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An Evaluation of Necessary Elements for Desirable Industrial Arts Instruction in the Elementary Schools of Utah

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AN EVALUATION OF NECESSARY ELEMENTS FOR DESIRABLE INDUSTRIAL ARTS INSTRUCTION IN THE ELEMENTARY SCHOOLS OF UTAH

by

Lee W. Ralphs

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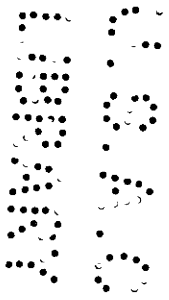

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INTRODUCTION

Significance

An essential part of the elementary school curriculum is the creative activity program connected with it. Educators believe that the fullest development of the child can best be attained through a program which provides a series of well selected experiences and activities. At present education considers the whole child--his abilities, needs, and interests--as vital factors in the development of a good curriculum, instead of merely the concrete and formal subject matter. Recently there has been an expressed view, by administrators of elementary school systems and many authorities and industrial arts teachers, that there is a definite need for formulating an effective plan of instruction for industrial arts in the elementary school program. This need has occurred because of the varied programs and confusion of current practices that exist in the activity programs of the elementary school, and the belief that industrial arts, probably more than most other subjects, can contribute to the activity program and the development of the whole child.

Most children retain more of what they learn, and for a longer period of time, if their learning experience is integrated with activity on their part. In the process of learning, the child's experiences can only become meaningful when the educational activity itself is in some way related to the individual interests, or felt needs, of the child. Likewise the rate of growth in learning is most rapid and beneficial when this principle is in operation. If the learning situation is to be meaningful it must go beyond just engaging in an activity. The experience should be followed by an opportunity for the child to have thorough explanations and

interpretations in order for him to understand and draw correct, meaningful conclusions.

Industrial arts as part of the activity program should be concerned about the consequences of action and not be satisfied with mere motion. It should also seek deliberately to encourage and strengthen creative ability by organizing learning around properly selected projects, experiences, or units of work. Industrial arts helps the child to satisfy his impulse to draw, to manipulate, to create, and to receive pleasure from being and working with other children as a group. Under these conditions total behavior patterns, including the emotional, intellectual, and active aspects, are further developed. The most generally accepted idea concerning the over-all picture of elementary industrial arts is that on the elementary school level industrial arts is a method of developing the different activities of any subject area which would involve the construction of projects, either individually or in groups. In order to do this most efficiently it is necessary to have a room available for that purpose, or some method of getting tools and equipment into the regular classroom for student use.

Purpose

The problem of this study was to procure and evaluate the opinions of industrial arts authorities and the opinions of Utah school administrators on the necessary elements for desirable industrial arts instruction in the elementary school.

The opinions of authorities were used to determine the most accepted practices being used for industrial arts instruction in the elementary schools in different areas of the nation. The opinions of Utah school

administrators were sought in an attempt to arrive at some common understanding of the necessary elements that would help formulate an instructional plan for the industrial arts program in the elementary schools of Utah.

From the opinions of the industrial arts authorities the writer developed 4 distinct plans of instruction. These were presented, in questionnaire form, to the Utah school administrators in order that they could indicate their preference for, or opposition to, any or all of these plans. The 4 different plans of instruction, a review of which will be discussed later, are analyzed by the writer to represent the most logical practices now being used in the majority of school systems.

The important aspect of any instructional plan should be thought of as an orderly procedure of getting learners to develop correct habits and skills that are educationally sound and will be of benefit to them throughout life; as well as to help the learner acquire knowledge and develop wholesome attitudes and ideals. This should be the measuring and evaluating standard for the success of any plan of instruction.

The need for such a study is apparent when one considers or contemplates the many practices, and omissions, in this very important aspect of a child's education. It should be emphasized that learning will be more permanent and complete if several of the senses are involved as they are when the several urges are satisfied through the industrial arts program.

Scope

It is obvious that many things must be considered in attempting to formulate a plan of instruction that would be even partially acceptable to the entire elementary school system of Utah. Such items as the facilities that are available within the school building itself; the size

and location of the school; the attitude of the administrators as to the worth of the industrial arts program; and the method of fitting this program into the curriculum, must be considered.

This investigation was not attempted for the purpose of developing a course of study of industrial arts to be considered as a part of the elementary curriculum; nor was it the purpose to go into any detail about the innumerable possible problems that would have to be considered in introducing it as a subject area. The writer limits this study to the evaluation of effective instructional elements that could be incorporated, with modifications, into a plan of instruction for industrial arts in the elementary schools of Utah.

REVIEW OF LITERATURE

Studies dealing with industrial arts instruction in the elementary schools are very limited; however, a few are available which might be used in connection with this thesis. The 4 most valuable studies encountered by the writer are reported in this section. The results of these and other similar studies are referred to throughout this study as a means of comparing industrial arts instruction given in the elementary schools of Utah with the same instructional methods of the nation.

Three general plans of industrial arts instruction in the elementary schools are reported in an interesting study made by Barich.(3,p.256-257) They are:

> 1. In small communities and in small elementary schools, industrial arts is taught, when it is taught at all, by the elementary teacher who teaches all parts of the curriculum. The reason for this is economy. In some instances industrial arts supervisory assistance is given by the industrial arts teacher in the upper grades. This, however, is the exception rather than the rule. The extent to which industrial arts is taught in such a situation depends on how well the teacher is prepared to carry on the work....Where teacher training service is not available there have been instances where local superintendents and principals with the assistance of the industrial arts teachers have put on their own elementary industrial arts program.
>
> 2. A second plan that is very often used, usually in the small city and country schools, calls for an itinerant industrial arts teacher for elementary schools. This itinerant teacher spends her time assisting the regular elementary teacher with the industrial arts phase of her work. Meetings are held where methods, projects, and other problems concerning the elementary industrial arts program are discussed. The itinerant industrial arts teacher is one who has adequate training and experience in this field.
>
> 3. A third plan, employed by larger city systems, usually

calls for a full-time supervisor, teacher with specialized training, and a special room and equipment. The city of Cleveland, for example, has 80 elementary schools where industrial arts work is taught by teachers specially trained in the industrial arts department of western Reserve University. These specialized teachers teach the fourth, fifth, and sixth graders. Some types of industrial arts work is taught in the kindergarten and grades 1, 2, and 3. However, in these grades the work is taught by the regular classroom teacher.

Another important study along this line is from the report of a committee appointed by the Commissioner of Education with Maris M. Proffitt, chairman.(20,p.36-39) Under the section, "Organization and Administration of Elementary Industrial Arts," they give the following:

> Grades 1 to 3. In these grades industrial arts can readily be taught by the classroom teacher--the content is simple, the skills are few, the necessary equipment is limited....
>
> Grades 4 to 6....As phases of on-going enterprises become more complex and require more varied use of tools and supplies or a broader knowledge of content and a more specific skill with tools than the grade teacher possesses, the children should be able to call on a specialized teacher for help.
>
> Specialist Teacher and Laboratory
>
> This teacher should be a man or woman who has majored in the field. He should have a shop or laboratory that is equipped for individual and group work. This necessitates flexibility in equipment, in supplies, and in reference books to care for the needs of the various groups at work. At one time a group of 7-year-olds may bring their problems to him; at another it may be several groups of 11-year-olds....The time of the specialist and the use of the laboratory should be adjusted to the conditions and needs of each school.
>
> The specialist should work with the classroom teacher in planning for the children's needs. His broad background of industrial information and his specific skills will supplement the classroom teachers' specific knowledge of the children and of their work. Industrial arts studies may be carried on by the regular teacher in her classroom or by this teacher and the specialist working together with the children in the classroom or in the shop as the need arises....
>
> In some communities an industrial arts supervisor may fit into the educational scheme. This man or woman should be responsible for improving the teaching of industrial arts. As a

> consultant and leader of teachers he should assist them in making tentative plans....Whenever necessary he should take a series of lessons with the children in order to demonstrate to the teacher a method or procedure that has been under discussion....He should be able to lead the teachers to share their experiences and to make suggestions in the development of the work.

Another less significant report concerning the over-all problem of elementary school industrial arts instruction is given by Begeman.(5,p.425) He reports the following about industrial arts in the St. Louis schools:

> The following proposals have been presented lately by the superintendent of instruction to the planning committee of the St. Louis Board of Education:
>
> 'It is proposed to make available practical arts (industrial arts and homemaking) facilities in each elementary school for children in grades kindergarten through 6 so that the regular teacher may have the opportunity for coordinating this type of work with the work of other areas.
>
> 'It is further proposed to provide grades 7 and 8 with facilities for homemaking for girls and industrial arts for boys ...this work to be offered under special teachers.'

A study was completed by Alterman (2) on industrial arts for elementary levels with special reference to the Horace Mann Laboratory School at Pittsburg, Kansas. The purpose of this study was to establish and introduce an industrial arts program for elementary schools. The author was primarily concerned with developing a suggested course of study for this particular school. Additional reference to his study will be made in a later section of this thesis.

In the literature taken from two authoritative books written regarding the program of industrial arts in the elementary schools, two different points of view are expressed regarding how the instruction should be given. Bonser and Mossman (6), in their discussion of industrial arts in the elementary school, state very definitely that instruction should

be given by the regular classroom teacher in all areas of the school in order to make all the different elements part of a common problem. They feel that to put the areas of instruction under specialized teachers would make the subject matter artificial and wasteful, causing some repetition or overlapping, and completely neglecting other important areas. Newkirk and Johnson (19), in their discussion of elementary industrial arts, favor instruction by specialists in some phases of industrial arts. They are of the opinion that the regular classroom teacher is not sufficiently qualified to give the thorough emphasis to industrial arts subjects that it rightly deserves. It should be noted that Bonser and Mossman published their material in 1923 while the Newkirk and Johnson book is dated 1947. It is possible that a fundamental change in basic philosophy over the period of about 25 years may have affected the recommendations that are made.

In spite of the fact that there is a considerable lapse of time between the writing of the 2 books, the 2 points of view probably indicate that no hard and fast rule can be set down as the only satisfactory way for handling elementary school industrial arts instruction. Rather, they indicate that many factors, such as the philosophy of the administrators and teachers, the physical facilities, and the training of teachers, would have to be given serious consideration.

Although the studies and reports referred to in this review of literature were made several years ago, they contain several points of information which were considered to be relevant to this study.

PHILOSOPHY AND IMPORTANCE OF INDUSTRIAL ARTS IN THE ELEMENTARY SCHOOL

Growth and Development

An important question to be considered in this study is the following: Does industrial arts provide a learning situation significant enough to justify its existence in the elementary school curriculum? This is a question which has long been in the minds of educators, especially school administrators and all those concerned with the development of a curriculum which is valuable to all children. Many educators accept industrial arts as an important part of general education, and by so doing accept its over-all philosophy.

