cit., p. 45.

[4]Gustin and Hayes, op. cit., p. 277.

> A third group of teachers are those who dislike this type of work, either because of their own inability to do any kind of handcraft themselves, or entertain the notion that it is **messy** work and do not like to have the **noise** and confusion--to them--of an activity carried on in their classrooms.[1]

Haws recognized the supervisory factor as demanding consideration. He felt that;

> A sympathetic administration could go a long way toward removing many of the present obstacles which block a program of industrial arts experiences being offered in many elementary schools.[2]

The literature found to bear on the central problem, though not extensive, supported the need for an investigation in this area. It further assisted materially in isolating and defining the boundaries of factors which could be profitably included in an inquiry utilizing a statistical approach.

Factors Selected for This Inquiry

The factors finally accepted for the investigation were grouped under eight general headings, viz., training, personal, public relations, teaching load, supervision or advisory, economic, physical, and disturbance. It was realized that arbitrary grouping would result in overlapping, but such grouping was believed necessary to provide a systematic approach to the problems of collecting and tabulating the data. Some of the basic thinking

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[1]Bernard, op. cit., p. 18.

[2]Haws, op. cit., p. 192.

involved in the final selection of these factors is outlined in the remainder of the chapter.

Training Factors

The amount and quality of general professional education may affect the quality of learning experiences which teachers provide their pupils just as the amount and quality of training in specialized subject matter areas may affect the types of learning experiences utilized by the teacher. Thus it seemed necessary to include general professional education and certain types of specialized training as factors in this study.

Attention to educational or training factors centered at the level of higher education, though some consideration was given to work experience and hobby activities. Education at the secondary level was considered as of lesser importance, and from the professional standpoint, as not directly related to the problem.

The amount of general professional education and the amounts of industrial arts, homemaking, and fine arts training at the college level seemed elements worthy of investigation. Because of the difficulty of securing reliable data on qualitative aspects of professional training in a study of this scope, only quantitative aspects were included.

Do teachers with more professional education incline more to the use of practical arts learning activities in their teaching?

Does the amount of college work in industrial arts, homemaking, or fine arts influence the use of practical arts activities by the elementary teacher?

Personal Factors

Teachers, as well as workers in other professional fields, are often employed and assigned to specialized jobs because of certain personal characteristics and experiences. For this reason personal elements of sex, age, marital status, teaching experience, salary, hobbies and work experience were regarded as possible factors in the use of practical arts by teachers in the elementary grades.

Do men more often utilize practical arts in their teaching than women?

Do younger, and possibly more recently trained, teachers more frequently provide practical arts learning experiences for their pupils?

Are teachers who use practical arts subject matter and techniques paid higher salaries?

Does the number of practical arts work experiences and the number of practical arts hobbies of teachers influence the amount of practical arts work which they provide for their pupils?

Public Relations Factor

Lay interest in schools and accompanying criticisms of school programs of study are a necessary part of our democratic system. This concern on the part of parents can encourage progress by stimulating appraisal and evaluation of school subject matter, methods, and techniques on the part of professional workers in education. This same public concern may also retard progress toward the use of more effective methods and more suitable subject matter when based on an inadequate philosophy of education and an imperfect understanding of school objectives and problems.

Because aggressive lay interest may exert either a positive or negative influence on the school's search for and use of more substantial and efficient methods and areas of learning, it seemed appropriate and necessary to include parent and press attitude as a factor in this investigation.

Do attitudes of parents and community newspapers affect the amount of practical arts learning activities afforded pupils in the elementary schools?

Is this attitude generally favorable or unfavorable toward the use of these activities?

Teaching Load Factor

It is generally agreed that most teachers, particularly at the elementary level, carry a teaching load

that is too heavy for most effective teaching. With its roots in economic necessity, forced by less than adequate financial support to many schools, excessive teaching load becomes a factor limiting the optimum realization of the school objectives and condemning many capable teachers to mediocre performance of their duties.

The number of pupils and the number of separate grades assigned to one teacher are important elements in teaching load which, when excessive, may either propel teachers forward toward more effective teaching methods or backward toward acceptance of teaching as a somewhat futile and discouraging task.

Most teachers are understandably opposed to mere additions to the curriculum. Additions or changes must promote more adequate and effective realization of pupil needs and school objectives to warrant approval by the busy teacher.

Practical arts and handwork activities have had a place in the curriculum of certain elementary schools for many years. In many others these activities have been practiced little or none. Teaching load may or may not be a factor in their use, but there seems to be sufficient evidence to warrant the inclusion of this element in the present investigation. Does the teacher with a heavy teaching load use practical arts activities less than the teacher with a lighter load?

Supervision or Advisory Factors

The influence of the principal or supervisor in relation to the establishment of a basic educational policy is of considerable importance in many schools. Leadership, at this level, may and usually does affect the subject matter, methods and techniques employed by individual teachers. It seemed desirable, therefore, to determine whether or not administrative attitude is a factor in limiting or promoting the use of practical arts activities at the elementary school level.

Does the attitude of the principal or supervisor toward the use of practical arts activities affect the use of such activities by the classroom teacher?

Does a rigid daily program of studies imposed by the administration limit the use of practical arts activities by the classroom teacher?

Economic Factor

The quality and often the type of instruction afforded pupils in a school are dependent in large measure upon the amount of money available for support of the school. The teaching staff, the physical plant, as well as instructional supplies reflect either positively or negatively the operation of this economic factor.

The possibility of neglect or curtailment of effective learning areas is present in schools where adequate instructional supplies are not available. Because

employment of certain areas and methods of instruction (including practical arts) are particularly dependent on instructional supplies, it was considered desirable to include the availability of and the need for such supplies as factors in this study.

Do classroom teachers who utilize practical arts activities in their teaching use more instructional supplies than those who do not utilize such activities?

Are needs for instructional supplies in the practical arts area adequately met?

Do teachers using practical arts activities find it necessary to spend more of their personal funds for supplies than do teachers not using these activities?

Disturbance Factors

Learning activities not completely in the pattern of the traditional school may encounter in their execution seeming problems which prevent full realization of their objectives and, in some instances, may render their utilization impossible even by superior teachers.

Traditional classroom learning was carried on in a formal, orderly, but artificial setting where quiet bookishness was held at high premium. Informal, live learning situations which might involve some necessary noise or temporary untidiness in the classroom were not considered compatible with learning.

This view still prevails in some quarters among both parents and teachers and may be a factor limiting the use of practical arts activities which involve noise and create temporary untidiness.

Do teachers who use practical arts activities feel differently about the noise and untidiness resulting from certain practical arts activities than teachers who do not use these activities?

Do teachers use practical arts activities less in school situations where objections (to resulting noise and untidiness) on the part of pupils, fellow-workers, and parents are more prevalent?

Is adequate classroom insulation for sound conducive to the use of practical arts activities?

Physical Factors

Because classroom physical conditions are known to have some influence on the subject matter, and methods, and the techniques employed by the teacher, it was believed that the use of practical arts activities would be accompanied by the presence of certain physical conditions in the classroom and school.

Some physical factors are doubtless more directly related than others to the use of practical arts activities. However, the inclusion of a variety of physical elements as factors directly or indirectly related, seemed

desirable to provide a general picture of what classroom physical conditions prevail when practical arts activities are a part of classroom subject matter and technique.

Are fixed desks and seats a factor limiting the use of practical arts activities?

Are certain built-in facilities such as electrical outlets and sinks with running water factors promoting the use of practical arts activities in the elementary classroom?

Do teachers who utilize practical arts activities more frequently have pupil activity space or room than those who do not utilize such activities?

Does classroom acoustics affect the use of practical arts activities?

Do small classrooms limit the use of practical arts?

Is classroom tool and material storage space a factor in the use of practical arts activities?

Does the availability of hand tools, utensils, or machines affect the utilization of practical arts in the elementary classroom?

Are work benches and tables for constructional activities factors in the use of practical arts activities?

Hypotheses

In the early stages of this study and the need became apparent for certain guide posts to provide

direction and immediate purpose throughout the investigation. Accordingly certain hypotheses or assumptions were set up as a frame of reference. These original hypotheses are recorded below to acquaint the reader with some of the basic reasoning which preceded the statistical attack on the problem.

1. Teachers who utilize practical arts activities will have attained a higher level of professional training than those who do not utilize such activities.

2. More training in the specialized areas of industrial arts, homemaking, and fine arts will have been attained by teachers who use practical arts in their teaching.

3. Greater use of practical arts will accompany each of the following personal characteristics, experiences, or circumstances relating to the classroom teacher: male sex, younger teachers, more practical arts hobbies, more practical arts work experiences, and higher salaries.

4. There will be a negligible relationship between the use of practical arts and the following personal characteristics and experiences on the part of the teacher: marital status and amount of teaching experience.

5. Practical arts activities will be utilized more often in communities where parent and press attitude is seen by teachers as favorable to their use.

6. There will be a negligible relationship between teaching load and the use of practical arts activities.

7. A favorable attitude on the part of the immediate supervisor (principal or supervisor) will be conducive to greater use of practical arts by the classroom teacher.

8. A rigid daily program of studies imposed by the school administrator will adversely affect the use of practical arts activities by the classroom teacher.

9. Costs of instructional supplies will be greater in classrooms where practical arts activities are utilized.

10. Noise and litter resulting from certain practical arts activities will be factors limiting the use of practical arts activities in the elementary classroom.

11. Certain physical factors, viz., movable seats and desks, tables for constructional activities, workbenches with vise, tool and material storage cabinets, hand tools for wood and metal, utensils for preparing food, sinks with running water, electrical outlets, electric or gas plates, activity space, insulation for noise, and larger floor areas will be present to a greater degree in classrooms where practical arts activities are employed.

12. There will be a negligible relationship between the use of practical arts activities and the presence of individual tool kits, jig saws, and sewing machines in the elementary classroom.

A review of related literature in the present chapter showed that the central problem of this investigation has been recognized by numerous authorities and writers in the general field. It was evident, however, that a detailed, scientific approach to the problem of disclosing factors affecting the use of practical arts in the elementary classrooms had not been undertaken. Accordingly, factors deemed worthy of investigation in this study were selected, discussed, and grouped under several general headings. Following the selection of factors certain predictions or hypotheses were advanced as to the role these factors would play in classroom use of practical arts activities.

The method of obtaining data relating to these factors and the statistical procedures employed in treating these data is described in the following chapter.

CHAPTER IV

METHOD OF INQUIRY

The Questionnaire

The instrument for obtaining data was built around the factors discussed in the preceding chapter relating to the use of practical arts activities in the elementary grades. The format of the questionnaire was such as to supply data in a manner adaptable to statistical manipulation. Its arrangement also permitted use as a basis for interviews.

Considerable effort was exercised to put the items in a form which could be checked with accuracy and reasonable speed. (Average checking time was twenty-five minutes.) All items were directed to the classroom teacher.

The questionnaire was checked for usability in a trial run reaching some twenty teachers in several schools in the State and with minor revisions was put in final form. (See Appendix.)

The Procedure for Obtaining Data

The following procedure, involving a "double check" system, was employed to obtain the raw data for the statistical portion of the study.

Principals (or superintendents in small systems) from a random selection of elementary schools in the thirty-four southernmost counties of Michigan were requested by letter to supply names and addresses of classroom teachers in grades one through six who used practical arts in their teaching. These teachers were promptly mailed the information forms described earlier.

A second letter was then sent to these same administrators requesting names of classroom teachers who did not utilize practical arts in their teaching. This second group of teachers were mailed the same questionnaire, coded to make separation of returns between the two groups easier.

Two follow-up letters were sent both groups of teachers. One followed two weeks after the questionnaire. The second was mailed three weeks after the first reminder.

As a means of verifying the accuracy of the selections of teachers by the principals, a self-rating scale was placed in the form itself. Respondents were asked to indicate how often they used practical arts in their classroom on the quantitative scale shown below.

___ every day

___ two or three times a week

___ once a week

___ two or three times a month

___ once a month

___ two or three times a semester

___ two or three times a year

___ never

A total of two hundred and ninety-five forms were mailed teachers reported by their principals as utilizing practical arts activities. One hundred and ninety, or slightly over seventy-five per cent, returned the form. Of this group seventy-one teachers indicated that they used practical arts two or more times a week. Ten teachers were disqualified: five because they represented platoon organization, and five because they taught grades other than one through six. The remaining select group of sixty-one teachers supplied data as "users" of practical arts.

A total of two hundred and ninety-five forms were mailed teachers reported by their principals as making little or no use of practical arts activities. One hundred and eighty-six teachers, or over sixty-five per cent, returned the form in this group. Sixty-one teachers indicated that they <u>never</u> used practical arts activities. Thirteen were disqualified: eleven because they represented schools with departmental or platoon organization, and two because they taught grades other than one through six. From the remaining select group of forty-eight teachers came the data for the other extreme or "non-users" group.

Thus from the total of three hundred and seventy-six returns it was possible to use data supplied by only one hundred and nine of the respondents participating in this inquiry. The central or "neutral" segment of the returned questionnaires was filed for possible future study.

Validity of the Data

Admittedly the weakest part of this inquiry lies in the use of the questionnaire as a means of supplying data. Since no other means seemed possible in a study of this type and scope all possible efforts were taken to insure valid returns. The questionnaire was addressed to classroom teachers, and effort made to employ terminology they could clearly understand. There was no evidence that any of the items were misinterpreted. All items used in the statistical procedure were arranged so a simple check (✓) or numerals supplied by the respondents would provide the necessary data. To further insure validity a selection of several teachers in each group were interviewed. All data so checked materially coincided with that of the original returns.

Statistical Procedures

The statistical procedures employed in this study are used to test whether there is a difference in the degree to which a given factor is present in two types

of situations. The null hypothesis that the means or proportions are the same is tested with alternative hypothesis that the means or proportions of one is greater than the other.

For those factors which can be expressed numerically, the Student-Fisher t test of differing means is utilized, and for factors which simply exist or do not exist (dichotomous factors) the difference of two percentages is tested.

Difference in Means

The formula[1] employed in the Student-Fisher t test is as follows:

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{\frac{\Sigma(X - \bar{X})^2 + \Sigma(Y - \bar{Y})^2}{N_x + N_y - 2} \left(\frac{1}{N_x} + \frac{1}{N_y}\right)}}$$

The number of degrees of freedom is $N_x + N_y - 2$. A table of t values is entered for the appropriate number of degrees of freedom, and the probability is found that a t value should equal or exceed the value computed from the data submitted in the study. If the probability is less than .01 the null hypothesis (hypothesis of no difference in means or variances) is rejected, and the

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[1]Paul R. Rider, Statistical Methods (New York: John Wiley and Sons, 1948), p. 92.

conclusion is drawn that the two samples come from populations with different means or variances or both. In this event the variances are tested by the variance ratio or Snedecor F test, and if they are found to be significantly different, the difference of means is tested by the Behrens-Fisher test.[1] If the F test does not show a significant difference in variances, the significant value of t is known to be caused by a difference in means, and it is not necessary to apply the Behrens-Fisher test.

From this significant difference in means we conclude that the factor tested is present in one type of situation more than in the other. A 5 per cent level of confidence can be used instead of a 1 per cent level, if less certainty of a difference is acceptable.

The formula employed in the Snedecor F test[2] is as follows:

$$F = \frac{\frac{\Sigma (X_1 - \bar{X}_1)^2}{N_1 - 1}}{\frac{\Sigma (X_2 - \bar{X}_2)^2}{N_2 - 1}} ; \quad \begin{matrix} M = N_1 - 1 \\ N = N_2 - 1 \end{matrix}$$

From those predictions which take into account the direction of the difference, i.e., those which assume the mean of one group to be greater than that of

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[1] J. F. Kenny and E. S. Keeping, Mathematics of Statistics, Part II (New York: D. Van Nostrand Company, Inc., 1951), pp. 257-260.

[2] Ibid., pp. 180-182.

the other, only one tail of the probability curve is used in determining levels of significance. In this approach the levels of significance of the predicted results are obtained by reducing one-half the probabilities reported in the conventional t tables since these tables use both halves of the probability curve.

For those hypotheses or predictions which do not take into account the direction of the differences, the area in both tails of the probability curves is taken into account in determining the levels of significance. In this approach the t values or probabilities are used as reported in the tables. The probabilities used are, of course, affected by the number of degrees of freedom in both approaches.

Difference in Percentages

The difference of percentages is computed by the following formula:[1]

$$t = \frac{p_1 - p_2}{\sqrt{PQ\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

All raw counts are converted to per cents. These per cents are per cents of the total number of respondents in each group of teachers--61 in the case of teachers who

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[1]Rider, op. cit., p. 82.

use practical arts and 48 in the case of teachers who do not use practical arts.

Here, as in the case of differing means, when predictions take into account the direction of the difference, only one tail of the normal probability curve is used in determining levels of significance. In this approach an absolute value of t of 1.64, or greater, will occur 5 per cent of the time, and values of 2.33, or greater, will occur 1 per cent of the time.

When predictions do not take into account the direction of the difference, both tails of the curve are used, and an absolute value of t of 1.96, or greater, will occur 5 per cent of the time, and values of t of 2.58, or greater, will occur 1 per cent of the time.

Confidence Limits

In certain cases throughout the study where a listing of confidence limits of the sample means of the two groups will have value for the reader the following formula[1] is used:

$$\bar{X} - t\sqrt{\frac{\Sigma(X - \bar{X})^2}{N(N - 1)}} \leq \mu \leq \bar{X} + t\sqrt{\frac{\Sigma(X - \bar{X})^2}{N(N - 1)}}$$

The statistical treatment described in the preceding pages will reveal which of the factors selected for

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[1]Alexander M. Mood, Introduction to the Theory of Statistics (New York: McGraw-Hill Book Company, 1950), p. 225.

this study play a role in the practice and use of practical arts activities in the elementary grades by testing whether or not the degree to which a given factor is present in one group differs significantly from that in the other group. It makes possible a scientific approach to the central problem of what circumstances prevail when practical arts are utilized in the elementary classroom.

CHAPTER V

THE MEANING OF THE DATA

The data presented here are based on the returns from sixty-one elementary teachers who use practical arts activities in their teaching and forty-eight elementary teachers who do not use these activities. The process of selecting these two groups was described in the preceding chapter as were the statistical procedures employed to test and give meaning to the data. The same grouping of factors used in the collecting and recording of data is retained in this chapter in the hope that it will make possible a more orderly presentation of the resulting interpretations and findings.

Training Factors

Table 1 reveals a statistically significant difference[1] between the two groups in the amount of general college training. A Student-Fisher t, significant at the 1 per cent level of confidence, indicates that the amount

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[1]Significant difference in means. All differences computed with the Student-Fisher t formula are differences in means. To avoid repetition and for sake of brevity, the qualifying term "in means" is sometimes omitted in this chapter.

of general college training of the teacher plays a role in the practice and use of practical arts activities in the elementary grades, i.e., a higher average level of general

TABLE 1

COMPARISON OF AMOUNT OF GENERAL COLLEGE TRAINING OF 61 TEACHERS WHO UTILIZE PRACTICAL ARTS IN THEIR TEACHING WITH 48 TEACHERS WHO DO NOT UTILIZE PRACTICAL ARTS IN THEIR TEACHING

Amount of Training	Scale Value	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
Less than 2 years of college	1	0	0
2 years or more of college	3	11	14
Bachelor's degree	4	37	32
Master's degree	5	13	2
Doctor's degree	7	0	0
Not reporting		0	0
Totals		61	48
Average level in years		4.03	3.75

Student-Fisher t = 2.49**; Degrees of freedom = 107

Snedecor F = 0.69; m = 47; n = 60

**Significant at the 1 per cent level of confidence.

college training has been attained by teachers who utilize practical arts in their teaching.

The hypothesis that teachers who utilize practical arts activities in their teaching have a higher level of professional training than those who do not use such activities is substantiated.

The average number of semester hours of training in industrial arts is greater for teachers who use practical arts activities in their teaching. (Table 2) A Student-Fisher t of 3.41 provides this difference with statistical significance at the 1 per cent level of confidence.[1]

Statistically significant differences between the two groups were not found in the amount of college training in homemaking (Table 3) and fine arts training (Table 4).

The assumption that teachers who use practical arts activities in their teaching have more college training in the three specialized areas of industrial arts, homemaking, and fine arts was not substantiated in its entirety. Only industrial arts training appears to be a factor contributing to the utilization of practical arts as defined for this study.

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[1]The variance ratio or Snedecor F test is applied in this study to all statistical items which result in a Student-Fisher t, significant at the 1 or 5 per cent level of confidence. If variances are found to be significantly different, the difference of means is tested by the Behrens-Fisher test.

TABLE 2

COMPARISON OF AMOUNT OF INDUSTRIAL ARTS TRAINING OF 61 TEACHERS WHO UTILIZE PRACTICAL ARTS IN THEIR TEACHING WITH 48 TEACHERS WHO DO NOT UTILIZE PRACTICAL ARTS IN THEIR TEACHING

Semester Hours Training	Scale Value	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0- 2	1.0	15	20
3- 4	3.5	14	16
5- 6	5.5	13	6
7- 8	7.5	4	1
9-10	9.5	3	0
11-12	11.5	5	1
13-14	13.5	0	1
15-16	15.5	3	0
17 or more	17.5	3	0
Not reporting		1	3
Totals		61	48
Average level in semester hours		5.84	3.14

Student-Fisher t = 3.41**; Degrees of freedom = 103

Snedecor F = 0.33**; m = 44; n = 58

Behrens-Fisher test**

**Significant at the 1 per cent level of confidence.

TABLE 3

COMPARISON OF THE AMOUNT OF HOMEMAKING TRAINING OF 61 TEACHERS WHO UTILIZE PRACTICAL ARTS IN THEIR TEACHING WITH 48 TEACHERS WHO DO NOT UTILIZE PRACTICAL ARTS IN THEIR TEACHING

Semester Hours Training	Scale Values	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0- 2	1.0	44	33
3- 4	3.5	9	4
5- 6	5.5	0	1
7- 8	7.5	0	2
9-10	9.5	1	2
11-12	11.5	1	0
13-14	13.5	0	0
15-16	15.5	0	0
17 or more	17.5	1	2
Not reporting		5	4
Totals		61	48
Average level in semester hours		2.03	2.76
Student-Fisher t		1.06	
Degrees of Freedom		98	

TABLE 4

COMPARISON OF THE AMOUNT OF FINE ARTS TRAINING OF 61 TEACHERS WHO UTILIZE PRACTICAL ARTS IN THEIR TEACHING WITH 48 TEACHERS WHO DO NOT UTILIZE PRACTICAL ARTS IN THEIR TEACHING

Semester Hours Training	Scale Values	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0- 2	1.0	10	8
3- 4	3.5	16	14
5- 6	5.5	11	9
7- 8	7.5	8	7
9-10	9.5	6	2
11-12	11.5	3	1
13-14	13.5	0	0
15-16	15.5	0	0
16 or more	17.5	5	2
Not reporting		2	5
Totals		61	48
Average levels in semester hours		6.19	5.22
Student-Fisher t		1.14	
Degrees of freedom		100	

Personal Factors

Personal factors of age, sex, marital status, teaching experience, work experience, and hobby interests cannot be regarded as elements promoting or limiting the use of practical arts activities by teachers in the elementary grades on the basis of results in this investigation.

Tables 5, 6, 7, 8, 10, and 11, relating to the personal factors listed above, show some differences in means or percentages, but these differences were not supported by t tests, and therefore may be due to chance.

TABLE 5

PERCENTAGE OF MALE TEACHERS AMONG 61 TEACHERS WHO USE PRACTICAL ARTS IN THEIR TEACHING COMPARED WITH THE PERCENTAGE OF MALE TEACHERS AMONG 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS IN THEIR TEACHING

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Male teachers	5	8.2	3	6.2	0.40
Female teachers	56	91.8	45	93.8	0.40
Totals	61	100.0	48	100.0	

Difference, significant at the 5 per cent level of confidence, was found between the two groups in the salary factor. (Table 9) The mean salary of teachers who use

TABLE 6

PERCENTAGE OF MARRIED TEACHERS AMONG 61 TEACHERS WHO USE PRACTICAL ARTS IN THEIR TEACHING COMPARED WITH PERCENTAGE OF MARRIED TEACHERS AMONG 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS IN THEIR TEACHING

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Married teachers	24	39.2	22	45.8	0.68
Single teachers	37	60.7	26	54.2	0.68
Totals	61	100.0	48	100.0	

practical arts is higher than the mean salary of teachers who do not use practical arts.