Industrial arts is a relatively new curriculum area in the public schools of America. It is an outgrowth of the old manual training and manual arts programs. As a matter of fact there were 2 strong influences which helped to formulate the early programs of shopwork. The first of these was the Russian System of Tool Exercises. This system was a product of the Imperial Technical School of Moscow, Russia. The purpose of the school was to train civil engineers, mechanical engineers, draftsmen, foremen, and chemists. To supplement the theoretical instruction with the best possible practical instruction extensive shops were provided. Victor Della Vos, the director of the shops, and his instructors worked out the courses with the end in view of teaching the fundamentals of mechanic arts. Therefore the courses outlined consisted of making exercises or models which involved the fundamental tool processes but were of no particular value after completion. Della Vos was interested in a system which would be sound and would also be of such a nature that a student's progress could be readily determined.

The second of these important influences was that of Swedish sloyd. Sloyd actually had its beginnings in the homes of the Scandinavian countries. It had been common practice since early times to spend evenings constructing useful articles that might serve a worthy purpose around the home or farm. As the years went by the people began to sell some of their products and the home sloyd became "domestic industries." With the advent of power machinery the profit was taken out of making the articles, and because the manufactured articles were cheap and "in style," people purchased these and handicraft almost disappeared among the people.

Two men, Uno Cygnaeus (1810-1888) of Finland and Otto Salomon (1849-1907) of Sweden, were largely responsible for the development of educational sloyd. Cygnaeus started his sloyd work by first training teachers, then putting the work into the folk schools which he had originated. In 1877 Salomon visited Finland and there met Cygnaeus who influenced him greatly. As a result of this there were quite a number of sloyd schools in Norway and Sweden by the middle of the nineteenth century.

These sloyd schools were very much the same as home sloyd and articles were made that could be sold, regardless of their educational value. Pupils received pay for what they did if the article was sold. Naturally the demand determined the type of article to be made. Teachers were expected to help students make the articles as good as possible and often they finished articles so that they would be acceptable.

Salomon was impressed with the idea that sloyd should be a fundamental part of the elementary schools and that rather than being organized on an economic basis it should be organized on a pedagogic basis so that its educational values would be emphasized. With these ideas in mind he made a

careful study of sloyd and developed what he called "educational sloyd." This educational sloyd system was considered valuable for every child and was worked out by an educator for the sole purpose of the enrichment of the learning and education of all children during the elementary school period. Since it was on the elementary level it recognized individual capacities and capabilities, and was therefore developed on the individual system. At a later time it was made an integral part of elementary education and was governed by the same educational principles that had been accepted in the teaching of other subjects and was correlated with them.

In 1876 work from the Imperial Technical School was shown at the Centennial Exposition in Philadelphia. Here Dr. John D. Runkle (1822-1902) saw the exhibit and was very much impressed with it. He was president of Massachusetts Institute of Technology, and upon his return to Boston he recommended that a group of instruction shops be established at the institute. This exhibit also had a great influence on Dr. Calvin M. Woodward (1837-1914), dean of the Polytechnic faculty of Washington University. A direct result of his interest in it was the adoption of the principles of the system by the St. Louis Manual Training School of Washington University. The schools established by these 2 men gave it an impulse which spread over the United States resulting in the movement to establish manual training high schools.

The first manual training high school to be operated at public expense as part of the school system was opened in Baltimore on March 3, 1884. The second school of this type was the Philadelphia Manual Training school in 1885, and the third was in Toledo, opened the same year. The Toledo school was the first of this type to provide for girls as well as boys.

Following these schools others came along in fairly rapid succession until in 1893 manual training had been introduced into the schools of more than 50 cities. By 1900 this number had more than doubled. Other developments consisted of putting manual training courses into the upper grades of elementary schools. A notable example is St. Paul where the work was done under the direction of Charles A. Bennett. The course was of 3 years duration and was modeled after that of the St. Louis Manual Training School, though modified somewhat to meet the needs of pupils. At the same time instruction was made very practical in order to hold more boys for high school work. This led to the introduction of completed useful problems and projects after a few fundamental tool exercises, and was patterned after and influenced to a great extent by the original sloyd system.

Toward the close of the nineteenth century and in the early part of the twentieth century there was considerable discussion and controversary in America about the vocational value of shopwork in general. This discussion finally led to separation of shopwork into 2 separate and distinct programs, namely industrial arts and trade and industrial education. The passage of the Smith-Hughes Act in 1917 brought about a more or less complete separation of the programs, and industrial arts became a definite part of general education.

To a limited extent industrial arts started in the United States as propaganda by leaders in the general and technical fields of higher education who were trying to produce a subject that would be more in keeping with the industrial life of the nation. Gradually leaders grew up within the field itself and it has now reached a place of real importance in educational fields. Although it was recognized in its early stages for its

general education values it has had its greatest growth and development since about 1920. Its greatest growth has probably been in the junior high school which came into being shortly after the enactment of the Smith-Hughes Act and the close of the first World War. It has, however, had almost phenomenal growth in the senior high school and has extended even into the college. It has also extended itself into the elementary schools and is at present receiving renewed emphasis and expansion at this level.

Although industrial arts is relatively young, its basic philosophy is well established and is becoming more generally known and accepted by educators on all levels. The philosophy of industrial arts takes into consideration the entire public school program, and is flexible enough to be adapted to any particular grade level.

In order to give full emphasis to the importance of industrial arts on the elementary school level it is necessary to consider the generally accepted philosophy pertaining to it. Authorities in industrial arts have expressed its philosophy in well chosen words and the writer feels that much can be gained by using these statements and quoting freely from them.

The most generally accepted goal of all education is the building of good, useful citizens. Industrial arts makes very definite contributions to the democratic way of living by affording experiences and contacts with a large number of materials common to our present day industrial civilization. Any subject area or activity which contributes to the sum total of the worth-while experiences of the individual student, and teaches him the necessity and dignity of work well done, as does industrial arts, should be assured a vital place in the elementary school curriculum for the

preparation which it provides for the sort of life the children of today are to be living.

Psychological Aspects

Plans of instruction in the elementary school industrial arts program facilitate, to a remarkable degree, the use of certain measures which psychologists insist are essential; namely, (1) to discover the presence of individual differences, (2) to apply basic individual remedies, and (3) to apply stimuli that will result in maximum individual effort. Bawden (4,p.24) makes the following statement concerning these psychological measures:

> The known facts, therefore, concerning individual differences among pupils constitute a weighty argument for those subjects of study which are capable of ready and natural adjustment to the individual abilities of pupils, among which industrial arts is prominent.

Many authorities claim that the most retentive learning is that done by the use of the hands. Some other statements follow which are concerned with the psychological measures mentioned above. Concerning the fundamental significance of industrial arts in modern education Bonser and Mossman (6,p.105-106) make the following statement:

> Industrial arts is thus a study that enlists all of the learning and active impulses and abilities of children--manipulative, investigative, esthetic, and social. It represents fields of real need in both child life and adult life. It uses the minds of children quite as much as their hands. It leads on to related fields of cultural content, giving a basis for interest in and appreciation for much of history, geography, science, literature, and art for which children and students otherwise would have no approach nor any adequate means of understanding.

In an article written by Moore (15,p.137), the following appears:

> ....Elementary industrial arts is at the threshold of the greatest development it has ever had, but we must be ready to interpret it.
>
> Let me give you the psychological facts underlying this new

> development. If we are to believe what is constantly told us —that learning takes place best where there is interest on the part of the learner—then we must realize that for the elementary child the printed page has never filled the bill psychologically. No child has ever been continually interested in the printed page. There has always been some means of trying to motivate this page by pictures and various other devices. If we in the field of industrial arts will develop the right curriculum, covering the right subjects, we can make this the most purposeful of all periods.

Teacher Training

We must be concerned with the training of teachers in considering the general philosophy of industrial arts. Industrial arts authorities claim that colleges and training institutions should train elementary teachers for industrial arts. On this matter Proffitt (20,p.39) says:

> Many communities may lack classroom teachers trained in industrial arts. This need can be met in several ways. Teachers already in service who have no background can be trained locally to do the work. Courses in industrial arts and special help can be given them to meet their specific needs. Prospective teachers can be prepared in teacher training schools, many of which include industrial arts as part of their curriculum, offering required courses in industrial arts for all students and elective courses in industrial arts for all students who wish to specialize in the field.

Gordon O. Wilber (23,p.6,7), in making a coast to coast survey of the industrial arts program, noted several significant aspects, one of which is cadet training practices. From his article the following quotation is taken:

> The evidence indicates that an adequate experience in cadet teaching results in maximum growth toward effective teaching, and that there is a close relationship between the experiences which the student has in cadet teaching and the program which he will eventually promote.
>
> It is indeed interesting, and at the same time somewhat alarming, to note the wide diversity in practices....
>
> The actual hour requirement actually ranges from 3 to 15 semester hours. In some schools the student may do as little as 1 class period for a semester while at other colleges he must

devote a full half-day for a semester or more to this activity.

> Apparently there is a trend toward increasing the amount of time devoted to cadet teaching and the amount of credit assigned to it....

On the subject of industrial arts teacher training and qualification Bawden (4,p.157) says:

> Professional qualifications of industrial arts teachers must be as high or higher than those of other teachers on the same level, but different. His professional preparation in general education must equal that of his colleagues. He must be qualified in the manipulative subject matter and in the several methods of teaching it; and also in the latest pupil-development methods of reaching various types of informational and appreciational subject matter. In addition he must have preparation for the special problems of shop management and class control; and, to be fully competent, he must have wage-earning experience in the activities he teaches.

It is evident that few elementary teachers meet all the requirements listed by Bawden; it is probably not meant that they should, but the list does include significant items or goals.

Educational Value

Another important item that must be treated when philosophy is mentioned is the actual educational value of the subject area under consideration. There has been quite a lot of experimentation with different industrial arts programs on the elementary school level, most of which has been very favorable, and many elementary schools carry out a very successful industrial arts program today. On the subject of industrial arts having definite educational value, Mones (14,p.12) makes the following statement:

> We who believe we know the value of industrial arts in a program of liberal education must be bold and alert in revealing the fallacies and misinterpretations of those who do not choose to love us or understand us.
>
> Those who do not love us tell us so quite frankly. They are

> the hostile legions of academicians, educational feudalists, literati, classicists, and intellectual cultists who accuse us of vulgarizing the aristocratic traditions of education....
>
> We are certainly as unanimously eager to emancipate intelligence, to develop cultivated discrimination, to refine emotions and attitudes, to create poise and self-control as are any of the classicists or traditionalists. In fact we are convinced that these are just the things we can do by means of industrial arts education.
>
> Our point is simply this. We do not differ from the traditionalists in basic aims and objectives. Not at all. We believe as they do, that a liberal education should develop mental power, articulate expression, conscious appreciation, and principled taste. And we insist that by skillful education revolving about industrial arts we can do just these things....
>
> Then there are some among us who are still fond of declaring that industrial arts education is a fine educational prescription for those of low mentality, low power of concentration, low degree of interest and motivation. These friends of ours are fond of arguing that pupils who make no satisfactory adjustment in the traditional classroom can be sent to the refuge of the industrial arts shop, where the rather low type of mind can find suitable occupation. To be sure there is something to this, but the truth must be seen in reverse. The truth is that industrial arts education is not by its nature especially geared to intelligences and personalities of low order and degree. The fact is that the values of industrial arts education are so comprehensive in scope, so attractive to all types of pupils, those of high intelligence and the dullards, of high mental gifts or low mental gifts, that all pupils will make better accommodation to a focus of industrial arts....
>
> An industrial arts program, in summary, may be defined as a program of education which will develop in a pupil all the basic individual and social powers and skills, and which will be achieved around a core of industrial experiences significant to a pupil because they are fundamentally important to the time and place in which he lives.

Thoughts expressed by William T. Bawden and J. R. Ludington (4, p.149) illustrate methods of fulfilling the desired goals or principles regarded as valuable in curriculum development by the use of industrial arts. Bawden makes the following statement:

> Without a definite plan for providing the variety of experiences essential to the all-around development of the individual,

> it is impossible to insure complete growth, activities in planning, construction, and expression are essential elements in this complete cycle of experiences. They constitute the contributions of the industrial arts program, and in no other department of the school can they be provided so readily and so naturally as in the industrial arts department. Means for insuring complete and all-around growth of the individual are generally lacking, and it may even be questioned whether this objective is consciously set up in such a school.

Ludington (12,p.12,13), on this same line of thinking, said:

> For at least 50 years good schools have included more and more guided opportunities for pupils to think in terms of the reality of life in addition to abstractions and symbols. This tendency to emphasize direct pupil experiences, such as sharing and participating in real life activities while seeking solutions to individual, social, and economic problems industrial in origin gave rise to industrial arts as an area of school experience.... There is need to develop the abilities of pupils to construct, to explore, to invent, to investigate, to experiment, and to learn through those activities in which they can engage with success and satisfaction. For all types of pupils, from very superior to the very inferior in academic ability, a better balance is needed between learning situations in which abstract symbols predominate and those in which a reality of life predominates.
>
> Industrial arts should be a medium of interpretation through a wide range of practical experiences which involve both manipulation and understanding on the part of the pupil....What individual capacities are revealed in the course of student activity has become a basic tenet in formulating and extending pupil experiences in industrial arts. Increased leisure time affords not only an education opportunity but it also becomes a liability and a responsibility with which the school must cope.

From the above statements it is evident that there is educational value in industrial arts properly administered. However it must be realized that there are objections to industrial arts from some schools and administrators. Among the most important of these objections are: (1) the lack of teacher training in the subject on the elementary level, (2) misunderstanding of, and several variations in, the actual content of the subject matter, (3) many variations in plans of instruction, and (4) the actual expense involved in the purchase of tools and materials

necessary for its proper organization and functioning. These, of course, are not serious drawbacks but it is important to at least be aware of them.

Aims and Objectives

There are only 1 or 2 generally accepted objectives of industrial arts on the elementary school level. Most writers on the subject claim as one of their objectives the understanding of the various processes of industry. Proffitt (20,p.18) makes the following analysis concerning this:

> Objectives. No attempt is made on the elementary school level, grades 1 to 6, to cultivate vocational interests or possibilities. The purposes are rather:
>
> To help the child understand what is going on about him in the industrial world:
>
> Materials that are used--their sources and characteristics.
> Products into which they are made and their values (intrinsic, aesthetic, utilitarian).
>
> Changes that have been made in the materials--the causes, the effects:
>
> Struggles and problems of all people who have made the changes from early times.
> Tools and processes they used.
>
> Continual progress in industry:
>
> Constant search for new materials and methods.
> Contributions of science to this progress.

In practically no situation do the writers give emphasis to the vocational and skill objectives of industrial arts in the elementary schools. In fact it is the opinion of most authors that little or no concern should be given to developing manual skills in elementary industrial arts.

Ericson (9,p.276) says:

> In the organization of industrial arts activities in the grades below the seventh, formal work with tools and materials is less and less favored. The woodworking program that once was

> common has given way to a large extent to other types of activity, with less demand for skills in the doing and more direct relationship to the study program of the classroom and to the life of the child.

Barich (3,p.255), in listing his objectives for elementary industrial arts, places skill at the bottom of the list. His list of objectives is:

> There is almost universal approval of the point of view that industrial arts on the elementary level contributes to general education. Other aims, purposes, or objectives often given include:
>
> 1. To develop interests through effective utilization of leisure time.
> 2. To stimulate purposeful planning resulting in greater levels of achievement.
> 3. To develop an appreciation of the value of industry to society.
> 4. To develop habits of investigation, experimentation, and creation.
> 5. To provide means by which children may satisfy the urge to create and to feel the joy of accomplishment.
> 6. To develop appreciation of good workmanship.
> 7. To develop safe work habits.
> 8. To develop understanding and proper use of tools.

It may be noted from the above list of objectives that they are very general in nature compared to the more specific objectives of industrial arts on the junior or senior high school level. Regarding the general objectives of industrial arts, Alterman (2,p.6,10), in his study, said:

> The elementary school has already focused the attention of children upon man as a reader, writer, artist, traveller, mathematician, fighter, and ruler, so now it owes industry the study of man as a worker. Industry is the only great department of civilization, with the exception of religion, which is not studied

> in the elementary school. An investigation should be made of fundamental understanding, values, and skills as seen in industrial work, industrial life, and industrial instruction. This general principle is constant, while the details vary. The exact field of investigation in any school will depend upon the nature of industrial operations in the neighborhood.
>
> The elementary school naturally should not expect to produce a finished proficiency in any art. To expect immature children in the grades, spending a few hours a week, to master 3 or 4 kinds of skilled workmanship would be preposterous. It is a crude and elementary kind of knowledge and skill that children in the grades can acquire.

Correlation

Industrial arts, to be of greatest value, must be correlated with the other subjects in the elementary curriculum; and because of its nature it can be correlated in some manner with practically all of those subjects. Industrial arts has been found to provide the necessary training in social efficiency which is so highly important to success in the activities of modern living. If the various elementary studies are approached through an industrial arts program which calls for both intelligence and action, the industrial and social results of progressive changes may be appreciated more fully and the life conditions of the people may be more thoroughly understood.

On this topic of correlation of subjects in the elementary school, Abercrombie (1,p.405-406) said:

> For many years we have talked and read of integration between industrial arts and other school subjects which are considered as basic in our modern school curriculum. Too much of this has been wishful thinking, however, and too little actual accomplishment. Much of this failure to integrate industrial arts and other subjects is traceable to the fact that our entire school system has been established upon the premise that science is science, mathematics is mathematics, industrial arts is industrial arts, and 'never the twain shall meet'....
>
> The general conclusion for complete education is clear. Industrial arts, English, science, and all other school subjects

> have a vital place in preparing boys and girls to live. Each subject must have a vital place of high position in a school curriculum which is responsive to realities. Each subject, however, must not be an end in itself but must be a part of the whole....

Curiosity and Learning Value

Another aspect of a child's development which is met to a large extent by industrial arts is the ability to satisfy the curiosity regarding many things concerning his life. The curiosity exhibited by a child is his method of expressing a desire to learn and grow. If, for some reason, the child is repressed rather than encouraged when he expresses his desire to learn, he will become discouraged, deeply disappointed, and will lose much of his inherent ability to acquire further knowledge. A child's curiosity may be encouraged and, if correctly guided, will become his most valuable educational asset. Industrial arts helps both to encourage and guide this phase of a child's maturation by stimulating him to express himself creatively and actively in units of work that are interesting and meaningful to him. Bonser and Mossman (6,p.13) express their concern regarding this in the following statement:

> The materials, processes, and products of industry appeal to our intellectual interests. Our curiosity as to what things are made of, how they are made, and what they are used for, leads us to ask many questions. This interest is strong in early life, but if it has little to satisfy it it will tend to grow less and less and to be crowded out by other interests. Industrial arts both satisfies and stimulates the curiosity found in all normal children.

It should be emphasized that industrial arts, as part of the activity program, can meet as many of the needs of the children as is possible if it helps to satisfy their curiosity.

Since it is established that probably the most important aim of all education is to build good citizens it would be well to emphasize the

important part industrial arts can play in meeting this goal. The elementary industrial arts program recognizes the needs of, and contributes to, the culture necessary for efficient social adjustment in our democratic way of living. The most important industrial tendencies of the modern world are thus used, controlled, and enlarged upon; and because of this we find that industrial arts does provide a learning situation significant enough to justify its existence in the elementary school curriculum.

QUESTIONNAIRE STUDY OF INDUSTRIAL ARTS

Instructional Implications

In order to obtain the necessary significant material essential to the evaluation of the instruction of industrial arts in the elementary schools of Utah, 250 questionnaire forms were mailed. These forms were sent to all of the city and district superintendents, all elementary school supervisors, and 175 elementary school principals throughout all the districts of the state of Utah.

A letter of transmittal was included with each questionnaire form. This letter included a brief statement of the aims of elementary school industrial arts, the purposes of the study, and brief instructions for marking and returning the questionnaire.

Included in the questionnaire were statements of 4 distinct plans of instruction for industrial arts in the elementary schools. These 4 plans represent different forms of instruction and are considered to be a summary of the most up-to-date practices that exist throughout the country at the present time. The ideas for these plans were obtained by the writer from research on the available literature in the field, and from discussion on the subject by industrial arts teachers and lay educators and administrators. The plans as they are stated are original to the writer and in no case are they a direct quotation from some other person. The ideas behind plans similar to these were mentioned by several authors as the form of instruction being used throughout different areas of the country. These 4 instructional plans are:

Plan A. The platoon type of organization, similar to that of secondary schools, where there is a specialized teacher

for the instruction of each separate subject area. Industrial arts would be included as 1 of the subject areas. In this type of organization the children go from 1 classroom to another for the various subjects.

Plan B. The form of organization in which there is a regular classroom teacher for instruction in all subjects or areas except industrial arts. Under this plan, on certain days of each week at a given time the entire class or section of a certain grade go into an industrial arts room for instruction under the direction of a specialized teacher.

Plan C. The type of organization which has a specialized industrial arts teacher available to all students and teachers. In this case the program is planned ahead in order to have the services of the specialized industrial arts teacher to meet the needs of the group at an appropriate and convenient time and place.

Plan D. The kind of organization in which there is either an industrial arts room available to all groups or grades, or there is some form of table with the necessary tools and equipment either in, or available to, each room. In either case the instruction would be under the guidance of the regular classroom teacher.

The letters A, B, C, and D have no relationship whatever to the plan they correspond with, but are used for identification purposes only. Numbers could have been used equally well.

In constructing the questionnaire the writer attempted to make it in such a form that it would be easily understood by all of the respondents and could be filled out in a minimum length of time. It was also hoped that the respondent could express his views to his satisfaction by marking the suggested reasons as they were listed under each plan. For these reasons the questionnaire was divided into 3 sections. Sections 1 and 2 were constructed in such a form as to result in giving the following information:

1. Student population of district and school.
2. The respondent's preference for, or opposition to, 4 different instructional plans.

3. What practices are now being followed in teaching industrial arts in the elementary schools.

4. The instructional plan that would be most acceptable under as near ideal conditions as possible.

5. Teacher qualification and training for industrial arts instruction in the elementary schools.

6. The philosophy of the respondent regarding industrial arts instruction in the elementary school.

The treatment of the information from the questionnaire is thoroughly covered in the section on "Presentation of Data."