Though not of broad statistical significance because only one sample is represented, it may be noted that the average yearly salary of teachers using practical arts is reported higher by nearly $250.00 than those not using practical arts. (Table 9)

Results in this area of the investigation support the hypotheses that (1) there is a negligible relationship between marital status and the use of practical arts (Table 6), (2) there is a negligible relationship between years of teaching experience and the use of practical arts (Table 8), and (3) teachers who use practical arts in their teaching are paid higher salaries. (Table 9)

Hypotheses not supported in this area are those assuming that (1) male teachers are more inclined to use

TABLE 7

AVERAGE AGE OF 61 TEACHERS WHO USE PRACTICAL ARTS IN THEIR TEACHING COMPARED WITH AVERAGE AGE OF 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS IN THEIR TEACHING

Age (in year groups)	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
20-24	2	2
25-29	6	4
30-34	5	4
35-39	8	3
40-44	7	5
45-49	14	14
50-54	11	5
55-59	4	5
60-64	3	3
65-69	0	2
Not reporting	1	1
Totals	61	48
Average ages	43.4	45.2
Student-Fisher t	0.88	
Degrees of freedom	105	

TABLE 8

AVERAGE TEACHING EXPERIENCE OF 61 TEACHERS WHO USE PRACTTCAL ARTS IN THEIR TEACHING COMPARED WITH 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS IN THEIR TEACHING

Teaching Experience (in year groups)	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0- 4	14	5
5- 9	2	6
10-14	10	6
15-19	10	8
20-24	4	8
25-29	13	6
30-34	4	2
35-39	3	4
40-44	1	0
Not reporting	0	3
Totals	61	48
Average years experience	17.25	18.0
Student-Fisher t	0.35	
Degrees of freedom	104	

TABLE 9

AVERAGE SALARY OF 61 TEACHERS WHO USE PRACTICAL ARTS COMPARED WITH AVERAGE SALARY OF 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS IN THEIR TEACHING

Salary (in 500 dollar groups)	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
Less than 2,500	1	0
2,500 to 2,999	7	10
3,000 to 3,499	16	18
3,500 to 3,999	13	6
4,000 to 4,499	11	7
4,500 to 4,999	9	4
5,000 to 5,499	4	2
5,500 to 5,999	0	0
More than 6,000	0	0
Not reporting	0	1
Totals	61	48
Average salary	3,815.00	3570.00
Student-Fisher t	1.73*	
Degrees of freedom	106	

*Significant at the 5 per cent level of confidence.

TABLE 10

AVERAGE NUMBER OF PRACTICAL ARTS HOBBIES OF 61 TEACHERS WHO USE PRACTICAL ARTS IN THEIR TEACHING COMPARED WITH 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS IN THEIR TEACHING

Number of Practical Arts Hobbies	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0	3	2
1	4	4
2	7	6
3	10	5
4	4	12
5	12	7
6	8	5
7	4	5
8	6	1
9	3	1
Totals	61	48
Average number of hobbies	4.51	4.08
Student-Fisher t	0.96	
Degrees of freedom	107	

TABLE 11

AVERAGE NUMBER OF PRACTICAL ARTS WORK EXPERIENCES OF 61 TEACHERS WHO USE PRACTICAL ARTS IN THEIR TEACHING COMPARED WITH 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS IN THEIR TEACHING

Number of Separate Work Experiences	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0	8	8
1	21	16
2	17	13
3	11	8
4	4	2
5	0	1
Totals	61	48
Average number of work experiences	1.70	1.65
Student-Fisher t	0.27	
Degrees of freedom	107	

practical arts than female teachers (Table 5), (2) younger (and perhaps more recently trained) teachers are more likely to use practical arts activities (Table 7), and (3) teachers using practical arts activities have had a larger number of practical arts work experiences and practical arts hobbies than teachers not using practical arts. (Tables 10 and 11).

Public Relations Factor

Favorable attitudes on the part of parents toward the use of practical arts activities in elementary classrooms were significantly different as reported by the two groups of teachers. (Table 12) A t value of 3.83 shows a statistically significant difference exists between the percentages of the two groups at the 1 per cent level of confidence. A larger proportion of teachers who perceive parental attitude to be favorable utilize practical arts than do teachers who do not so perceive parental attitude.

TABLE 12

PARENT ATTITUDE TOWARD USE OF PRACTICAL ARTS IN THE ELEMENTARY SCHOOL AS EXPRESSED BY 61 TEACHERS USING PRACTICAL ARTS AND 48 TEACHERS NOT USING PRACTICAL ARTS

Parent Attitude	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Favorable	54	88.5	27	56.3	3.83**
Unfavorable	1	1.6	4	8.3	1.66*
Unknown	5	8.3	17	35.4	3.51**
Not reporting	1	1.6	0	0.0	
Totals	61	100.0	48	100.0	

**Significant at the 1 per cent level of confidence.

*Significant at the 5 per cent level of confidence.

Significant difference at the 5 per cent level of confidence is noted between the percentages of parents who are reported as reacting unfavorably to the use of practical arts. (Table 12) Teachers using practical arts report a smaller proportion of parents who do not look with favor on the use of these activities.

A larger proportion of teachers who do not use practical arts activities report parental attitude unknown than do teachers who use such activities. A t value of 3.51 shows a difference, here, statistically significant at the 1 per cent level of confidence. (Table 12)

Newspaper and press attitude toward the use of practical arts activities in the elementary classroom, as reported by the two groups, assumed essentially the same pattern as parent attitude. (Table 13) In this one sampling 75.4 per cent of the teachers using practical arts reported favorable attitude on the part of newspapers contrasted with 39.6 per cent reported by teachers not using practical arts. This difference is statistically significant at the 1 per cent level of confidence.

The number of community newspapers reported as reacting unfavorably is small, but the difference between the two groups is statistically significant at the 5 per cent level of confidence. (Table 13)

A difference, statistically significant at the 1 per cent level of confidence, is noted between the two

TABLE 13

COMMUNITY NEWSPAPER AND PRESS ATTITUDE TOWARD THE TEACHING OF PRACTICAL ARTS IN THE ELEMENTARY GRADES AS EXPRESSED BY 61 TEACHERS WHO USE PRACTICAL ARTS AND 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS

Newspaper Attitude	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Favorable	46	75.4	19	39.6	3.79**
Unfavorable	0	0.0	3	6.3	1.98*
Unknown	14	23.0	26	54.1	3.36**
Not reporting	1	1.6	0	0.0	
Totals	61	100.0	0	100.0	

**Significant at the 1 per cent level of confidence

*Significant at the 5 per cent level of confidence

groups in the proportions reporting newspaper attitude unknown. (Table 13) Teachers who use practical arts activities more frequently know the attitude of the community newspaper in regard to their use in the school.

It is of interest to note, in this one sample, the marked increase in the percentages of both groups reporting newspaper "attitude unknown" as compared with the percentages reporting parent "attitude unknown." (Compare Table 12 with Table 13) This increase may be expected since individual parent opinion as well as public

opinion does not always find its way into newspaper editorials. It is generally known that newspapers in small communities frequently avoid controversial issues.

Parent and press attitude may be a factor of some significance in promoting or inhibiting the utilization of practical arts activities in the elementary grades. Practical arts are utilized more often in communities where teachers perceive parents and the press to have a favorable attitude toward the use of such work. Where this attitude, for some reason, is not recognized by teachers, practical arts activities are not as frequently used.

The hypothesis that practical arts activities are practiced more often in communities where parent and press attitude is seen by teachers as favorable toward their use appears to be substantiated.

Teaching Load Factor

The average number of pupils assigned to one teacher is shown to be lower for teachers who utilize practical arts activities in their teaching. (Table 14) A Student-Fisher t of 3.39 gives this statistical significance at the 1 per cent level of confidence.

Table 15 reveals a statistically significant difference between the two groups in the number of separate grades assigned to one teacher. The average range of

TABLE 14

AVERAGE NUMBER OF PUPILS REGULARLY ASSIGNED TO ONE TEACHER AS REPORTED BY 61 TEACHERS WHO USE PRACTICAL ARTS AND 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS

Number of Pupils	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
Less than 20	1	0
20-24	1	0
25-29	19	3
30-34	23	24
35-39	16	17
40-44	1	4
45-49	0	0
More than 50	0	0
Totals	61	48
Average number pupils	31.5	34.3

Student-Fisher t = 3.39**; Degrees of freedom = 107

Snedecor F = 0.64; m = 47; n = 60

**Significant at the 1 per cent level of confidence.

grade levels assigned to teachers who use practical arts is wider than is the average range for teachers not using practical arts.

TABLE 15

NUMBER OF SEPARATE GRADES ASSIGNED TO ONE TEACHER AS REPORTED BY 61 TEACHERS USING PRACTICAL ARTS AND 48 TEACHERS NOT USING PRACTICAL ARTS

Number of Grades Taught by One Teacher	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
1	42	46
2	16	1
3	1	1
4	1	0
5	1	0
Totals	61	48
Average number of grades	1.41	1.05
Student-Fisher t	2.96**	
Degrees of freedom	107	
Snedecor F = 0.176;** Behrens-Fisher test **	n = 47;	n = 60

**Difference of means significant at 1 per cent level of confidence.

Significant differences were not found between the two groups in the amount of time allowed during the regular school day for teaching preparation (Table 16), nor were they found in the item of additional hours which would be devoted to practical arts if teaching load were lighter. (Table 17).

TABLE 16

PREVALENCE OF PRACTICE OF ALLOWING REGULAR SCHOOL TIME FOR DAILY TEACHING PREPARATION AS REPORTED BY 61 TEACHERS WHO USE PRACTICALARTS AND 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Time out for teaching preparation	8	13.1	3	6.3	1.17
No time out for teaching preparation	52	85.2	45	93.7	1.43
Not reporting	1	1.7	0	0.0	
Totals	61	100.0	48	100.0	

In summarizing findings in this factor, we note that the average number of pupils assigned to one teacher was found to be lower for teachers using practical arts, and since a smaller number of pupils is generally interpreted as lighter teaching load, this finding would indicate that teachers using practical arts usually have a lighter teaching load. However, the average number of different grade levels assigned to teachers was found to be higher for teachers using practical arts. As it is generally known that more grade levels in a classroom result in a wider range of pupil abilities, which necessitates more individual and small group instruction on the part of the teacher, this finding would indicate that teachers using practical arts usually have a heavier teaching load.

TABLE 17

ADDITIONAL HOURS PER WEEK WHICH WOULD BE DEVOTED TO TEACHING PRACTICAL ARTS IF TEACHING LOAD WERE LIGHTER AS REPORTED BY 61 TEACHERS WHO USE PRACTICAL ARTS AND 48 WHO DO NOT USE PRACTICAL ARTS

Additional Hours for Practical Arts	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
None	17	13
1	1	6
2	16	15
3	10	6
4	1	2
5	4	1
Not reporting	12	5
Totals	61	48
Average added hours (Mean)	1.78	1.56

Student-Fisher t = 0.72; Degrees of freedom = 90

Snedecor F = 0.71; m = 42; n = 48

These two findings, relating respectively to the number of pupils and to the number of different grades assigned to a teacher, in combination essentially negate or balance one another, thus supporting the hypothesis that there is a negligible relationship between teaching load and the use of practical arts.

Further, we found no significant difference between the two groups in the amount of school time allowed for teaching preparation nor in the additional time per week they felt would be devoted to practical arts if teaching loads were lighter.

The weight of evidence seems to support the assumption that there is a negligible relationship between teaching load and the use of practical arts.

Supervision and Advisory Factors

The attitude of immediate superiors (supervisors and principals) may be a factor of some importance in the practice and use of practical arts activities by teachers in the elementary grades. (Table 18) Supervisor attitude toward the use of practical arts activities, reported by the two groups on a five point attitude scale, disclosed a difference of means significant at the 1 per cent level of confidence.

Teachers do utilize practical arts activities more in their teaching when encouragement for such work is forthcoming from their immediate superiors. A neutral or hands-off policy by immediate superiors is more often accompanied by little or no utilization of practical arts activities on the part of the teacher.

It seems worthy of notice that in the sampling reported in Table 18 only 2 teachers out of the 103 reporting

TABLE 18

ATTITUDES OF SUPERVISORS TOWARD USE OF PRACTICAL ARTS ACTIVITIES IN THE ELEMENTARY GRADES AS REPORTED BY 61 TEACHERS WHO USE PRACTICAL ARTS AND 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS

Attitude of Supervisor	Value	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
Insists practical arts are essential	0	14	0
Encourages practical arts	1	34	15
Takes no stand in regard to practical arts	2	12	28
Discourages practical arts	3	1	0
Considers practical arts waste of time	4	0	1
Not reporting		0	4
Totals		61	48
Means		1.00	1.70

Student-Fisher t = 5.38**; Degrees of freedom = 103

Snedecor F = 0.71; m = 43; n = 60

**Significant at the 1 per cent level of confidence.

on this item felt their immediate supervisors assumed a definitely negative attitude toward the use of practical arts.

The assumption that a favorable attitude on the part of immediate superiors is conducive to greater use

of practical arts activities on the part of the classroom teacher is substantiated.

Attempts to establish relationship between the attitude of the administration toward the daily schedule and the use of practical arts activities were unsuccessful. The distributions compiled from the reports of the two groups are spread in a nearly parallel manner over the entire range of the five point scale shown in Table 19. A Student-Fisher t of 0.97 does not give statistical support to differing means. The slight difference shown may be due to chance.

The hypothesis that a rigid daily program of studies imposed by the school administration affects adversely the use of practical arts by the classroom teacher is not supported by statistical results in this study.

Economic Factors

The average amount allotted for classroom instructional supplies is larger for teachers who use practical arts activities than for teachers who do not use these activities. (Table 20) A Student-Fisher t indicates a difference statistically significant at the 1 per cent level of confidence.

The average amounts reported in the one sample used in this study are $46.10 for teachers using practical arts and $18.10 for teachers using practical arts. Confidence

TABLE 19

ATTITUDE OF ADMINISTRATION TOWARD DAILY SCHEDULE AS REPORTED BY 61 TEACHERS USING PRACTICAL ARTS AND 48 TEACHERS NOT USING PRACTICALARTS

Attitude of Administration Toward Daily Schedule	Scale Value	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
Time set for all studies and activities	0	11	7
Time set for about three-fourths of studies and activities	1	6	7
Time set for about one-half of studies and activities	2	4	0
Time set for about one-fourth of studies and activities	3	2	2
Complete freedom as to time spent on studies and activities	4	27	30
Not reporting		11	2
Totals		61	48
Means		2.56	2.89
Student-Fisher t		0.97	
Degrees of Freedom		94	

limits, computed for these two means, show the average amount of instructional supplies used by teachers who utilize practical arts will fall between $39.10 and $53.10 while

TABLE 20

ESTIMATE OF THE AMOUNT ALLOTTED EACH YEAR FOR INSTRUCTIONAL SUPPLIES BY 61 TEACHERS WHO USE PRACTICAL ARTS AND 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS

Dollars	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0- 19	8	14
20- 39	10	8
40- 59	6	1
60- 79	1	0
80- 99	1	0
100-119	2	0
120-139	0	0
140-159	1	0
160-179	0	0
180-199	1	0
Not reporting	31	25
Totals	61	48
Average amount in dollars	46.10	18.10
Confidence limits of means	$39.10 < $\bar{X}$ < $53.10	$11.10 < $\bar{X}$ < $25.10

Student-Fisher t = 2.99**; Degrees of freedom = 51

Snedecor F = .073 **; m = 22; n = 29

Behrens-Fisher test **

**Significant of the 1 per cent level of confidence.

the average amount used by teachers not utilizing these activities will range between $11.10 and $25.10.

Over half of the respondents in both groups did not report on this item, doubtless because the cost of instructional supplies are not known to individual teachers in some school systems. However, the proportions not reporting in both groups were practically identical and thus probably do not materially influence the statistical results.

Teachers using practical arts report on the average needs for more funds for instructional supplies than do teachers not using these activities. (Table 21) The Student-Fisher t shown in this table is significant at the 1 per cent level of confidence.

In this sample teachers using practical arts reported an average of $75.10 needed for instructional supplies which may be compared with an average of $25.50 reported by teachers not using practical arts. Calculation of 1 per cent confidence limits for the two means shows the difference in the amount of funds needed by the two groups to be of considerable practical significance. The average amount needed by teachers who use practical arts will fall between $52.55 and $98.15 while the average amount needed by teachers not using practical arts will range between $16.35 and $37.15. (Table 21)

Teachers who utilize practical arts in their teaching on the average spend more of their own money on

TABLE 21

ESTIMATE OF THE AMOUNT NEEDED EACH YEAR FOR INSTRUCTIONAL SUPPLIES BY 61 TEACHERS WHO USE PRACTICALARTS AND 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS

Dollars	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0- 19	1	8
20- 39	3	7
40- 59	10	5
60- 79	6	0
80- 99	1	0
100-119	5	0
120-139	0	0
140-159	1	0
160-179	0	0
180-199	2	0
Not reporting	32	28
Totals	61	48
Average amounts in dollars	75.10	26.50
Confidence limits of means	$52.55 < \bar{X} < 98.15$	$16.35 < \bar{X} < 37.15$

Student-Fisher t = 4.69**; Degrees of freedom = 58

Snedecor F = 0.134;** m = 19; n = 28;

Behrens-Fisher test**

**Difference of means significant at the 1 per cent level of confidence.

instructional supplies than do teachers not utilizing these activities. (Table 22) A t value, significant at the 1 per cent level of confidence, was found here.

Slight differences in percentages, not of statistical significance, may be noted between the two groups in

TABLE 22

PERSONAL FUNDS SPENT YEARLY ON INSTRUCTIONAL SUPPLIES BY 61 TEACHERS WHO USE PRACTICAL ARTS AND 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS

Amount in Dollars	Scale Value	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0 through 1	0	8	19
5	5	15	17
10	10	21	3
15	15	2	4
20	20	4	1
More than 20	25	9	2
Not reporting		2	2
Totals		61	48
Average in dollars		10.50	5.33

Student-Fisher t = 3.68**; Degrees of freedom = 103

Snedecor F = 0.698; m = 45; n = 58

**Significant at the 1 per cent level of confidence.

their "yes" and "no" responses to the question, "Would you teach more practical arts activities if more money were available for instructional supplies?" (Table 23) Significant difference at the 1 per cent level of confidence was found between the two groups, however, in the percentages who were uncertain about an increase in the use of

TABLE 23

INCREASE IN THE AMOUNT OF PRACTICAL ARTS ACTIVITIES WHICH WOULD BE TAUGHT IF MORE MONEY WERE AVAILABLE FOR INSTRUCTIONAL SUPPLIES AS REPORTED BY 61 TEACHERS WHO USE PRACTICAL ARTS AND 48 TEACHERS WHO DO NOT USE PRACTICAL ARTS

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Increase in amount of practical arts	24	39.3	17	35.4	0.42
No increase in amount of practical arts	16	26.2	9	18.8	0.83
Uncertain about increase in practical arts	12	19.7	22	45.8	4.00**
Not reporting	9	14.8	0	0.0	
Totals	61	100.0	48	100.0	

**Significant at the 1 per cent level of confidence.

practical arts if more money were available for instructional supplies.

The weight of evidence in this area of the investigation supports the hypothesis that more money will be

required for classroom instructional supplies when practical arts activities are utilized. Teachers who use such activities are shown (1) to receive larger allotments of instructional supplies, (2) to need more money for instructional supplies, and (3) to spend more of their own money on such supplies.

Noise Factor

The average teacher not using practical arts feels there are more objections (on the part of pupils, teachers, administration, custodians and parents) to noisy activities in the classroom than does the average teacher using practical arts. (Table 24) Difference in the extent of objections voiced by the two groups proved to be statistically significant at the 5 per cent level of confidence.

Though not of broad statistical significance because only one sample is represented, it seems appropriate to the purpose of this study to note that relatively few in either group reported no objections to noisy activities arising from associates and patrons. (Table 24)

More teachers not using practical arts expressed the personal feeling that noisy activities such as hammering, sawing, filing, etc., should not be permitted in a classroom than did teachers who use practical arts. (Table 25) This difference was supported by t values at the 1 per cent level of confidence.

TABLE 24

TEACHER OPINION ON THE EXTENT OF OBJECTIONS (BY PUPILS, TEACHERS, ADMINISTRATION, CUSTODIANS AND PARENTS) TO NOISY ACTIVITIES WITHIN THE CLASSROOM

Number of Objections From All Sources	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
None	16	5
1	17	17
2	16	10
3	10	8
4	2	4
5	0	3
Not reporting	0	1
Totals	61	48
Means	1.43	1.96
Not reporting	0	1
Totals	61	48
Means	1.43	1.96

Student-Fisher t = 2.18*; Degrees of freedom = 106

Snedecor F = 1.45; m = 46; n = 60

*Significant at the 5 per cent level of confidence.

TABLE 25

TEACHER OPINION ON THE USE OF NOISY ACTIVITIES (HAMMERING, SAWING, FILING, ETC.) IN A CLASSROOM

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Noisy activities should be permitted	51	83.6	23	47.9	3.97**
Noisy activities should not be permitted	9	14.8	24	50.0	3.98**
Not reporting	1	1.6	1	2.1	
Totals	61	100.0	48	100.0	

**Significant at the 1 per cent level of confidence.

Statistically significant difference between the opinions of the two groups was not found in answers to the question, "In your opinion is noise an important factor in limiting the quantity of practical arts activities in elementary classrooms?" (Table 26)

Statistically significant differences in opinion between the two groups were found concerning the adequacy of classroom insulation for noise. (Table 27) This difference, significant at the 1 per cent level of confidence, indicates a possible relationship between the use of practical arts activities and classroom acoustics.

TABLE 26

TEACHER OPINION ON THE IMPORTANCE OF NOISE AS A FACTOR LIMITING THE USE OF PRACTICAL ARTS ACTIVITIES IN CLASSROOMS

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Noise an important factor	18	29.5	16	33.3	0.43
Noise not an important factor	36	59.0	25	52.1	0.72
Uncertain	7	11.5	6	12.5	0.16
Not reporting	0	0.0	1	2.1	
Totals	61	100.0	48	100.0	

The weight of evidence in this area of the study supports the assumption that noise resulting from certain practical arts activities is a factor limiting the use of these activities. We have found that such activities are more often utilized by teachers who feel there is little or no objection to the resulting noise, that a larger proportion of teachers who use practical arts activities believe that noisy activities should be permitted in a classroom, and that a larger proportion of teachers who utilize these activities teach in adequately insulated rooms. Only

TABLE 27

TEACHER OPINION ON THE ADEQUACY OF CLASSROOM INSULATION FOR NOISE

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Classroom insulation adequate	28	45.9	8	16.7	3.22**
Classroom insulation not adequate	32	52.5	40	83.3	3.38**
Not reporting	1	1.6	0	0.0	
Totals	61	100.0	48	100.0	

**Significant at the 1 per cent level of confidence.

one item included in the investigation does not give positive support to the above assumption, viz., statistically significant differences were not noted between the two groups in their opinions on the importance of noise as a factor limiting the use of practical arts activities.

Litter and Untidiness Factor

Significant difference between the two groups were found in opinions on the extent of objections (by pupils, teachers, administration, custodians, and parents) to activities which cause untidiness in the classroom. (Table 28) The average teacher not using practical arts feels there are more objections to the litter and untidiness resulting from

TABLE 28

OPINION ON THE EXTENT OF OBJECTIONS (BY PUPILS, TEACHERS, ADMINISTRATION, CUSTODIANS AND PARENTS) TO ACTIVITIES WHICH CAUSE UNTIDINESS IN THE CLASSROOM

Number of Objections From All Sources	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
None	18	9
1	24	19
2	14	12
3	5	4
4	0	2
5	0	1
Not reporting	0	1
Totals	61	48
Means	1.10	1.45
Student-Fisher t	1.74*	
Degrees of freedom	106	

*Significant at the 5 per cent level of confidence.

certain practical arts activities than does the average teacher using practical arts.

Teachers using practical arts activities do not object as frequently to resulting litter and untidiness as do teachers not using these activities. (Table 29) A difference significant at the 1 per cent level of confidence may be noted here.