In Section 3 of the questionnaire the respondent was asked to indicate his opinion of the plan he favored most, and his opinion of the plan in use at the time, providing industrial arts was being taught. He was aided in giving this information by checking "Yes" - "No" columns to 12 suggested statements concerning policy, administration, facilities, etc. of the 4 suggested instructional plans.

The questionnaire method of attack was used in solving the problem for several reasons: first, specific answers to an identical list of questions were desired from a large number of people; second, the information received is objective in nature; third, a larger percent of the administrators directly involved in the problem were contacted; and fourth, it is one of the most reliable methods of evaluating the opinions involved.

Distribution of Replies

Forty district and city superintendents of schools were contacted by questionnaire; of these 31 returned replies. There were 35 elementary school supervisors contacted in the same manner; 33 of these were elementary supervisors, 1 was general supervisor of a city school system, and 1 was an industrial arts supervisor for another city school system. Of these 35 supervisors, 30 returned replies.

All superintendents and supervisors were contacted, but the elementary school principals were selected at random. One hundred and seventy-five elementary school principals were contacted by questionnaire; replies were received from 131 of these principals. All districts having more than 1 elementary school were represented by 2 or more replies from the elementary principals.

One or more replies were received from all districts either through superintendents, elementary school supervisors, or elementary school principals. There were only 2 districts not represented by returns from either superintendent or supervisor. Five districts had more than 1 elementary school supervisor. In no case did more than 2 supervisors answer from the same district.

Of the 200 questionnaires sent there was a total of 192 returned, which was nearly 77 percent return.

Tables 1 and 2 give a complete summary of the total returns of all questionnaires sent. The data for these tables are given in numbers only, and will be broken down into greater detail in later sections of the study. The information was broken down into 2 separate tables because of the footnoting used for Table 1, which was necessary for its correct interpretation. These 2 tables represent all compiled and tabulated replies to the questions or statements, in consecutive order, of the complete questionnaire.

Philosophy of Respondents

The writer has chosen to treat in detail the information from Section 2 of the questionnaire ahead of the other information because it deals with the philosophy of elementary school industrial arts. The items included in this section deal with the most important things which are considered to be part of the philosophy, of which there are various opinions.

Table 1. Summary of the questionnaire returns of this study. Data, given in numbers, for Sections 1 and 2

Section 1

1. Position.	Superintendent 31				Supervisor 30				Principal 131				
2. Student population.	Smallest	Largest	Av.		Smallest	Largest	Av.		Smallest	Largest	Av.		
	150	7,100	2,200		150	7,100	2,200		9	1,144	280		
	Plan A			Plan B			Plan C			Plan D			
	Supt.	Supv.	Prin.	Supt.	Supv.	Prin.	Supt.	Supv.	Prin.	Supt.	Supv.	Prin.	
3. Favored under existing conditions.	1	0	5	7	3	34	6	5	23	18	20	64	
4. Practicing at present.	0	0	6	6	0	8	1	1	1	10	15	72	
5. Most opposed.	23	23	76	8	9	14	5	2	6	1	0	15	
6. Favored under ideal conditions.	2	0	9	2	4	37	9	12	51	12	11	32	

Section 2

	Yes			No		
	Supt.	Supv.	Prin.	Supt.	Supv.	Prin.
1. Is industrial arts merely busy work?	2	0	3	28	30	128
2. Are handwork facilities fully utilized without industrial arts?	3	4	13	25	22	112
3. How well trained is the regular classroom teacher for industrial arts?1/						
4. To what extent should colleges train elementary teachers for industrial arts instruction?2/						
5. Could more time be given to manipulative activities?	24	28	116	4	1	6
6. Can industrial arts be correlated with all other subject areas?	22	28	109	4	2	26
7. Should teachers' guide be prepared for elementary industrial arts?	26	29	115	3	1	5
8. Are children mature enough to understand industrial processes? (extent)3/						
9. In what grades should industrial arts be given to both boys and girls?4/						
10. Preference for industrial arts teachers in elementary school.5/						
11. Should industrial arts develop manual skills in elementary pupils?6/	9	7	41	5	5	11
12. Would a mobile unit be practicable?7/	2	3	20	25	20	61

1/ Well trained: supt. 0, supv. 0, prin. 4. Partly trained: supt. 16, supv. 14, prin. 58. Not trained: supt. 12, supv. 12, prin. 62.

2/ Large: supt. 7, supv. 7, prin. 46. Small: supt. 19, supv. 22, prin. 75. None: supt. 2, supv. 0, prin. 3.

3/ Large: supt. 5, supv. 9, prin. 40. Small: supt. 22, supv. 21, prin. 81. None: supt. 1, supv. 0, prin. 1.

4/ Primary: supt. 0, supv. 0, prin. 4. Intermediate: supt. 11, supv. 8, prin. 54. All: supt. 16, supv. 22, prin. 62.

5/ Women: supt. 1, supv. 0, prin. 6. Men: supt. 4, supv. 2, prin. 32. Either: supt. 21, supv. 26, prin. 83.

6/ "To some extent:" supt. 14, supv. 16, prin. 68.

7/ "I don't know:" supt. 3, supv. 6, prin. 43.

Table 2. Summary of the questionnaire returns of this study. Data, given in numbers, for Section 3

Section 3	Superintendent		Supervisor		Principal	
Reasons for favoring Plan A.	Yes	No	Yes	No	Yes	No
1. It has the advantage of the service of a specialist.	0	0	0	0	6	0
2. It is easier to administer.	0	0	0	0	5	1
3. It costs less to operate.	0	0	0	0	5	0
4. Children gain more in what they need to know from a specialist.	1	0	2	1	6	0
5. Under the platoon system children progress more rapidly and easily through the rest of their school life.	0	0	0	0	5	0
6. The facilities and buildings make this arrangement possible.	0	0	0	0	6	0
7. More time can be given to manipulative experiences.	1	0	1	0	4	2
8. The teacher load is less.	1	0	2	1	5	1
9. The tools and equipment are fully utilized.	1	0	2	0	6	0
10. Industrial arts is given more emphasis than under a regular classroom teacher.	1	0	2	0	5	1
11. A well-trained teacher handles this instruction at all grade levels.	1	0	2	0	5	1
12. Children profit more educationally with variations in room and teacher.	1	0	2	0	4	2
Reasons for favoring Plan B.						
1. It is easier to administer.	3	2	2	0	17	8
2. The regular classroom teacher is not qualified to give sufficient emphasis to industrial arts.	8	0	3	1	24	3
3. More attention is given to individual differences and interests.	4	1	2	1	20	7
4. The teacher load is less.	2	3	3	0	13	17
5. It makes the transfer from elementary to secondary easier for children.	2	2	1	1	20	6
6. Better correlation with all other subjects is permitted.	1	2	1	1	15	9
7. It allows for more manipulative experiences.	6	0	3	1	23	3
8. It is probably the most modern practice.	2	3	2	1	14	9
9. A specialist is available.	4	2	4	1	16	10
10. A specialist is needed more for industrial arts than for other subject areas.	3	4	2	0	13	11
11. It costs less to operate.	1	4	1	2	17	7
12. Each small group receives the same important information and instruction.	4	1	2	2	15	6

Table 2. Summary of the questionnaire returns of this study. Data, given in numbers, for Section 3 (cont.)

Section 3	Superintendent		Supervisor		Principal	
Reasons for favoring Plan C.	Yes	No	Yes	No	Yes	No
1. A specialist is available.	7	2	6	1	40	10
2. Industrial arts is given more emphasis than under regular classroom teacher.	5	3	6	1	45	13
3. The entire curriculum is planned ahead to meet more fully the needs and interests of the children.	11	1	8	2	63	7
4. A specialist is needed more for industrial arts than for other subjects.	1	9	4	6	23	37
5. It gives the regular teacher free periods.	2	8	3	7	21	45
6. It permits better correlation with all other subjects.	10	2	6	5	36	12
7. This is probably the most modern practice.	2	6	3	6	35	24
8. The teacher load is less.	6	6	5	5	27	19
9. It requires only 1 well equipped room.	11	2	9	1	45	13
10. A classroom with fixed furniture could be used.	5	6	2	7	30	15
11. Most classrooms have an area large enough for worktable and workbench with vises.	5	4	2	6	6	40
12. Children gain more in what they need to know from a specialist.	8	1	3	3	40	5
Reasons for favoring Plan D.						
1. It is easier to administer.	6	8	6	6	26	18
2. It costs less to operate.	11	4	8	4	35	8
3. Children receive more from the guidance of their regular classroom teacher.	16	1	18	1	43	2
4. Building and staff make this the most logical.	17	1	17	1	40	3
5. More correlation with all other subjects is permitted.	18	2	17	1	47	4
6. Individual differences are more fully satisfied.	11	3	15	0	39	6
7. Manipulative facilities are fully utilized.	8	3	9	2	22	19
8. More time can be given to meaningful manipulative experiences.	8	6	13	1	34	11
9. The teacher can arrange in groups according to abilities, and accomplish more.	8	4	12	3	34	8
10. It helps transfer children from elementary to secondary education.	2	5	4	5	10	30
11. Every child's needs are better fulfilled.	9	3	13	0	27	10
12. Children gain more educationally from all other subjects, as well as industrial arts.	8	4	15	0	35	6

Tables 3 through 14 follow in consecutive order the 12 questions listed in Section 2 of the questionnaire.

Table 3. Replies to the question, "Do you consider industrial arts in elementary schools as merely 'busy work'?"

Personnel	Attitude				Total	
	Yes		No			
	No.	%	No.	%	No.	%
Superintendents	2	6.6	28	93.4	30	100
Supervisors	0	0.0	30	100.0	30	100
Principals	3	2.3	128	97.7	131	100

It is evident from Table 3 that there is almost unanimous opinion from the administrators that they do not feel industrial arts in the elementary school to be merely "busy work." This probably means that they consider it to have definite educational value.

These data do not necessarily say that all these people favor industrial arts in the elementary school. There were a few respondents who indicated, by writing on the questionnaire form, that they were not in favor of industrial arts being taught in the elementary schools. Some thought that a good arts and crafts program was more desirable, and others thought that industrial arts should be left to the junior high school and above. However, it is noted that a much larger percentage of the respondents favored industrial arts in the elementary school curriculum and some were anxious that it soon be made a part of their program. Several letters were returned with the questionnaire commending the study, and expressing the hope that it would affect their program.

Table 4. Replies to the question, "Are the handwork facilities of the curriculum being fully utilized without industrial arts?"

Personnel	Attitude				Total	
	Yes		No			
	No.	%	No.	%	No.	%
Superintendents	3	10.7	25	89.3	28	100
Supervisors	4	15.4	22	84.6	26	100
Principals	13	11.0	112	89.0	125	100

Table 4 shows that a larger percent of the schools, which were represented by questionnaire returns, would be able to have more use of their present handwork facilities if industrial arts instruction were part of their curriculum. It is not evident from the table information just what materials are considered as "handwork facilities," but it is probably natural that the new schools would have much more and better equipment of all sorts in each classroom than the old, poorly-equipped buildings. The resulting data showed very little variation in the attitude of the respondents from schools with small population compared with the schools of large population.

The term "handwork facilities" in the elementary school generally would consist of all hand tools, machines, and equipment that might be used as part of any activity program where the hands are used in the learning situation. With this definition as a basis it is evident that the large majority of respondents considered industrial arts as part of the activity program of the school.

It should also be noted that the results shown in the above table are to a certain extent subjective. The answers depend entirely on the interpretation of "handwork facilities" as expressed by the individual, and is conditioned by personal characteristics of the mind, or thinking of the respondent.

Table 5. Replies to the question, "At present how well trained, in general, is the regular classroom teacher for elementary industrial arts instruction?"

Personnel	Attitude						Total	
	Well Trained		Partly Trained		Not Trained			
	No.	%	No.	%	No.	%	No.	%
Superintendents	0	0.0	16	57.2	12	42.8	28	100
Supervisors	0	0.0	14	51.8	12	48.2	27	100
Principals	4	3.2	58	47.8	62	51.0	124	100

From the data shown in Table 5 it is evident that there is a very definite trend in attitude toward the present training or qualification of the regular classroom teacher for industrial arts instruction in the elementary school. The evidence shows clearly that practically all respondents felt that the regular teacher is poorly trained for this phase of instruction. The data presented is a subjective measurement because it would take an agreement of all authorities to determine how much, and what type of specific training is necessary to determine whether a teacher is well trained or not. Even more subjective in definition and measurement is the term, "partly trained."

Despite the drawbacks the table is significant in 2 respects. First, it is obvious that there is a unanimity of thinking among the respondents. Second, since it can be the assumed attitude of the respondents that the regular classroom teacher is either partly trained or not trained at all in industrial arts instruction, it can be generalized that the teacher training units of the higher institutions are not either requiring intern teachers to take courses that would help train them for this field, or they are not, in most cases, even making these courses available to the teacher trainee.

Table 6. Replies to the question, "To what extent should colleges train elementary teachers specifically for industrial arts instruction?"

Personnel	Attitude						Total	
	Large		Small		None			
	No.	%	No.	%	No.	%	No.	%
Superintendents	7	25.9	19	66.6	2	7.5	28	100
Supervisors	7	24.2	22	75.8	0	0.0	29	100
Principals	46	37.4	75	60.1	3	12.5	124	100

From Table 6 it is evident that approximately two-thirds of the respondents expressed the opinion that the colleges should do little toward training elementary teachers specifically for industrial arts instruction. It may be suggested that the respondents are not very consistent in their thinking on the subject of teacher training. In Table 5 they indicated that the average elementary teacher is, at best, partly trained for this instruction. Then in Table 4 they express the opinion that the colleges should have only small training available to the cadet teacher, especially courses that would help train the individual specifically for industrial arts instruction in the elementary school. Another explanation might be the fact that they do not feel industrial arts important enough to justify specific training in that field compared to the other areas of the elementary curriculum.

Authoritative statements which deal with the part colleges should plan in the training of elementary industrial arts teachers, are those given by Proffitt (20) and are referred to in an earlier section of this study. There is an apparent lack of agreement between Proffitt's statements and the results of this questionnaire study.

Table 7. Replies to the question, "With an industrial arts program in the elementary schools could more time be given to the manipulative activities of children than would otherwise be the case?"

Personnel	Attitude				Total	
	Yes		No			
	No.	%	No.	%	No.	%
Superintendents	24	88.9	4	11.1	28	100
Supervisors	28	96.5	1	3.5	29	100
Principals	116	95.1	6	4.9	122	100

Table 7 indicates that the large majority of the school administrators are of the opinion that more time could be given to the manipulative activities of children if industrial arts is part of the curriculum. It can be implied from these data that they consider industrial arts, on the elementary school level, as a definite activity program involving the use of the hands in the learning situation. It might also be implied from this table that since the majority claim that more time could be given to the manipulative activities of children if industrial arts were a part of the curriculum, they would favor a larger activity program than now exists.

Another main observation from the data taken from Table 7 is that these school administrators claim that at the present time the manipulative activities of children are not being fully met by the present program. With industrial arts as a part of the curriculum, more time could be given to the activity program of the children. It should be recognized that in the elementary school the activity program is an extremely important part of the child's education. Activity or participation actually increases the retentiveness of any learning situation.

Moore (15) gives some statements which will furnish evidence of the conclusions drawn from the data taken from Table 7. These statements are given in an earlier section of this study.

Table 8. Replies to the question, "Do you think industrial arts could be made flexible enough to meet the needs of any grade level at any time, in order to correlate the activities of industrial arts with other subjects?"

Personnel	Attitude				Total	
	Yes		No			
	No.	%	No.	%	No.	%
Superintendents	22	84.0	4	16.0	26	100
Supervisors	28	93.3	2	6.7	30	100
Principals	109	87.8	15	12.2	124	100

According to Table 8 a large majority of the respondents feel that industrial arts can be made flexible enough to meet the needs of elementary school children. This seems to indicate that these respondents are of the opinion that industrial arts can be correlated with all the other subject areas as taught in the elementary school. It should be emphasized that this is one of the main arguments in favor of introducing the industrial arts program into the elementary school curriculum. The industrial arts program is constructed in such a manner that it can be integrated into all types of subject matter. For example, it is felt that arithmetic could be made much more meaningful if it were taught in relationship to some phase of the industrial arts program, for in that way the child could see that arithmetic is the best way to reach a solution and it would have more meaning to him. It is also suggested that children be given the responsibility of figuring the cost of projects they make, and in many activities which actually deal with the exchange of money and monetary values. This is only one of many suggested ways in which industrial arts could be correlated with the other areas of the child's educational experience.

Some statements concerning flexibility and correlation of industrial arts with other subject areas are made by Abercrombie (1), and substantiate

the data shown in Table 8. These are referred to in an earlier section.

Table 9. Replies to the question, "Should a suggested teachers' guide be prepared for industrial arts in elementary schools, and made available to the teachers?"

Personnel	Attitude				Total	
	Yes		No			
	No.	%	No.	%	No.	%
Superintendents	26	89.3	3	10.7	29	100
Supervisors	29	96.7	1	3.3	30	100
Principals	115	95.9	5	4.1	120	100

A conclusion drawn from Table 9 is that a large percentage of school administrators agree that a teachers' guide should be prepared and made available to the elementary school teachers on the subject area of industrial arts. Throughout the country there are 2 or possibly 3 such guides available for regular classroom teachers who include industrial arts in their instruction. They are quite different in content, and may serve 1 situation or area very well and not be able to be applied, in any form, to another. These suggested programs, or guides, were written by authors on the subject of elementary industrial arts, but are quite outdated at the present time.

The main inference from Table 9 is that the respondents think a teachers' guide should be prepared by authorities, and that it should be up-to-date and appropriate or useful for the school situation as it exists in the state of Utah. It can be assumed that these administrators have found a definite value to guides that have been prepared for the elementary teachers in all other subject areas on the elementary level, and that they think a guide or supplement for industrial arts on this level would be valuable to the teachers.

Table 10. Replies to the question, "To what extent are elementary children mature enough to get an understanding of the process of industry?"

Personnel	Attitude						Total	
	Large		Small		None			
	No.	%	No.	%	No.	%	No.	%
Superintendents	5	18.5	22	77.8	1	3.7	28	100
Supervisors	9	30.0	21	70.0	0	0.0	30	100
Principals	40	32.0	81	67.2	1	0.8	122	100

Table 10 indicates that children are only to a small degree mature enough to get an understanding of the processes of industry. The answers are naturally very subjective and conducive to much qualification. Each respondent may think very differently about the word "mature" and their definition of that word would determine their answer to the question. Likewise, the respondents may have a misunderstanding of the term "process of industry," which may affect their answer. Therefore, it may be interpreted in many different ways according to the understanding of the respondent concerning the industrial processes.

Another way to interpret the results of this table is that, since the majority of respondents represent areas which are rural and not industrial, they may be of the opinion that industrial processes are much more complicated than they actually are. If the respondents themselves have a misinterpretation of the process of industry as interpreted by the industrial arts program, they would naturally claim that they felt it to be beyond the understanding of the average elementary school child.

There are several statements made in an earlier section of this study by Proffitt (20) which are concerned with the ability of children to understand basic industrial processes as interpreted by the industrial arts program.

Table 11. Replies to the question, "In what grades should industrial arts instruction be given to both boys and girls in the elementary school?"

Personnel	Attitude						Total	
	Primary		Intermediate		All			
	No.	%	No.	%	No.	%	No.	%
Superintendents	0	0.0	11	42.3	16	57.7	27	100
Supervisors	0	0.0	8	26.7	22	63.3	30	100
Principals	4	3.4	54	45.4	62	51.2	120	100

From the data of Table 11 it may be assumed that the question was misleading and probably misinterpreted by some of the respondents. Since at least half of the respondents indicated that they think industrial arts should be taught to both boys and girls in all the grades of the elementary school as indicated in the "All" column, then take such a definite stand against teaching it in the primary grades as is indicated in the "Primary" column, is evidence that they interpreted the question to mean primary only.

Another interpretation to read into the data from this table is that the question implied that industrial arts instruction should be given to both boys and girls. Such a large percent of the respondents gave their opinion in 1 way or another that it is safe to assume they all felt that industrial arts should be given to girls on the elementary level, as well as to boys. There is much to support this idea of the instruction being given to both sexes that it is probably safe to make this assumption. It is highly recommended in other elementary activity programs that the instruction be given to the mixed group for its social benefit, and it would be faulty not to include industrial arts with this same group.

Walter R. Williams, Jr. (24), in his treatment of industrial arts in the elementary school, substantiates the data derived from Table 11. The article by Williams is referred to in an earlier section.

Table 12. Replies to the question, "Which would you prefer for industrial arts instruction in the elementary schools?"

Personnel	Attitude						Total	
	Women		Men		Either			
	No.	%	No.	%	No.	%	No.	%
Superintendents	1	4.0	4	16.0	21	80.0	26	100
Supervisors	0	0.0	2	7.1	26	92.9	28	100
Principals	6	4.9	32	26.5	83	68.8	121	100

It is evident from the data of Table 12 that the majority of school administrators in the state, who were contacted in this study, do not favor 1 sex over the other for industrial arts instruction in the elementary schools. It should also be noted that a majority of the school principals favor men for this instruction, compared to the attitude of the other administrators. An item of interest that was mentioned in many of the questionnaire returns was that the respondents favored women over men for this instruction in the lower elementary grades, but for an over-all general statement as to their preference they were more inclined to check the term "either."

As was mentioned previously, and will be considered later in the study, each of these tables was tabulated on a breakdown according to school population from the group of respondents who were principals. It should be noted that of the 32 principals who said they preferred men teachers, 16 of them represented schools with a population over 500; 4 represented schools with a population between 200 and 500; 5 principals represented schools with a population between 100 and 200; and 7 represented schools with a population of less than 100. This is 1 of the few items where there was a noticeable difference according to the population of the school.