TABLE 29

TEACHER OPINION ON THE USE OF CLASSROOM ACTIVITIES WHICH CAUSE UNTIDINESS (SAWING, PLANING, PLASTER CASTING, ETC.)

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Activities resulting in untidiness should be permitted	53	86.9	33	68.8	2.30**
Activities resulting in untidiness should not be permitted	7	11.5	15	31.2	2.56**
Not reporting	1	1.6	0	0.0	
Totals	61	100.0	48	100.0	

**Significant at the 1 per cent level of confidence.

Slight differences, not of statistical significance were found in the "yes" and "no" answers to the question, "In your opinion is litter (untidiness resulting from certain practical arts activities) an important factor in limiting the quantity of practical arts activities in the elementary classroom?" (Table 30) Statistically significant difference, however, was noted between the groups in the number who were uncertain. A larger proportion of teachers not using practical arts were uncertain as to whether or not resulting litter is an important factor.

Results in this area seem to be fairly conclusive. The assumption that litter and untidiness resulting from certain practical arts activities are factors limiting the use of practical arts in the elementary classroom appears to be substantiated.

TABLE 30

TEACHER OPINION ON THE IMPORTANCE OF UNTIDINESS RESULTING FROM THE USE OF CERTAIN PRACTICAL ARTS ACTIVITIES AS A FACTOR LIMITING THE USE OF THESE ACTIVITIES

	61 Teachers Using Practical Arts		48 Teachers Not Using Practical Arts		t
	No.	%	No.	%	
Untidiness an important factor	12	19.7	8	16.7	0.40
Untidiness not an important factor	44	72.1	29	60.4	1.29
Uncertain	5	8.2	10	20.8	1.90*
Not reporting	0	0.0	1	2.1	
Totals	61	100.0	43	100.0	

*Significant at the 5 per cent level of confidence.

Physical Factors Relating to the Classroom

Table 31 records classroom floor areas for the two groups as distributed through 19 intervals of 50 square feet each. A Student-Fisher t of 0.24 indicates the difference between the two groups is not statistically significant.

Table 32 records the number and percentages of "yes" responses from both groups of teachers to 19 questions concerning classroom physical conditions and equipment. Differences in percentages between the two groups and t values are also listed.

TABLE 31

FLOOR AREAS IN CLASSROOM OF TEACHERS WHO USE PRACTICAL ARTS COMPARED WITH FLOOR AREAS IN CLASSROOMS OF TEACHERS WHO DO NOT USE PRACTICAL ARTS

Floor Area in Square Feet	61 Teachers Using Practical Arts	48 Teachers Not Using Practical Arts
0- 349	1	1
350- 399	0	1
400- 449	4	0
450- 499	2	0
500- 549	3	4
550- 599	1	2
600- 649	6	7
650- 699	5	4
700- 749	5	3
750- 799	3	2
800- 849	1	4
850- 899	0	1
900- 949	2	2
950- 999	0	0
1,000-1,049	1	0
1,050-1,099	0	0
1,100-1,149	0	0
1,150-1,199	0	0
1,200 or more	2	1
Not reporting	25	16
Totals	61	48
Average room size (Sq.Ft.)	826.5	837.5
Student-Fisher t	0.24	
Degrees of Freedom	66	

TABLE 32

RESPONSES TO QUESTIONS CONCERNING EQUIPMENT AND CLASSROOM PHYSICAL FACTORS FOR ELEMENTARY PRACTICAL ARTS

Questions	61 Teachers Using Practical Arts "Yes"		48 Teachers Not Using Practical Arts "Yes"		Dif. in Percent	t
	Number	Percent	Number	Percent		
1. Are pupils' seats and desks (or tables and chairs) in your classroom easily movable?	52	85.2	39	81.3	3.9	0.55
2. Do you have a special table (or tables) available for constructional activities in your room?	39	63.9	13	27.1	42.8	3.82**
3. Is your room equipped with a workbench with a wood or metal vise?	21	34.4	0	00.0	34.4	4.53**
4. Do you have a cabinet or chest for storing tools and equipment?	22	36.0	3	06.3	29.7	3.67**
5. Do you have a cabinet or other storage space for practical arts materials?	38	62.3	18	37.5	24.8	2.58**
6. Do you have common hand tools for wood or metal in your room?	24	39.3	0	00.0	39.3	4.93**
7. Are common hand tools available in building for use in your room?	49	80.3	6	12.5	67.8	7.04**

TABLE 32 (Continued)

Questions	61 Teachers Using Practical Arts "Yes"		48 Teachers Not Using Practical Arts "Yes"		Dif. in Percent	t
	Number	Percent	Number	Percent		
8. Is your room equipped with individual tool kits for your pupils?	0	00.0	0	00.0	00.0	
9. Do you have utensils for preparing food in your room?	2	03.3	0	00.0	03.3	1.29
10. Is your room equipped with a sink with running water?	13	21.3	5	10.4	10.9	1.52
11. Do you have a jig saw in your room?	4	06.6	1	02.1	04.5	1.12
12. Do you have a sewing machine in your room?	2	03.3	0	00.0	03.3	1.29
13. Do you have one or more electrical outlets in your room?	58	95.1	44	91.7	03.4	0.72
14. Do you have an electric or gas plate in your room	4	06.6	1	02.1	04.5	1.12
15. Do you have an activity space in your classroom?	37	60.7	7	14.6	46.1	4.88**

TABLE 32 (Continued)

Questions	61 Teachers Using Practical Arts "Yes"		48 Teachers Not Using Practical Arts "Yes"		Dif. in Percent	t
	Number	Percent	Number	Percent		
16. Do you have an activity room in connection with (adjoining) your room?	6	09.8	1	02.1	07.7	1.63
17. Do you have an activity room available to your pupils elsewhere in your building?	27	44.3	0	00.0	44.3	5.33**
18. Do you feel that your classroom is adequately insulated for noise?	28	45.9	8	16.7	29.2	3.22**
19. Are you, in general, satisfied that the physical conditions and equipment in your classroom are adequate for any practical arts activities you wish to provide your pupils?	19	31.1	5	10.4	20.7	2.59**

**Significant at the 1 percent level of confidence.

Because the number of teachers who did not report on these items was negligible, the values for the "no" responses were nearly identical with those for the "yes" responses. Thus, it seemed unnecessary to include the "no" responses and calculations in the table.

Differences between the "yes" responses of the two groups, with t values significant at the 1 per cent level of confidence, were found in items 2, 3, 4, 5, 6, 7, 15, 17, 18 and 19 of Table 32.

Teachers using practical arts activities more often have available certain types of equipment than do those not using practical arts. Tables for constructional activities (Item 2), work benches equipped with a vise (Item 3), tool and material storage cabinets (Items 4 and 5), and common hand tools (Items 6 and 7) are present to a greater degree in the classrooms of teachers who utilize practical arts in their teaching.

Activity space within the classroom and elsewhere in the building (Items 15 and 17) are more often available to teachers who are using practical arts activities.

Classrooms of teachers who use practical arts activities are more frequently adequately insulated for noise than are those of the second group. This item was previously used to support the noise factor. (Item 18)

Practical arts activities are employed more commonly in classroom situations where teachers are satisfied

that the general physical conditions and equipment provided are adequate for such work. (Item 19)

Differences in percentages between the two groups in the remaining 9 items did not produce t values of statistical significance, and we conclude the differences here may be due to chance.

Approximately 5/6 of both groups reported pupils' seats and desks easily movable. (Item 1) Though the difference here is not statistically significant for the major purpose of this study, it is noteworthy that such large percentages of both groups in this sampling teach in situations where seating can be moved to make activity space available.

No individual pupil tool kits were reported by teachers in either group. (Item 8)

Few in either group reported that their room contained a sink with running water or utensils for preparing food, and in neither case was the difference statistically significant. (Items 9 and 10)

The number of jig saws listed as available in classrooms was relatively small, and the difference between the percentages was not statistically significant. (Item 11) In this one sampling only 3.3 per cent of the group using practical arts indicated that sewing machines were in their classrooms, and none were reported by the second group in

the sampling used for this study. (Item 12) The t value of 1.29 may be due to chance.

6.6 per cent of the group using practical arts reported electric or gas plates in their classrooms with only 2.1 per cent of the second group so reporting in the sample providing data for this study. (Item 14) Statistically this difference in percentages is not significant.

Most teachers in both groups of this sample indicated that electrical outlets were available in their classrooms. (Item 13) The difference in percentages of 3.4 may be due to chance.

The hypothesis that certain physical factors play a role in the practice and use of practical arts activities in the elementary classroom, i.e., these factors are present to a greater degree where practical arts studies are employed appears to be substantiated by statistical results in regard to the physical conditions and equipment listed below:

Tables for constructional activities
Work benches equipped with a vise
Common hand tools in the classroom
Common hand tools in the building
Tool storage cabinets
Material storage cabinets
Activity space in the classroom
Activity space elsewhere in the building

Adequate classroom insulation for noise

Teacher rating of classroom physical conditions as adequate.

Support is also found for the hypothesis that there is a negligible relationship between the use of practical arts activities and the presence of the following physical factors:

Individual pupil tool kits

Jig saws

Sewing machines

The hypothesis that certain physical factors are present to a greater degree in classroom where practical arts are employed is not substantiated in regard to the physical conditions and equipment listed below:

Movable seats and desks

Utensils for preparing food

Sink with running water

Electrical outlets

Electric or gas plate

Activity room in connection with (adjoining) classroom

Larger floor areas

Discussion in this chapter has centered around critical examination of the data collected for this inquiry in the light of the original hypotheses or assumptions. Detailed and, it is hoped, orderly assembly of the facts resulting from statistical manipulation of the raw data has

made possible a statement of the findings of this study. These findings are analyzed and interpreted in the following chapter, and are placed in summary form in Chapter VII.

CHAPTER VI

INTERPRETATION OF FINDINGS IN TERMS OF PRACTICAL IMPLICATIONS AND CONCLUSIONS

This study has been directed toward one ultimate aim: to assist educators in their efforts to provide more adequate instruction in practical arts activities at the elementary school level by isolating and verifying factors which affect the use of such activities.

Chapter V presented in some detail the reasoning, based on and centering around accumulated data, which permitted a statement of the several results or findings of this inquiry. These findings were essentially a listing of the original factors included in the investigation with a statement as to whether or not they played a role in the practice and use of practical arts in the elementary grades. Further interpretation and explanation of the findings in terms of practical implications and specific conclusions seems necessary if the ultimate objective of the study is to be adequately and completely attained.

What can be done about these findings? What possibilities do they open up? What do they mean for education and educators in general? What are some of the wider meanings of these findings?

Findings Relating to Educational Factors

Practical arts is usually taught by classroom teachers who have more general professional training. The clearer insights and broader viewpoints which may stem from a more adequate professional training are apparently necessary to the utilization of these activities. Partially trained teachers with limited educational vision and questionable teaching standards are evidently less able to throw off the shackles of the time-honored "sitting-setting" of the traditional school. More general professional education for classroom teachers should result in greater use of the active learning methods and techniques of which practical arts is so prominent a part. Thus the present trend toward higher general educational standards for teachers may be expected to exercise positive effects on the use of practical arts activities in the elementary schools of Michigan.

A greater amount of college training in industrial arts was found to have been attained by teachers who utilize practical arts in their teaching. The amounts of homemaking and fine arts training at the college level were not shown to be factors in the use of these activities. It perhaps should be expected that more college work in industrial arts would be accompanied by greater use of practical arts activities by teachers in the elementary grades since industrial arts training provides a large segment of the skills and informations necessary to the teaching of practical arts as defined for this study. An obvious conclusion is that an

increase in the amount of elective and required college courses in industrial arts for elementary teachers will result in an increase in the practice and use of practical arts as learning experiences.

Why the amount of homemaking training does not appear as a factor in the use of practical arts is not altogether clear for this work is definitely a practical art supplying content utilized in the elementary grades. One possible explanation may be found in the broad subject matter scope of industrial arts courses offered by some teacher training institutions. When these courses include, as they often do, elements relating to food, textiles, clothing, and utensils they supply content commonly associated with homemaking offerings. Thus teachers without regular homemaking training do not suffer extensive deficiencies in this area.

It is possible, too, that the homemaking phase of elementary school practical arts is somewhat underdeveloped in Michigan as this inquiry made no attempt to determine the relative emphases placed on the several areas of practical arts. There is some ground for belief that if more college work in homemaking were elected by elementary teacher trainees, this phase of practical arts would be more thoroughly treated in the elementary grades.

The reason fine arts does not appear as a factor in the use of practical arts is more apparent, for this field with its emphasis on form, color, and design of abstractions,

cannot, in the strict sense, be included in the practical arts area. Except in instances where college fine arts departments have broadened or shifted their emphasis to include industrial arts objectives, content, and methods, teacher training in such work is incidental, rather than basic, to the practice and use of practical arts activities. The inference is that this shift in emphasis has not taken place in Michigan, though such may be the case in other sections of the country.

Findings Relating to Personal Characteristics and Experiences of Teachers

In general, personal characteristics and experiences of teachers play no role in the practice and use of practical arts activities in the elementary school.

Men utilize these activities neither more nor less frequently than women when teaching in the elementary grades. It is possible that practical arts skills such as gardening and the use of tools, commonly associated with males, is balanced by skills such as sewing, weaving, and cooking commonly associated with females.

Marriage, which some consider conducive to an accumulation of practical arts skills such as cooking, sewing, gardening, and home repair apparently does not contribute to greater use of such activities by the teacher as school learning experiences.

Neither age nor teaching experience of the teacher appear as factors in the utilization of practical arts

activities in the elementary grades. If we may assume that younger teachers are more recently trained, this finding would imply that recency of training does not positively affect the emphasis which teachers place on such work. It might further imply that teacher training institutions are not making progress in providing more and better training for teachers in the practical arts areas. The writer is not inclined to accept this view. There has been progress in suppling pre-service training, but this has been accompanied by progress in providing in-service training. Thus older teachers in Michigan have kept apace with more recently trained teachers in the practice of these activities.

The number of practical arts hobbies and the number of practical arts work experiences of teachers appear to have no effect on the extent to which they utilize practical arts in their teaching. This finding should be accepted with reservations, however, for it was based only on the number of such hobbies and experiences. Had the length of time and quality of work in these items been measured and tested the results might have been materially different. It does not seem wise, on the basis of this study, to discount completely practical arts hobbies and work experiences as factors affecting the use of practical arts by teachers in the elementary grades.

Teachers who use practical arts activities as a phase of learning experience in their classrooms receive

higher salaries. This finding, coupled with the finding that teachers using practical arts have attained a higher level of professional education, leads reasonably to the conclusion that such teachers are better teachers. Salary and the amount of professional training, though by no means the only criteria by which a teacher's worth may be judged, are in combination a gauge of excellence that can scarcely be discounted.

Findings Relating to Public Relations

Practical arts activities are practiced more often in communities where parent and press attitude is seen by teachers as favorable to their use.

It should be pointed out that this finding is weakened somewhat because substantiating data are not supplied directly by parents and press. The finding rests on teacher reports of the way they, themselves, perceive parent and press attitude, and therefore may be colored to some extent by rationalization. It is possible that teachers who use practical arts work in their teaching regard such activities highly and tend to believe that others have the same opinion. Conversely, teachers who do not utilize these learning experiences regard them lightly or with disfavor and tend to believe others have the same opinion.

If this interpretation is accepted, we conclude that when teachers feel public opinion favors the use of practical arts activities, they more frequently utilize such

activities as learning experiences. If they do not so view public opinion, whatever the true opinions may be, these activities are less often employed.

The writer, however, is inclined to minimize the possible effects of rationalization on the part of classroom teachers in reporting parent and press opinion and to view the teachers' reports as essentially valid. In the several instances where two or more teachers reported from the same community, the data on this item were identical. This supports the view that these teachers were generally aware of the true attitudes of parents and press.

If this second interpretation is accepted, we conclude that use of practical arts is accompanied by a favorable attitude on the part of parents and community newspapers. This logically carries its negative counterpart that lack of use of practical arts is accompanied by an unfavorable or at least indifferent attitude by parents and press toward such learning activities. Two possible conclusions may be drawn: (1) Public opinion is the active force which promotes or limits the use of such activities in the school, or (2) teachers (or the school) are the activating force which influences public opinion favorably or unfavorably toward the use of these activities.

This factor may, and probably does, operate to some extent from either direction. In a democracy, public opinion exerts controls on the curriculum practices of schools and can retard the use of desirable content and

methods. Teachers, however, are specialists and may through thoughtful, successful utilization of new content and more effective methods sway public opinion in the direction of acceptance. Unsuccessful practice, of course, can have the opposite effect. Most parents hold a pragmatic outlook in regard to school practices: if an innovation gets results, it is good and is accepted. The most tenable conclusion in this finding would place the initiative with the teacher. When teachers effectively demonstrate the value of practical arts as learning experiences most parents and patrons of the school develop favorable attitudes toward their use.

Findings Relating to Teaching Load

Individual teaching load does not appear to be a factor in the use of practical arts activities in self-contained classrooms of the elementary school. Teaching load has a number of ramifications. Chief among these are number of pupils taught, number of separate grade levels taught, and "free" time for the teacher. In general, more pupils mean more work, more grade levels mean a wider range of pupil abilities resulting in more individual instruction, and less "free" time means less time for teaching preparation. A common reason for not using practical arts activities advanced by classroom teachers is "lack of time". The writer has repeatedly found this to be one of the stock answers offered by such teachers. Now "time" and teaching

load are essentially the same quantity or thing except in instances where arbitrary allocation of "time" for certain teaching activities are made by the administration, but findings in this inquiry show that a rigid daily program of studies imposed by the administration does not adversely affect the use of practical arts by the classroom teacher.

The conclusion is, therefore, that "lack of time" is an excuse or an alibi rather than a reason for not using practical arts. It is often a rationalization--a process of projecting the blame on the administration rather than facing the true reasons which may be one or more of several contributing factors such as lack of vision, lack of training, lack of ability or even less personal factors such as lack of materials and equipment.

Practical arts work is really a part of an enriched method of teaching and learning. It does not necessarily impose a heavier teaching load on the classroom teacher.

Findings Relating to Supervisory and Administrative Factors

Classroom teachers use practical arts activities more when encouragement is forthcoming from their immediate superiors. A neutral or hands-off policy is more often accompanied by little or no utilization of practical arts.

The attitude of the principal or supervisor toward the use of practical arts activities assumes special significance in view of the number and variety of factors found to bear on the use of such activities. The nature of

many of the obstacles or circumstances inhibiting the utilization of these learning experiences render them primarily a responsibility of the administration. Factors relating to public acceptance, instructional supplies, equipment, and other physical circumstances such as classroom insulation pose problems that the classroom teacher cannot, and should not be expected to, solve except in limited measure.

The strategic position of the principal, further, permits him, if favorably inclined toward the use of practical arts activities, to influence the selection of teachers capable of teaching this work when employing new teachers. He also is in a position to initiate practical arts in-service training courses and to encourage teacher enrollment.

Classroom use of practical arts is without doubt dependent on the attitude of the administration in the light of findings disclosed by this inquiry. It is reasonable to conclude that the use of these learning experiences will be limited in any school where they are not actively encouraged by those in supervisory and administrative positions.

Findings Relating to Economic Factors

Costs of instructional supplies are greater when practical arts work is employed by the classroom teacher. It seems reasonable to conclude from this finding that if more money were available, more practical arts learning

experiences might be made available to more children. How extensive this expansion might be is not known. The multiplicity of factors bearing on the use of practical arts activities and the fact that this study made no attempt to determine the relative importance of the various factors, render it impossible to assess the extent to which costs of instructional supplies are a limiting circumstance.

This finding helps in some measure to discredit the rather common fallacy that a good practical arts program may be carried on in an elementary classroom entirely with salvage and scrap material, for it was shown that teachers who use these activities are given more money for instructional supplies.

The finding carries an implication for classroom teachers also. If inadequate supplies do limit the use of practical arts activities, it behooves teachers to be alert to means of securing free and inexpensive material for this work.

Findings Relating to Noise and Untidiness Factors

Noise and untidiness resulting from certain practical arts activities should be regarded as factors inhibiting the use of practical arts activities in the elementary classroom of Michigan.

Noise resulting from practical arts activities is only one of several types of distracting sounds that may originate in a classroom. Clapping of hands, marching,

certain dramatic presentations, and even singing can prove to be distracting and disturbing to neighboring classrooms. The chief difference as annoying factors probably lies in the fact that practical arts noise is not in the accepted traditional pattern. It is a new and different noise to many schools and therefore is disturbing. It is the writer's experience that schools in which such work is the accepted practice do not generally report these noises more disturbing than other legitimate working or activity noises.

Noise from practical arts activities is a factor, however, as shown by the findings and cannot be easily dismissed. Such work was found to be more often taught in classrooms that are adequately insulated, and the obvious conclusion is that more attention should be given to classroom acoustics in both present and projected school housing. Scheduling of noisy activities at times when least disturbing to neighboring classrooms may be a partial solution to this limiting circumstance.

The problem of litter and untidiness resulting from certain practical arts activities can doubtless be more readily met. Adequate storage facilities and organized pupil clean-up can meet most of the objections directed at this inhibiting factor.

Teachers and associates in schools which use these learning experiences were found to be less prone to object to either resulting noise or litter than those in schools which did not use such activities. The implication is that

when teachers, pupils, parents, administrators, and janitors become familiar with the values of such work they are inclined to minimize the disturbing effects of noise and untidiness. Achievement of outstanding results with pupils through use of these learning activities is one method of eliminating or at least alleviating, objections to these limiting factors.

Findings Relating to Physical Factors

Certain classroom equipment items were found to accompany the use of practical arts activities as defined for this study. Tables for constructional activities, workbenches with vise, tool and material storage space, and hand tools for wood and metal apparently are added or extra equipment in most classrooms where practical arts activities are utilized. Other findings have shown that instructional supplies cost more and that classroom teachers are paid more in situations where these learning experiences are commonly practiced.

If extra equipment is necessary, if instructional supplies cost more, and if teachers capable of teaching practical arts are paid more, it follows that a general "cost" or financial factor is at work which can serve as a real limiting factor in many school situations, especially in periods of economic stress.

The earlier suggestion that the home economics area of elementary grade practical arts may be underdeveloped in

Michigan is given additional support in this finding. Utensils for preparing food, sinks with running water, and electric or gas plates were not found to be present to a greater degree in classrooms where practical arts work is utilized. The absence of these equipment items would imply that simple processes centering around food preparation are not extensively utilized, even in situations where other phases of practical arts are practiced.

This finding showed that activity space in the classroom is more often available in situations where practical arts work is used. Such space is apparently supplied through superior planning and more efficient room arrangement as no difference between the two groups in classroom floor areas was found. Any classroom large enough for effective teaching is large enough for practical arts activities.

CHAPTER VII

SUMMARY

The Study and Its Design

Practical arts at the elementary school level has been described as an area of learning possessing both a content and a method. The content of practical arts finds its source in the knowledge, facts, and skills commonly associated with the home, community, farm, industry, and business; its method is that of self-activity and self-expression through doing simple but appropriate operations and processes selected from these same sources.

The objectives of practical arts are basically those of general education, i.e., the development of the whole child physically, mentally, and emotionally.

This study found its origin in the knowledge that, although the need for practical arts work has been recognized by leading teachers and educators of both past and present, such work is presently underdeveloped and lagging in many elementary schools of this country.

In ultimate aim the study seeks to assist classroom teachers, administrators, and teacher trainers (1) to locate

and eliminate or alleviate factors which inhibit utilization of practical arts work in the elementary grades, and (2) to locate and promote factors which contribute to effective use of practical arts in the elementary grades.

Because the self-contained classroom approach to the use of such activities is predominant in Michigan and the nation, the study was directed specifically to this phase of the problem.

The factors affecting the use of practical arts activities were approached statistically through data supplied by two groups of teachers from schools in Michigan organized on the self-contained classroom basis. These groups were (1) elementary classroom teachers who do use practical arts activities, and (2) elementary classroom teachers who do not use such activities. The data, provided through questionnaire and interview, were statistically manipulated to test whether there is a difference in the degree to which these factors are present in each of the two teaching situations represented by the teachers. Thus a direct, scientific approach was made to the central problem of what circumstances prevail when practical arts are utilized in the elementary classroom.