Table 13. Replies to the question, "Should industrial arts, in the elementary school, be concerned with developing manual skills in children?"

Personnel	Attitude						Total	
	Yes		No		To some extent			
	No.	%	No.	%	No.	%	No.	%
Superintendents	9	32.1	5	17.9	14	50.0	28	100
Supervisors	7	25.0	5	17.9	16	57.1	28	100
Principals	41	34.1	11	9.2	68	56.7	120	100

Table 13 indicates that the majority of respondents think that industrial arts should have little concern for manual skills in the elementary schools. The term "to some extent" was included in the question to permit qualification for the respondents' answers, and received the majority of expressed opinions. A number of comments which were written in by the respondents included a few terms which were used in place of the term, "to some extent," and were included as statements used for qualification of their opinions. Samples of these comments are: "I feel that highly technical power tools used in developing manual skills are not advisable for use in the elementary school." And, "The therapeutic value of industrial arts is more important than developing manual skills." In a few cases the respondent had checked "no" and had underlined the word "concerned" in the question. This probably indicated that they felt that industrial arts might help to develop manual skills but should not be emphasized as a main objective.

A larger percentage of the respondents who answered different from the "to some extent" phrase felt that the industrial arts program should be concerned with developing manual skills.

Ericson (9) and Barich (3) have made some statements which will give

more light on the ideas about developing skills in children. These statements are given in an earlier section.

Table 14. Replies to the question, "Would a mobile industrial arts unit and specialist, that goes from 1 school to another, be practicable?"

Personnel	Attitude							
	Yes		No		I don't know		Total	
	No.	%	No.	%	No.	%	No.	%
Superintendents	2	6.7	25	83.3	3	10.0	30	100
Supervisors	3	10.3	20	71.3	6	18.4	29	100
Principals	20	16.3	61	49.7	43	34.0	124	100

It is evident from Table 14 that the principals were more undecided on the matter than were the other administrators.

The term "I don't know" was added to Table 14 but is not found in the original question in the questionnaire. The term was added because a large number of the respondents expressed their opinion in those or similar words, and for this reason the writer felt that tabulations should be shown on it.

An experimentation in California, using a mobile industrial arts shop, is under way and meeting with much success. In his article, "Industrial Arts on Wheels," Easter (8,p.17) says:

> This Kern County Rural School experiment in a traveling shop program has evolved from a program to encourage industrial arts in small schools....
>
> Under contract to participating schools, the shop instructor works directly with 10 different schools....
>
> A flexible program meets the needs of central California schools. Some schools emphasize farm projects; others, home projects. In either case pupils follow a basic course providing a well rounded exploratory experience....

Presentation of Data

In presenting the data from the questionnaire after the respondents have expressed their views as to their general philosophy or what they actually think about industrial arts instruction in the elementary school, it is necessary to consider actually how they want the instruction to be done. This data will be treated in 2 separate phases: in the first place the actual opinion of each separate group of administrators will be put in table form and thoroughly discussed. This material appears in Tables 15 through 18. Following the phase concerned with opinions on instruction, will be treated the second phase or the effect that student population has on the types of instructional plan favored most under both ideal and existing conditions. This information appears in Tables 19 through 21.

The next information to be dealt with, after the administrators have said how they want this instruction to be given, is the reasons they give for wanting it as they do. These reasons will be discussed thoroughly and many implications will be considered. These data will be shown in Tables 22 through 24.

Not all data was easily interpreted. In 2 cases the replies were of practically no value because the respondent did not interpret the instructions correctly, or for some other reason marked the questionnaire in such a manner that there was a definite contradiction on all important matters. In some cases the respondent penciled a note to the effect that certain statements would have to be qualified in some ways before an honest opinion could be expressed. Several respondents were very generous with valuable and constructive criticism regarding some of the statements or instructional plans. In spite of the above weaknesses the writer feels that the information available from the replies is very valuable to the study. By far the greater

percent of questionnaire replies were consistent, making the evaluation objective and the questionnaire valid and reliable.

Table 15. Opinion of Utah school superintendents concerning industrial arts instruction in the elementary schools of Utah

Opinion	Plan A		Plan B		Plan C		Plan D		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Plans favored:										
1. Existing conditions.	1	3.2	7	22.6	6	19.4	18	54.8	32	100
2. Ideal conditions.	2	8.0	2	8.0	9	36.0	12	48.0	25	100
Now being used.	0	0.0	6	35.3	1	5.9	10	58.8	17	100
Most opposed.	23	62.2	8	21.6	5	13.5	1	2.7	37	100

There is a variation in numbers in the "Total" column of this and other tables which will follow because the total represents the greatest number of respondents answering each specific item. In several cases only 1 or 2 of the suggested items were marked or answered.

According to the data included in Table 15 more superintendents favored Plan D than any of the other 3 suggested plans. It is also of interest to note that the plan being used most at the present time is Plan D.

Two of the superintendents reporting opposed the subject of industrial arts as a part of the elementary school curriculum. At least 8 of them opposed more than 1 plan, and a majority opposed the method of instruction suggested in Plan A over that of the other plans combined.

Another thing to be noted from Table 15 is that some of the superintendents favored more than 1 plan of instruction under existing conditions since there were only 31 replies.

Table 16. Opinion of elementary school supervisors concerning industrial arts instruction in the elementary schools of Utah

Opinion	Plan A		Plan B		Plan C		Plan D		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Plans favored:										
1. Existing conditions.	0	0.0	3	10.7	5	17.9	20	71.4	28	100
2. Ideal conditions.	0	0.0	4	14.8	12	44.4	11	40.8	27	100
Now being used.	0	0.0	0	0.0	1	6.2	15	93.8	16	100
Most opposed.	23	67.7	9	26.5	2	5.8	0	0.0	34	100

According to the data in Table 16, the results shown are very similar to the data of Table 15. This means that the supervisors and superintendents were generally of the same opinion. The important thing to note from this table is that, under ideal conditions, Plan C is slightly favored over Plan D by the supervisors, while Plan D rated slightly higher than Plan C by the superintendents.

Since only 30 elementary supervisors answered the questionnaire it is obvious that at least 4 of them opposed more than 1 of the suggested instructional plans. None of the supervisors reporting actually opposed industrial arts instruction in the elementary schools of their system or district.

The slight variance in the reports from the supervisors compared to the superintendents exists in the fact that more district policies were represented by answers from superintendents. In some cases 2 supervisors reported from the same district. Where 2 supervisors reported from the same district their questionnaire replies were practically identical.

Table 17. Opinion of elementary school principals concerning industrial arts instruction in the elementary schools of Utah

Opinion	Plan A		Plan B		Plan C		Plan D		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Plans favored:										
1. Existing conditions.	5	2.8	34	19.3	23	13.1	64	64.8	176	100
2. Ideal conditions.	9	7.0	37	28.6	51	39.5	32	24.9	129	100
Now being used.	6	8.3	8	11.1	1	1.5	57	79.1	72	100
Most opposed.	76	68.5	14	12.6	6	5.4	15	13.5	111	100

From Table 17 it is evident that under existing conditions almost twice as many elementary school principals favor Plan D as any other plan, but under ideal conditions Plan C is the favored plan. The principals are of the same general opinion as both the supervisors and superintendents in claiming that Plan D is used most in the schools, and that Plan A is the plan most opposed.

Many of the principals reporting both favored and opposed more than 1 of the suggested plans of instruction. In some instances the respondents stated that they opposed 3 plans and favored only 1; others favored 2 or 3 of the suggested plans and did not oppose any.

Three of the principals reporting stated that they opposed any form of industrial arts instruction in the elementary schools.

Table 18 is included to show, by percentage, how the opinions of the superintendents, supervisors, and principals compare on the 4 suggested plans of instruction.

From the results as indicated in Tables 15, 16, and 17 it can be concluded that the situation where the classroom teacher handles the industrial arts instruction, as well as the other areas, is the favored situation.

Table 18. Comparison of the opinions of superintendents, supervisors, and principals concerning the suggested plans of industrial arts instruction in the elementary schools of Utah. Data, in percentages, are taken from Tables 15, 16, and 17

Opinion	Plan A			Plan B			Plan C			Plan D		
	Supt.	Supv.	Prin.	Supt.	Supv.	Prin.	Supt.	Supv.	Prin.	Supt.	Supv.	Prin.
Plans favored:												
Existing conditions.[1]	3.2	0.0	2.8	22.6	10.7	19.3	19.4	17.9	13.1	54.8	71.4	64.8
Ideal conditions.[2]	8.0	0.0	7.0	8.0	14.8	28.6	36.0	44.4	39.5	48.0	40.8	24.9
Now being used.	0.0	0.0	8.3	35.3	0.0	11.1	5.9	6.2	1.5	58.8	93.8	79.1
Most opposed.	62.2	67.7	68.8	21.6	26.5	12.6	13.3	5.8	5.4	2.7	0.0	13.5

1/ Conditions as they actually exist in the schools at the time the survey was taken, or at the time the questionnaire was returned.

2/ Conditions being ideal for industrial arts instruction in the schools at the time the survey was made, and the questionnaire was returned.

Several authorities on elementary industrial arts are also of the opinion that the regular classroom teacher should be responsible for teaching all the different subject areas of the elementary curriculum, including industrial arts. On this phase of organizing for instruction of the elementary industrial arts subject area, Bonser and Mossman (6, p.73-75) make the following statement:

> Because of the marked relationships of the several subjects of study, it is very artificial and wasteful to separate each entirely from the others in teaching. Where each subject is taught by a teacher who does not teach the other subjects related to it, it is difficult to make use of the elements of 2 or more subjects as these elements are part of a common problem....Because of its very extensive relationships, industrial arts of all subjects should not be taught by a special teacher.

A similar attitude is expressed by Ericson (9,p.276) when writing about the elementary school industrial arts instruction. He says:

> In the organization of industrial arts activities in the grades below the seventh, formal work with tools and materials is less and less favored....This means also that the special teacher of shopwork is less used in these grades, and that the activity carried on comes under the direction and supervision of the regular classroom teacher.

Several other writers express the view that the regular classroom teacher should handle all the instruction of the different subject areas in the elementary school, including industrial arts.

It was felt that the data on student population would be of definite interest for it may affect the most acceptable plan from the point of view of the respondent. Since there was such a variation in the sizes of schools from population data reported by the principals of the elementary schools, 3 tables are used to show whether or not the school population influenced the type of plan used in the school, or if it influenced the plan of instruction preferred. The schools were divided

into 4 groups according to population. The first group included the schools with a population below 100 pupils. The second group was made up of schools of between 100 and 200 pupils. The third group was made up of those schools with a population between 200 and 500 pupils. The last group included all the schools with a population over 500. This tabulation was made on the replies from the principals because there was a large representation numerically. The same data were not tabulated from the replies of the superintendents or supervisors because it was felt that the results would not be significant if taken from such small numbers.