Summary of Findings

Certain hypotheses or assumptions were advanced predicting the role the various factors investigated in

this study would play in the use of practical arts in the elementary grades. Chapter V presented in detail the statistical results and findings which either supported or failed to support these hypotheses. A summary of these findings as they related to each assumption is presented here.

Hypothesis No. 1

Teachers who utilize practical arts activities will have attained a higher level of professional training than those who do not utilize such activities.

This hypothesis was substantiated. Practical arts is usually taught by classroom teachers who have more general professional training.

Hypothesis No. 2

More training in the specialized areas of industrial arts, homemaking, and fine arts will have been attained by teachers who use practical arts in their teaching.

This hypothesis was substantiated in part. Of the three specializing areas, only industrial arts training appears to be a factor contributing to the utilization of practical arts as defined for this study.

Hypothesis No. 3

Greater use of practical arts will accompany each of the following personal characteristics, experiences, and circumstances relating to the classroom teacher: (a) male sex, (b) younger teachers, (c) more practical arts hobbies, (d) more practical arts work experiences, and (e) higher salaries.

This assumption was substantiated only in regard to salaries. Teachers who use practical arts in their teaching

are paid higher salaries. Sex, age, number of practical arts hobbies, and number of practical arts work experiences were not found to play a role in the use of practical arts activities by elementary teachers in Michigan.

Hypothesis No. 4

There will be a negligible relationship between the use of practical arts and the following personal characteristics and experiences on the part of the teacher: (a) marital status, and (b) amount of teaching experience.

This hypothesis was supported by statistical results. Neither the marital status nor the amount of teaching experience of the teacher play a role in the use of practical arts in the elementary classrooms of Michigan.

Hypothesis No. 5

Practical arts activities will be utilized more often in communities where parent and press attitude is seen by teachers as favorable to their use.

This assumption was substantiated by findings. Practical arts activities are utilized more often in schools where parents and the press are known by teachers to have a favorable attitude toward the use of such work. Where this attitude, for some reason, is not known to teachers, practical arts activities are not as frequently used.

Hypothesis No. 6

There will be a negligible relationship between teaching load and the use of practical arts activities.

The weight of evidence supported this assumption. Teaching load does not appear to play a role in the practice and use of practical arts activities in the elementary classroom

Hypothesis No. 7

A favorable attitude on the part of the immediate superior (principal or supervisor) will be conducive to greater use of practical arts by the classroom teacher.

This hypothesis was supported by the findings. Teachers do use practical arts activities more in their teaching when encouragement is forthcoming from their immediate superiors. A neutral or hands-off policy is more often accompanied by little or no utilization of practical arts learning activities on the part of the teacher.

Hypothesis No. 8

A rigid daily program of studies imposed by the school administration will adversely affect the use of practical arts activities by the classroom teacher.

This assumption is not substantiated by statistical results, and we conclude that a rigid daily program of studies set up by the administration does not inhibit the use of practical arts as learning activities.

Hypothesis No. 9

Costs of instructional supplies will be greater in classrooms where practical arts activities are utilized.

This hypothesis was substantiated by the findings. Need for and cost of instructional supplies are greater when practical arts work is employed by the classroom teacher. It was further found that teachers who use practical arts as learning experiences spend more of their own money on instructional supplies.

Hypothesis No. 10

Noise and litter resulting from certain practical arts activities will be factors limiting the use of practical arts activities in the elementary classroom.

The weight of evidence from statistical findings supported this assumption. Noise and untidiness resulting from certain practical arts activities should be regarded as factors inhibiting the use of practical arts activities in the elementary classrooms of Michigan.

Hypothesis No. 11

Certain physical factors, viz., movable seats and desks, tables for constructional activities, work benches with vise, tool and material storage cabinets, hand tools for wood and metal, utensils for preparing food, sinks with running water, electrical outlets, electric or gas plates, activity space, insulation for noise, and larger floor areas will be present to a greater degree in classrooms where practical arts activities are employed.

Statistical results supported this hypothesis in regard to the following items: tables for constructional activities, workbenches with vise, hand tools for wood and metal, tool and material storage cabinets, activity space, and insulation for noise. These physical items should be viewed as positive factors playing a role in the practice and use of practical arts activities in the elementary classroom.

The above hypothesis (No. 11) was not substantiated in regard to the following physical items: movable seats and desks, utensils for preparing foods, sinks with running

water, electrical outlets, electric or gas plates, and larger floor areas. These physical items cannot be regarded as factors playing a role in classroom use of practical arts as defined for this study.

Hypothesis No. 12

There will be a negligible relationship between the use of practical arts activities and the presence of individual tool kits, jig saws, and sewing machines in the elementary classroom.

This assumption was supported by the statistical findings. These physical items cannot be regarded as factors either promoting or retarding the use of practical arts activities as practiced in Michigan schools.

Recommendations

The facts arising from the practical interpretations and implications of the findings of this inquiry lead to the following recommendations for classroom teachers, administrators, and teacher trainers.

Recommendations for Classroom Teachers

1. Classroom teachers with an inadequate background in practical arts training should expand their skills and knowledge in this area through enrolling in in-service training courses, visiting classrooms where this work is carried on, and consulting books and current magazines relating to this work.

2. Classroom teachers should be alert to means of securing salvage and inexpensive materials to augment the regular instructional supplies of the school.

3. Classroom teachers should show ingenuity in improvising equipment for practical arts work--such as converting old tables to work benches, and making tool and materials storage cabinets from boxes and crates.

4. Classroom teachers should schedule noisy activities at a time not objectionable to associates.

5. Classroom teachers should organize pupil clean-up committees following activity periods to minimize the untidiness resulting from necessary practical arts activities.

6. Classroom teachers should make efforts to acquaint parents with the value of practical arts activities for their children through classroom displays and parent teacher conferences.

Recommendations for Administrators and Supervisors

1. Classroom teachers should be given the active support and encouragement of their immediate superiors (principals and supervisors) if practical arts activities are to be most effectively utilized in the classroom.

2. Administrators should assume some responsibility in acquainting parents and patrons of the school with the value of practical arts as learning experiences through sponsorship of group meetings, school displays and exhibits, and favorable press releases.

3. More financial support should be regarded as necessary if practical arts work is utilized as learning experiences in a school. Teachers capable of utilizing this work are paid higher salaries, and additional instructional supplies and classroom equipment are necessary.

4. Room acoustics should be of better quality if practical arts activities are carried on in classrooms.

5. Any classroom large enough for effective teaching should be considered large enough for practical arts activities.

6. Teaching load is usually not a valid reason for a teacher's failure to use practical arts as learning experiences.

Recommendations for Teacher Trainers

1. Teacher training institutions should provide more pre-service work in industrial arts for students on the elementary curriculum.

2. More in-service courses in industrial arts should be made available to elementary teachers in the field.

3. Teacher trainers should stress the use of salvage and inexpensive materials in college industrial arts courses designed for the preparation of elementary teachers.

4. Teacher trainers should put considerable emphasis on student planning and construction of classroom practical arts equipment in basic industrial arts courses.

Suggestions for Further Research

This study sought to expose and investigate factors that influence the use of practical arts as learning experiences in the elementary grades to the end that administrators and teachers may improve the quality and quantity of teaching in this area. It is believed that numerous factors have been disclosed. A limited number of recommendations, based on the findings as well as on practical experience, have been offered in the hope that some positive action may be taken to promote greater utilization of practical arts activities at the elementary level.

As this study progressed, however, opportunities for additional study and research in this area have presented themselves from time to time. It is believed that investigation of at least three directly related problems would extend the usefulness of this inquiry.

1. A study, similar to this inquiry, based on data supplied by classroom teachers in Michigan not reached in this inquiry could further test the reliability of data of this type.

2. A study concerned with factors relating to the use of practical arts in the elementary grades and based on data obtained from school administrative personnel could extend the scope of this study.

3. Several studies, similar to this inquiry but pursued in other sections of the United States, could assist in determining the generality of these findings as related to the entire country.

The need for research on two additional problems became apparent during the course of this inquiry. These problems, though not as directly related to the present study as those presented above, are in the same general field and, it is believed, are worthy of consideration by future investigators.

1. A study which would compare the scope and retention of learning in classrooms where practical arts activities are utilized with the scope and retention of learning in classrooms where only traditional subject matter and method are utilized could materially aid in verifying the effectiveness of practical arts as learning experiences in the elementary grades.

2. A study devoted to establishing and clarifying the psychological and anthropological bases for the use of practical arts could contribute to more general use of these learning experiences. Several studies, including the present one, have dealt incidentally with these basic disciplines in attempts to verify the need for more practical, active elements in learning. However, more thorough and extensive study relating to the origin of the need for practical arts work in the elementary grades is necessary if the true and elemental bases on which this work rests are to be universally recognized.

APPENDIX

MICHIGAN STATE NORMAL COLLEGE
YPSILANTI, MICHIGAN

We are interested in locating a number of elementary classroom teachers in Michigan who use practical arts activities in their teaching. Regular classroom teachers (grades 1 through 6) who use elementary tool and hand work experiences such as simple woodworking, metalworking and crafts as an integrated handwork approach to many of the more abstract concepts of traditional subject matter can participate in a study which should be of value to educators in the elementary school area.

Participation in this study will require relatively little of the teacher's time. A brief conference or questionnaire will provide the necessary information.

Will you assist by recommending any teacher or teachers in your school who meet this requirement? A return envelope and blank for recording recommended teachers (or indicating that no teachers meet this requirement) are inclosed for your convenience. It is important that the blank be returned in either case so our listings may be complete.

Your cooperation is appreciated.

Very truly yours,

Duane G. Chamberlain
Supervising Teacher

_____
Principal

_____
School

_____
City or town

Please check one of the following:

1. We have one or more regular classroom teachers (grades 1 through 6) in our school who provide their pupils with elementary tool and hand work experiences such as simple woodworking, metal-working and crafts..... ☐

2. We have no elementary classroom teachers in our school who meet this requirement..... ☐

****

The following teachers in our school meet the requirement listed in item (1) above:

Mr., Miss, Mrs._____

Address_____

_____

Mr., Miss, Mrs._____

Address_____

_____

Mr., Miss, Mrs._____

Address_____

_____

Mr., Miss, Mrs._____

Address_____

_____

MICHIGAN STATE NORMAL COLLEGE
YPSILANTI, MICHIGAN

We have your reply to our recent query concerning practical arts activities in the elementary grades. Thanks for your prompt assistance in advancing our study on "Factors Relating to Teaching of Practical Arts Activities in the Elementary Grades." When completed, the study should result in increased understanding of education at the elementary school level. These results can be made known to you.

To complete this study statistically we need data from teachers who utilize little or no tool and handwork activities in their teaching. Will you kindly submit (on the form below) names of one or more of your regular classroom teachers (grades 1 through 6) who make <u>least use</u> of tool and handwork activities such as woodworking, metalworking and crafts in their teaching?

Very truly yours,

Duane Chamberlain
Supervising Teacher

****

Mr., Miss, Mrs._____

Address_____

_____

Mr., Miss, Mrs._____

Address_____

_____

MICHIGAN STATE NORMAL COLLEGE

YPSILANTI

April, 1952

To Teachers in Elementary Education:

A current study seeks to investigate the factors relating to use of practical arts activities in the elementary grades. To advance this study it is necessary to obtain information from elementary teachers who utilize practical arts methods and materials in their teaching. It is equally important to receive information from teachers who achieve excellent results without the use of such activities.

You have been selected as one qualified to contribute worthy opinions concerning this problem. Whether or not you use practical arts activities in your teaching, your reasoned opinions can be of great value to this study. You may be sure they will not be used in a way to embarrass you or your school.

If you are willing to cooperate in this study, please fill out this information form and return it in the envelope provided. Your assistance will be sincerely appreciated.

Very truly yours,

Duane Chamberlain

Duane Chamberlain
Supervising Teacher

Average checking time of this questionnaire; 25 minutes

Information Form Concerning

FACTORS RELATING TO TEACHING OF PRACTICAL ARTS ACTIVITIES IN THE ELEMENTARY GRADES

Place a check in the square below that most nearly describes how often you use practical arts in your classroom.

Practical arts activities find their origin in the work of the home, the farm, industry and business. For purposes of checking this scale, think of practical arts as activities which provide pupils with manipulative experiences in the use of common hand tools such as hammers, saws, planes, files, etc.) and common constructional materials (such as wood, metal, plastics, leather, etc.)

every day	two or three times a week	once a week	two or three times a month	once a month	two or three times a semester	two or three times a year	never

Do you use "activity" or "experience" units in your teaching?---------- Yes ☐
No ☐

(An activity unit may be defined as a large learning situation extending over a considerable period of time (1 to 6 weeks) which involves the use of a number of school subjects such as reading, numbers, handwork, science, social studies, etc.)

If answer is "Yes" please check items (a), (b), and (c) below.

(a) Place a check in the square below that most nearly describes the number of activity units you carry on during the school year.

one	two	three	four	five	six	seven	more than seven

(b) Do your pupils often engage in simple woodworking processes as a phase of these activity units?---------- Yes ☐
No ☐

(c) Do your pupils often engage in simple crafts such as weaving, leather work, sewing, and carving as a phase of these units?-- Yes ☐
No ☐

I. Training Factors

1. Place a check in the square that will indicate the highest level of education you have completed.

Less than two years of college------- ☐
Two years or more of college--------- ☐
Bachelor's degree-------------------- ☐
Master's degree---------------------- ☐
Doctor's degree---------------------- ☐

2. Place a check in the square that most nearly describes the amount of your college training in industrial arts (crafts, woodwork, metalwork, ceramics, weaving, etc.)

0-2 semester hours	☐	9-10 semester hours	☐
3-4 " "	☐	11-12 " "	☐
5-6 " "	☐	13-14 " "	☐
7-8 " "	☐	15-16 " "	☐
		17 or more " "	☐

3. Place a check in the square that most nearly describes the amount of your college training in homemaking (cooking, sewing, etc.)

0-2 semester hours	☐	9-10 semester hours	☐
3-4 " "	☐	11-12 " "	☐
5-6 " "	☐	13-14 " "	☐
7-8 " "	☐	15-16 " "	☐
		17 or more " "	☐

4. Place a check in the square that most nearly describes the amount of your college training in fine arts (Do not include music)

0-2 semester hours	☐	9-10 semester hours	☐
3-4 " "	☐	11-12 " "	☐
5-6 " "	☐	13-14 " "	☐
7-8 " "	☐	15-16 " "	☐
		17 or more " "	☐

II. Personal Factors

5. Sex — Male ☐ Female ☐

6. Marital status — Single ☐ Married ☐

7. Age (in year groups)

20-24	☐	45-49	☐
25-29	☐	50-54	☐
30-34	☐	55-59	☐
35-39	☐	60-64	☐
40-44	☐	65-69	☐

8. Teaching experience (in year groups)

0-4	☐	20-24	☐
5-9	☐	25-29	☐
10-14	☐	30-34	☐
15-19	☐	35-39	☐
		40-44	☐

9. Place a check in the square which most nearly describes your salary for this school year.

Less than $2,500	☐	$4,000 to 4,499	☐
$2,500 to 2,999	☐	4,500 to 4,999	☐
3,000 to 3,499	☐	5,000 to 5,499	☐
3,500 to 3,999	☐	5,500 to 5,999	☐
		More than $6,000	☐

10. Please check any of the practical arts hobbies listed below that you follow personally.

Sewing---------- ☐
Knitting---------- ☐
Embroidering------- ☐
Cooking---------- ☐
Weaving---------- ☐
Preserving foods--- ☐
Gardening---------- ☐
Photography-------- ☐
Woodwork---------- ☐

Metal work---------- ☐
Carving---------- ☐
Leatherwork---------- ☐
Upholstering---------- ☐
Ceramics---------- ☐
Rug making---------- ☐

other _____

11. Please check (or list) all practical arts work experiences you may have had.

Factory or industrial--- ☐
Housewife---------- ☐
Building trades--------- ☐
Farming---------- ☐

Camp counselling (crafts, etc.)----- ☐
Business practice---------- ☐

other _____

III. Public Relations Factors

(For purposes of checking this item as well as later items in this questionnaire, think of practical arts as that subject matter area which finds its origin in the work of the home, the farm, industry and business. At the elementary school level practical arts takes the form of manipulative experiences in the use of common tools, materials and processes inherent in such activities as crafts, handwork, cooking, sewing, duplicating and gardening.)

12. Check one of the following concerning parent and patron attitude (in your community or city) toward the teaching of practical arts in the elementary grades. (Consider previous contacts with parents and patrons through P T A meetings, parent conferences, correspondence, etc.)

Favorable--------- ☐
Unfavorable------- ☐
Unknown to me----- ☐

13. Newspaper and press "stand" (in your community or city) toward the teaching of practical arts in the elementary grades is: (check one)

Favorable--------- ☐
Unfavorable------- ☐
Unknown to me----- ☐

IV. Teaching Load Factors

14. Check the square which most nearly describes the number of pupils regularly assigned to your room.

Less than 20---------- ☐
20-24---------- ☐
25-29---------- ☐
30-34---------- ☐

35-39---------- ☐
40-44---------- ☐
45-49---------- ☐
More than 50---------- ☐

15. Check the grade or grades that you teach.

Kdg.	☐	Third	☐
First	☐	Fourth	☐
Second	☐	Fifth	☐
		Sixth	☐

16. Are you allowed time out of your regular school day for daily teaching preparation? (Do not count time allowed for committee or staff meetings)---------- Yes ☐ No ☐

17. If your teaching load were lighter how much additional time per week would you devote to providing practical arts experiences for your children? (Check one)----------

none	☐
1 hour	☐
2 hours	☐
3 hours	☐
4 hours	☐
5 hours	☐

Please explain _____

_____

_____

18. Check the type of organization that best describes your classroom.

Self-contained classroom. (One teacher primarily in charge of all pupils for whole day. Special teachers may give help in the regular classroom. An exception may be made in the case of physical education, instrumental music, etc.)---------- ☐

Departmental. (School day is divided into segments or periods with pupils reporting to a number of teachers for instructional purposes)---------- ☐

Platoon. (Pupils are grouped in sections or platoons and are scheduled so that each platoon spends approximately one-half day in the homeroom, one-fourth day in shops, music, etc. and one-fourth day in physical education and related activities)---------- ☐

V. Supervision of Advisory Factors

19. Place a check in the square that best describes the attitude of your immediate superior (principal or supervisor) in regard to use of practical arts activities in the elementary grades.

a. Insists that practical arts activities are essential to elementary school learning---------- ☐

b. Encourages practical arts activities---------- ☐

c. Takes no particular stand in relation to practical arts activities---------- ☐

d. Discourages practical arts activities---------- ☐

e. Considers practical arts activities a waste of time---------- ☐

20. Check one of the following statements which best describes the attitude of your administration toward your daily schedule.

a. Time rigidly set for all studies and activities in your daily program---------- ☐

b. Time rigidly set for about three-fourths of the studies and activities in your daily program---------- ☐

c. Time set for about one-half of the studies and activities in your daily program---------- ☐

d. Time set for only about one-fourth of the studies and activities in your daily program---------- ☐

e. Complete freedom as to time you spend on the various studies and activities in your daily program---------- ☐

21. Check one of the following statements that best describes the type of assistance and supervision available to you in the practical arts area.

a. Pupils taught practical arts by a specializing teacher in a special handwork or crafts room with little or no assistance from you. ☐

b. A handwork or arts teacher teaches practical arts in your room. ☐

c. A handwork or arts specialist is available for consultation and assistance in practical arts problems---------- ☐

d. All practical arts taught by you with little supervision and no direct assistance.---------- ☐

e. No practical arts taught.---------- ☐

VI. Economic Factors

22. What is your estimate of the amount allotted you each year for instructional supplies (paper, paints, crayons, chalk, wood, textiles, metal, plaster of Paris, scissors, tools, etc.)?----------$ ___

23. What is your estimate of the amount needed each year for instructional supplies in your room?----------$ ___

24. Place a check in the square that most nearly describes the amount of your personal funds (your own money) you spend yearly for instructional supplies.

None---------- ☐
$1.00---------- ☐
$5.00---------- ☐
$10.00---------- ☐
$15.00---------- ☐
$20.00---------- ☐
More than $20.00---------- ☐

25. Would you teach more practical arts activities if more money were available for instructional supplies----------Yes ☐
No ☐
Uncertain ☐

VII. Physical Factors

After each of the following questions:
Draw a circle around the Y if the answer is "yes".
Draw a circle around the N if the answer is "no".

26. Are pupils' seats and desks (or tables and chairs) in your classroom easily movable?---------- Y N

27. Do you have a special table (or tables) available for constructional activities in your room?---------- Y N

28. Is your room equipped with a workbench with a wood or metal vise? Y N

29. Do you have a cabinet or chest for storing tools and equipment?-- Y N

30. Do you have a cabinet or other storage space for practical arts materials?---------- Y N

31. Do you have common hand tools for wood or metal in your room?---- Y N

32. Are common hand tools available in building for use in your room? Y N

33. Is your room equipped with individual tool kits for your pupils? Y N

34. Do you have a jig saw in your room?---------- Y N

35. Do you have a sewing machine in your room?---------- Y N

36. Do you have utensils for preparing foods in your room?---------- Y N

37. Is your room equipped with a sink with running water?---------- Y N

38. Do you have one or more electrical outlets in your room?-------- Y N

39. Do you have an electric or gas plate in your room?---------- Y N

40. Do you have an activity space in your classroom?---------- Y N

41. Do you have an activity room in connection with (adjoining)your room?---------- Y N

42. Do you have an activity room available to your pupils elsewhere in your building?---------- Y N

43. Do you feel that your classroom is adequately insulated for noise?---------- Y N

44. What is the floor area of your classroom?---------- _____ square feet

45. Are you, in general, satisfied that the physical conditions and equipment in your classroom are adequate for any practical arts activities you wish to provide your pupils?---------- Y N

VIII. Noise or Disturbance Factors

46. In your opinion should noisy activities such as hammering, sawing, sanding, filing, etc. be permitted in a classroom?----------Yes ☐
No ☐



47. Check any of the following sources that would, in your opinion, object to noisy activities in your classroom.

Pupils in your room---------- ☐
Pupils in adjoining rooms----- ☐
Teachers in adjoining rooms--- ☐
Administration---------- ☐
Custodians---------- ☐
Parents---------- ☐

48. In your opinion should activities which cause untidiness (sawing, planing; plaster casting, etc.) be permitted in a classroom?----------Yes ☐
No ☐

49. Check any of the following sources that would, in your opinion, object to activities which result in untidiness and litter in your room.

Pupils in your room---------- ☐
Fellow teachers---------- ☐
Administration---------- ☐
Custodians---------- ☐
Parents---------- ☐

50. In your opinion is litter (untidiness resulting from certain practical arts activities) an important factor in limiting the quantity of practical arts activities in elementary classrooms?----------Yes ☐
No ☐
Uncertain ☐

51. In your opinion is noise an important factor in limiting the quantity of practical arts activities in elementary classrooms?---------Yes ☐
No ☐
Uncertain ☐

****

Name _____

School _____

Address _____

MICHIGAN STATE NORMAL COLLEGE
YPSILANTI, MICHIGAN

We hope you will find time to check and return the questionnaire on practical arts activities mailed you recently. Many teachers check the form in fifteen minutes.

As you are one of a limited number of teachers, selected by principals in this section of the state to participate in this study, it is particularly important that we hear from you. Feel free to make frank and candid responses. The material submitted is held in strictest confidence as far as individual respondents are concerned.

When completed, the study should result in increased understanding of education at the elementary school level. These results can be made known to you.

Your assistance is appreciated.

Very truly yours,

Duane Chamberlain
Supervising Teacher

MICHIGAN STATE NORMAL COLLEGE
YPSILANTI, MICHIGAN

A check of returns shows we have not received the questionnaire on practical arts activities mailed you this spring. As it will soon be necessary to close our listings and begin a study of data, we hope you will find time to check and return the questionnaire in the near future.

The limited number of teachers contacted makes it particularly important that we hear from you. Whether or not you use practical arts activities in your teaching, your responses are most valuable to this study and will be held in strictest confidence.

Very truly yours,

Duane Chamberlain
Supervising Teacher

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