The population data from the replies of the superintendents showed that the districts represented varied in size from as low as 150 to as high as 7,100, and resulted in a common average of 2,200. The significant things from the population data, as reported from the superintendents, are that those whose school population was less than the average favored Plan D under existing conditions, while those whose districts were above the average favored Plan C. Very similar results were shown from the replies of principals whose population averaged over 500 and under 100.

Table 19. Comparison of the population of the school with the selected instructional plan under the conditions as they exist in the schools

	School Population							
	Under 100		101-200		201-500		Over 500	
	No.	%	No.	%	No.	%	No.	%
Plan A	3	7.8	0	0.0	2	4.9	1	4.1
Plan B	6	15.6	8	32.0	13	31.8	7	29.0
Plan C	6	15.6	2	8.0	8	19.8	6	25.0
Plan D	23	61.0	15	60.0	18	43.5	10	41.9
Total	38	100.0	25	100.0	41	100.0	24	100.0

Table 20. Comparison of the population of the school with the selected instructional plan under the most ideal conditions that could exist in the schools

	School Population							
	Under 100		101-200		201-500		Over 500	
	No.	%	No.	%	No.	%	No.	%
Plan A	3	8.1	2	8.0	2	5.2	2	7.7
Plan B	5	13.5	5	20.0	14	37.0	10	38.5
Plan C	20	54.0	8	32.0	13	34.2	10	38.5
Plan D	9	24.4	10	40.0	9	23.6	4	15.3
Total	37	100.0	25	100.0	38	100.0	26	100.0

Table 21. Comparison of the population of the school with the practices of elementary industrial arts that were indicated as being practiced in Utah

	School Population							
	Under 100		101-200		201-500		Over 500	
	No.	%	No.	%	No.	%	No.	%
Plan A	1	3.7	1	7.1	1	5.5	2	14.3
Plan B	0	0.0	3	21.4	3	16.7	3	21.4
Plan C	0	0.0	0	0.0	1	5.5	0	0.0
Plan D	26	96.3	10	71.5	13	72.3	9	64.3
Total	27	100.0	14	100.0	18	100.0	14	100.0

Reasons for Favoring Plans

The 3 tables which follow are included in this study for the purpose of showing the tabulations of reasons, as listed by the respondents, for favoring 1 plan over the rest. Several significant things to be noted in this section of the study are:

1. Very few administrators favored Plan A, B, or C under conditions as they exist in the schools at the present time.

2. Very few administrators favored either Plan A or Plan B as plans of instruction under "ideal" conditions.

3. A fairly large percent (43%) of the respondents favored Plan D under both existing and ideal conditions (Table 25).

4. The majority of respondents (64%) favored Plan D as a plan of instruction under existing conditions (Table 18).

5. A fairly large percent of the respondents (40%) favored Plan C as the instructional plan to be used under ideal conditions (Table 18).

In view of what is indicated in the above 5 statements it was felt by the writer that a table must be inserted which would show the reasons for favoring Plan D as an instructional plan in the schools as they exist at the present time. Table 22 is used for this purpose. It was also felt that a table should be constructed which would show the reasons for favoring Plan C as an instructional plan under ideal conditions (Table 23). These 2 tables would be sufficient to show the information taken from the questionnaire which was concerned with the main reasons for favoring any of the plans under either ideal or existing conditions. Such few respondents favored any other plan under either of these conditions that these data were not significant enough to be included in the form of a table. It was necessary to add a third table to this section of the study because of the fact that 43 percent of the respondents favored Plan D under both existing and ideal conditions, and from the questionnaire results it was impossible to determine which reasons were listed as reasons for their favoring it under ideal conditions and which were listed as reasons for their favoring it under existing conditions. Table 24 gives this information. Table 25 is included to show the tendency for the respondents to favor any 1 plan under both ideal and existing conditions.

Table 22. Reasons for, and number of, Utah school administrators who list Plan D separately as the plan most favored under existing conditions

Reasons	Superintendents		Personnel Supervisors		Principals		Total	
	Yes	No	Yes	No	Yes	No	Yes	No
1. Easier to administer.	3	2	4	1	10	10	17	13
2. Costs less to operate.	2	3	5	0	13	7	20	10
3. Children receive more guidance from regular teacher.	5	1	9	0	17	3	31	3
4. Building and staff make this most logical.	2	0	7	0	18	4	27	4
5. Permits more correlation with other areas.	6	0	8	0	21	2	35	2
6. Individual differences are more fully satisfied.	4	1	7	0	17	5	28	6
7. Manipulative facilities are more fully utilized.	3	1	4	1	10	11	17	13
8. More time for manipulative experiences.	4	1	5	1	14	9	35	11
9. Can guide group according to abilities and accomplish more.	3	2	6	1	14	6	23	9
10. Helps transfer from elementary to secondary.	1	2	0	5	2	15	3	22
11. Every child's needs are better fulfilled.	4	1	6	0	13	6	23	7
12. Children gain more educationally from all subjects, as well as industrial arts.	3	2	7	0	15	6	25	8

Table 23. Reasons for, and number of, Utah school administrators who favor Plan C for industrial arts instruction in the elementary schools under "ideal" conditions

Reasons	Superintendents		Personnel Supervisors		Principals		Total	
	Yes	No	Yes	No	Yes	No	Yes	No
1. Specialist available.	3	0	6	1	27	4	36	5
2. Industrial arts given more emphasis than under regular teacher.	3	1	6	1	29	5	38	7
3. Entire curriculum is planned ahead.	7	0	6	1	35	1	48	2
4. A specialist is needed more for industrial arts than other areas.	1	5	3	3	19	11	23	19
5. Gives regular teacher a free period.	2	3	2	4	16	14	20	21
6. Permits better correlation with other areas.	5	1	4	3	26	6	35	10
7. Probably the most modern practice.	1	3	3	3	19	8	23	14
8. Teacher load is less.	3	3	2	2	16	10	21	15
9. Requires only 1 well equipped room.	6	1	6	0	29	4	41	5
10. Classroom with fixed furniture could be used.	3	4	1	4	18	11	22	19
11. Most classrooms have area large enough for worktable with vises.	2	3	1	4	4	20	7	27
12. Children gain more in what they need to know from a specialist.	5	0	1	1	24	2	30	3

Table 24. Reasons for, and number of, Utah school administrators who favor Plan D under both existing and ideal conditions

Reasons	Superintendents		Personnel Supervisors		Principals		Total	
	Yes	No	Yes	No	Yes	No	Yes	No
1. Easier to administer.	3	4	3	3	13	7	19	14
2. Costs less to operate.	5	2	4	3	17	3	26	8
3. Children receive more guidance from regular teacher.	8	0	9	0	20	2	37	2
4. Building and staff make this most logical.	7	0	7	0	19	2	33	2
5. Permits more correlation with other areas.	8	0	7	0	26	0	41	0
6. Individual differences are more fully satisfied.	4	2	8	0	22	1	34	3
7. Manipulative facilities are more fully utilized.	3	2	5	1	12	8	20	11
8. More time for manipulative experiences.	4	5	8	0	20	2	32	7
9. Can guide group according to abilities and accomplish more.	5	2	6	2	20	2	31	6
10. Helps transfer from elementary to secondary.	1	3	4	0	8	15	13	18
11. Every child's needs are better fulfilled.	5	2	7	0	14	4	26	8
12. Children gain more educationally from all subjects, as well as industrial arts.	5	2	8	0	20	2	33	4

Table 25. Comparison, in number and percent, of Utah school administrators who wanted the same instructional plan under both ideal and existing conditions

Personnel	Same Instructional Plan									
	Plan A		Plan B		Plan C		Plan D		Total*	
	No.	%	No.	%	No.	%	No.	%	No.	%
Superintendents	0	0.0	1	4.0	2	8.0	8	32.0	11	35.5
Supervisors	0	0.0	1	4.0	3	10.0	10	36.0	14	46.7
Principals	4	3.0	17	14.0	13	11.0	26	22.0	60	45.8

* The number division under the "Total" column is the total number of school administrators favoring this situation, and is the total of all the plans combined.

The percentage division of the "Total" column is the percent of all administrators returning the questionnaire.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study was undertaken to determine which of 4 suggested plans of industrial arts instruction would be most acceptable by school administrators of Utah for use in the elementary school system. There also was an attempt made to determine the main reasons for favoring any 1 plan. Limited study was also made of the philosophy and thinking of industrial arts authorities regarding industrial arts instruction in the elementary school. This was done in order to compare the opinions of these authorities with the opinions of Utah school administrators on the subject of industrial arts instruction in the elementary school.

One hundred and ninety-two school administrators, including superintendents, elementary supervisors, and elementary school principals, returned questionnaires sent out to them. Questionnaires were returned from nearly every geographical section of the state. Principals from elementary schools of all types and sizes responded. With this in mind the writer feels the conclusions drawn can be said to have come from a representative group of the elementary schools in Utah, and that the sampling was adequate to provide significant evidence of the instructional plans analyzed. These conclusions are taken from the tables listed in this thesis and the items that are significant or important have been included.

From the evidence presented in table form throughout this study the following conclusions have been drawn:

1. Under conditions as they actually exist in the schools a majority (an average of 64 percent) of the administrators

favored Plan D over any other plan. This is the situation where the regular teacher handles the instruction of all subjects, including industrial arts, and is the plan suggested as most desirable by Bonser and Mossman (6) in their suggested program. They favor it because they are of the opinion that the regular classroom teacher better understands the needs, interests, and capabilities of the student than would a specialist working with them only occasionally (Table 18).

2. Under conditions that were interpreted by the respondent to be "ideal" for industrial arts instruction, an average of 40 percent favored Plan C, while an average of 38 percent favored Plan D. From this it might be concluded that approximately the same percentage felt that the "ideal" situation would be to have the instruction under the guidance of the regular teacher as the percentage who felt the "ideal" to be with the services of a specialist (Table 18).

3. A majority (67 percent) of these school administrators opposed the form of instruction as suggested in Plan A, or the platoon system (Table 18).

4. The plan of instruction that was favored or in use or which was opposed was influenced to a small extent by the population of the school (Tables 19, 20, and 21).

5. The administrators who stated that they desired the same plan under both existing and ideal conditions favored Plan D by a large majority. Thirty percent of all the administrators who responded favored this plan under both conditions while only 10 percent favored Plan C, 7 percent favored Plan B, and 1 percent favored Plan A.

6. The most significant reasons for the popularity of Plan D throughout the study, listed in order of importance, are (Tables 22 and 24):

    a. It permits more correlation with other subject areas.

    b. Children receive more guidance and direction from the regular classroom teacher.

    c. Building and staff make this most logical.

    d. Individual differences are more fully satisfied.

7. For the following reasons, listed in order of importance, Plan C was considered important under "ideal" conditions (Table 23):

    a. The entire curriculum is planned ahead.

    b. It requires only 1 well equipped room.

c. A specialist is available.

d. Industrial arts is given more emphasis than under the regular classroom teacher.

e. Children gain more in what they need to know from the services of a specialist.

8. Practically all of the administrators felt that industrial arts should be part of the elementary curriculum, and should be given to both girls and boys (Tables 3 through 14).

9. There is no direct evidence to show that the financial problems that existed in Utah at the time the study was made had a definite influence on the plan that was favored most. However, since a large majority of the respondents who favored Plan C under ideal conditions did so because it requires only 1 well equipped room, and since few favored Plan D because it cost less to operate, it might be concluded that if more money had been available Plan C would have been favored to a greater extent.

10. As long as the same financial condition continues to exist it will probably result in a lack of expansion of the industrial arts program in the elementary schools.

11. Since practically all of the administrators felt that industrial arts should be part of the curriculum, and since it has more expense attached to it than many other subject areas in the elementary school, the conclusion could be drawn that additional money is needed for the public school system of Utah in order to provide a more complete program.

12. In comparing the opinions of the Utah school administrators with the opinions of the industrial arts authorities quoted in this study, it can be concluded that the Utah administrators favor the plan where the instruction of industrial arts is under the direction of the regular classroom teacher, while the majority of the authorities favor the specialized teacher and the organization as described under Plan C.

Recommendations

An adequate program for industrial arts in the elementary schools of Utah must begin with the needs and interests of the child and must recognize the individual differences of children in this relationship.

The core of the industrial arts program in elementary school lies in the participation of the individual student. For this reason, student

cooperation and organization, which is the basis of practically all participation, must receive careful consideration. The 3 pre-requisites of this cooperative plan are: First, that the program be so arranged that it will not only include all students, but will give opportunity for the participation of all students; second, that it will encourage every student to participate; and third, that socialization be made a dominant characteristic of the program.

Since Plan C was recognized as important under "ideal" conditions, it is recommended that each elementary school of the state try to improve its program of industrial arts by using the organization described under either Plan D or Plan C, whichever is more favorable to the particular school.

In making this study certain facts concerning the industrial arts program in elementary schools have presented themselves, which indicate a need for further research in the following areas:

1. A study of the industrial arts curriculum and that of the arts and crafts curriculum in the elementary schools;
2. The value of mobile units for small rural schools in Utah;
3. A comparison of the replies of administrators with those of the typical elementary school teacher on the program of elementary industrial arts, together with its educational implications;
4. The present facilities of the typical elementary school for an industrial arts program on the elementary level;
5. A critical analysis of the courses which college students should be required to study if they plan to teach industrial arts in the elementary school, based on data taken from several training institutions where teachers are trained specifically for this area of industrial arts;
6. Does industrial arts on the elementary school level, not including household mechanics, meet the needs and interests of boys more than it does girls?
7. The effect that curtailment of money for educational purposes has on industrial arts instruction in the elementary school.

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APPENDIX

Logan, Utah
January 3, 1951

Dear

Your judgment and opinion are being sought in connection with a thesis study of industrial arts instruction in the elementary schools of Utah. This study is being conducted with the cooperation of the Industrial Education Department of the Utah State Agricultural College.

I am sure you realize that industrial arts is not a new subject to be crowded into the elementary curriculum. The ideas of industrial arts were introduced into American public schools about 75 years ago as a result of the work exhibited by Della Vos at the Philadelphia Centennial Exposition in 1876. Since then there have been many divergent trends and opposing viewpoints concerning its place in the educational practices. At present there are opposing points of view, implied in theory and clear in practice, as fundamental as to constitute in themselves trends requiring primary consideration.

Important aims of industrial arts in the elementary school are:

1. Learning about basic industrial processes.
2. Acquiring information about useful skills associated with industrial processes which may result in developing interesting hobbies, and in obtaining a foundation for vocational life.
3. Developing an appreciation and interest for the modern industrial processes.

The learnings acquired by industrial arts come through the pupil's experiences with tools and materials, and through his study of resultant conditions of life.

The purpose of this study is an attempt to arrive at some common understanding of the necessary elements that would help formulate an instructional plan for the industrial arts program in the elementary schools of Utah.

It is believed that a desirable plan of instruction can be formulated only by utilizing the judgments of professional people in acquiring a tentative appraisal that would be useful. Most elementary school educators of Utah are being contacted for these results.

I am very anxious for a maximum reply and will be very grateful if you will cooperate by indicating your opinion on the enclosed questionnaire and returning it to me promptly in the self-addressed envelope.

Sincerely,

(Signed) Lee Ralphs

QUESTIONNAIRE

Instructions:

The four suggested plans of organizing for industrial arts instruction listed below are the ones most commonly found in elementary school systems of the country. Please read each plan carefully and thoroughly. Then, in light of the brief description of each, indicate your opinion by checking the statements in Section 1.

Plan A. The platoon type of organization, similar to that of secondary schools, where there is a specialized teacher for the instruction of each separate subject area. Industrial arts would be included as one of the subject areas. In this type of organization the children go from one classroom to another for the various subjects.

Plan B. The form of organization in which there is a regular classroom teacher for instruction in all subjects or areas except industrial arts. Under this plan, on certain days of each week at a given time, the entire class or section of a certain grade go into an industrial arts room for instruction under a specialized teacher.

Plan C. The type of organization which has a specialized industrial arts teacher available to all students and teachers. In this case the program is planned ahead in order to have the services of the specialized industrial arts teacher to meet the needs of the group at an appropriate and convenient time and place.

Plan D. The kind of organization in which there is either an industrial arts room available to all groups or grades, or there is some form of table with the necessary tools and equipment either in, or available to, each room. In either case the instruction is under the guidance of the regular classroom teacher.

Note: The specialized teacher referred to is also well acquainted with the elementary school curriculum.

Section 1

1. Indicate your position: Superintendent ____ Supervisor____ Principal ____.

2. What is student population? _____.

3. Under existing conditions the practice we would favor is Plan ____.

4. We are now following the practices of Plan(s) _____.

5. We are opposed to Plan(s) _____.

6. Under as near ideal situations as possible we would favor Plan ____.

Now please answer all the questions in Section 2.

Section 2

1. Do you consider industrial arts in elementary schools as merely "busy work"? Yes _____ No _____.

2. Are the handwork facilities of the curriculum being fully utilized without industrial arts? Yes _____ No _____.

3. At present, how well trained, in general, is the regular classroom teacher for elementary industrial arts instruction? Well trained _____ Partly trained _____ Not trained _____.

4. To what extent should colleges train elementary teachers specifically for industrial arts instruction? Large _____ Small _____ None _____.

5. With an industrial arts program in the elementary schools could more time be given to the manipulative activities of children than would otherwise be the case? Yes _____ No _____.

6. Do you think industrial arts could be made flexible enough to meet the needs of any grade level at any time in order to correlate the activities of industrial arts with the other subjects? Yes _____ No _____.

7. Should a suggested teachers' guide be prepared for industrial arts in elementary schools, and be made available to the teachers? Yes _____ No _____.

8. To what extent are elementary children mature enough to get an understanding of the processes of industry? Large _____ Small _____ None _____.

9. In what grades should industrial arts instruction be given to both boys and girls in the elementary schools? Primary _____ Intermediate _____ All _____.

10. Which would you prefer for industrial arts instruction in the elementary schools? Women _____ Men _____ Either _____.

11. Should industrial arts in the elementary schools be concerned with developing manual skills in children? Yes _____ No _____ To some extent _____.

12. Would a mobile industrial arts unit and specialist, that goes from one school to another, be practicable? Yes _____ No _____.

In Section 3 you may check 1 or 2 plans, but check only those items for the plan you favor and for the plan you may now be using.

Section 3

Plan A. The platoon type of organization, similar to that of secondary schools, where there is a specialized teacher for the instruction

of each separate subject area. Industrial arts would be included as one of the subject areas. In this type of organization the children go from 1 classroom to another for the various subjects.

My reasons for favoring this plan are:	Yes	No
1. It has the advantage of the service of a specialist.	____	____
2. It is easier to administer.	____	____
3. It costs less to operate.	____	____
4. Children gain more in what they need to know from a specialist.	____	____
5. Under the platoon system children progress more rapidly and easily through the rest of their school life.	____	____
6. The facilities and buildings make this arrangement possible.	____	____
7. More time can be given to manipulative experiences.	____	____
8. The teacher load is less.	____	____
9. The tools and equipment are fully utilized.	____	____
10. Industrial arts is given more emphasis than under a regular classroom teacher.	____	____
11. A well-trained teacher handles this instruction at all grade levels.	____	____
12. Children profit more educationally with variations in room and teacher.	____	____

Plan B. The form of organization in which there is a regular classroom teacher for instruction in all subjects or areas except industrial arts. Under this plan, on certain days of each week at a given time, the entire class or section of a grade go into an industrial arts room for instruction under a specialized teacher.

My reasons for favoring this plan are:	Yes	No
1. It is easier to administer.	____	____
2. The regular classroom teacher is not qualified to give sufficient emphasis to industrial arts.	____	____
3. More attention is given to individual differences and interests.	____	____
4. The teacher load is less.	____	____
5. It makes the transfer from elementary to secondary easier for children.	____	____
6. Better correlation with all other subjects is permitted.	____	____
7. It allows for more manipulative experiences.	____	____
8. It is probably the most modern practice.	____	____
9. A specialist is available.	____	____
10. A specialist is needed more for industrial arts than for other subject areas.	____	____
11. It costs less to operate.	____	____
12. Each small group receives the same important information and instruction.	____	____

Plan C. The type of organization which has a specialized industrial arts teacher available to all students and teachers. In this case the program is planned ahead in order to have the services of the specialized industrial arts teacher to meet the needs of the group at an appropriate and convenient time and place.

My reasons for favoring this plan are:	Yes	No
1. A specialist is available.	____	____
2. Industrial arts is given more emphasis than under regular classroom teacher.	____	____
3. The entire curriculum is planned ahead to meet more fully the needs and interests of the children.	____	____
4. A specialist is needed more for industrial arts than for other subjects.	____	____
5. It gives the regular teacher free periods.	____	____
6. It permits better correlation with all other subjects.	____	____
7. This is probably the most modern practice.	____	____
8. The teacher load is less.	____	____
9. It requires only 1 well equipped room.	____	____
10. A classroom with fixed furniture could be used.	____	____
11. Most classrooms have an area large enough for worktable and workbench with vises.	____	____
12. Children gain more in what they need to know from a specialist.	____	____

Plan D. The kind of organization in which there is either an industrial arts room available to all groups or grades, or there is some form of table with the necessary tools and equipment either in, or available to, each room. In either case the instruction is under the guidance of the regular classroom teacher.

My reasons for favoring this plan are:	Yes	No
1. It is easier to administer.	____	____
2. It costs less to operate.	____	____
3. Children receive more from the guidance of their regular classroom teacher.	____	____
4. Building and staff make this the most logical.	____	____
5. More correlation with all other subjects is permitted.	____	____
6. Individual differences are more fully satisfied.	____	____
7. Manipulative facilities are fully utilized.	____	____
8. More time can be given to meaningful manipulative experiences.	____	____
9. The teacher can arrange in groups according to abilities, and accomplish more.	____	____
10. It helps transfer children from elementary to secondary education.	____	____
11. Every child's needs are better fulfilled.	____	____
12. Children gain more educationally from all other subjects as well as industrial arts.	____	____

Do you desire a copy of the tabulated replies to this survey? Yes ____ No ____.