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A Study to Ascertain the Need for Industrial Arts in the Elementary Schools of Grand Forks

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A STUDY TO ASCERTAIN THE NEED FOR INDUSTRIAL ARTS IN THE ELEMENTARY SCHOOLS OF GRAND FORKS

by
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This Thesis submitted by Douglas A. Holm in partial fulfillment of the requirements for the Degree of Master of Science from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

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Date April 20, 1973

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ABSTRACT

This study was designed to ascertain the following: (1) the extent to which industrial arts is included in the curriculum of the elementary schools of the Grand Forks school system, (2) the benefits of an elementary industrial arts program in the Grand Forks schools, as viewed by the elementary teachers, (3) the type of industrial arts program elementary teachers would like to see implemented in their schools if a program were offered, (4) whether a program in elementary industrial arts should be taught as a separate or a correlated unit of instruction, (5) whether elementary teachers feel that a course in elcmentary industrial arts should be a requirement for a major in elementary education, (6) the need for an in-service workshop on elementary industrial arts for elementary teachers.

Methods

The descriptive method of research was used in this study, using the survey as the method of research and the questionnaire as the survey instrument. Data were collected from 123 of 225 elementary teachers in the Grand Forks school system. Related literature was reviewed to observe types of programs, implementation and the needs determined by similar articles and studies of this nature. Data were presented in a narrative form with certain data presented in tabular form followed by a narrative description according to its nature.

Conclusions

Several conclusions can be drawn from the findings of this study:

1. It can be concluded from the findings that incorporating industrial arts in the elementary school curriculum of the Grand Forks school system would be beneficial to the elementary schools.
2. Industrial arts should be integrated with the subject matter of the elementary schools when implementing an industrial arts program in the elementary schools.
3. A student teacher assigned to teach elementary industrial arts at the elementary level was preferred by the elementary teachers for implementation of an industrial arts program.
4. It can be concluded from the findings that elementary majors should be required to take a course in elementary industrial arts in their college preparation.
5. It can be concluded from the findings that there is a need for an in-service workshop concerning elementary industrial arts by the elementary teachers.
6. One can conclude from the findings that an in-service workshop on elementary industrial arts should be offered as a night course during the school year as a two-semester hour course.
7. It can be concluded from the findings that industrial arts can be successfully correlated with the subject matter of the elementary schools.

Recommendations

It is recommended that the elementary schools consider the addition of a program in industrial arts. The needs and expectations of the elementary teachers should be given consideration when putting this program into effect.

Whereas the majority of the elementary teachers felt that students now pursuing an elementary education major should be required to take instruction in industrial arts, it is recommended that the elementary education majors in the Center for Teaching and Learning be required to take a course of this nature.

It is recommended that the Industrial Technology Department continue placing industrial arts student teachers in the elementary school setting. In placing the student teachers at the elementary level guidelines should be developed by a cooperative effort between the Industrial Technology Department and the elementary schools. Thereafter expansion of the program would be beneficial.

Because of the large demand for an in-service workshop on elementary industrial arts, it is recommended that the Industrial Technology Department place emphasis on providing an in-service workshop for the elementary teachers. It is also suggested that this class be a two-semester hour course offered in the evenings during the school year.

It is recommended that a study of this type be conducted again, when the impact of elementary industrial arts is felt by the elementary teachers through more exposure to this type of program.

It is recommended that other specialized programs such as home economics and business education conduct similar studies in the elementary schools to ascertain the implications of career education for their discipline.

CHAPTER I

INTRODUCTION

For centuries man has attempted to devise educational programs to prepare youth for a productive role in society. Numerous federal legislative acts accompanied by sizable grants of monies have enabled local schools to develop new programs to meet the needs of youth in a technologically based world.

One major piece of legislation, the Smith-Hughs Act of 1917, facilitated the implementation of vocational education at the secondary level. This act provided specific job training in agriculture, trades and industries, and home economics. The 1958 National Defense Education Act channeled millions of dollars into education for enrichment and expansion of science education. In 1968 the Vocational Education Act and its subsequent amendments expanded the concept of vocational education from that of job enrichment and preparation to that of career exploration as well.

It has become evident that career preparation does not begin only at the high school and college level but has its roots in the elementary and junior high school. During a child's early years, he develops attitudes and ideas about work based on opinions of parents, teachers, and peers. It was from this understanding that programs in career education and the world of work were begun at the kindergarten level and continued through grade twelve.

Terminology

Some of the terms used in the following discussion are confusing without definition. The following operational definitions clarify the terms used:

The term career education is defined as general education directed toward the preparation of youth for the selection of a future career based on personal assessment and career opportunities.

The term elementary industrial arts is defined as that phase of the elementary school curriculum which provides the child with opportunities for exploration, manipulation, and experimentation with materials and techniques appropriate to converting these materials to serve some useful purpose. The instructional program includes construction activities and experiences related to the elementary school subject matter content and to industry and occupations (1, p. 38).

The term Grand Forks public school system is defined as those schools within the district recognized by the North Dakota Department of Public Instruction.

The term differentiated student teaching has been defined as being related to the total spectrum of student teaching in industrial arts at all levels of education K through 12. Under the system of differentiated student teaching, the student teachers involved spent part of their assigned student teaching experience in an elementary school, junior high school and senior high school.

The Problem

This study was concerned with industrial arts programs offered in the elementary schools, benefits of, and implementation of an

industrial arts program and desired in-service educational programs for elementary teachers in the Grand Forks school system.

The purpose of the study was to (1) determine the extent of industrial arts in the elementary schools in the Grand Forks school system, (2) determine the need for industrial arts in the elementary schools of the Grand Forks school system, (3) determine a method elementary teachers could use to incorporate an industrial arts program in their school, (4) determine what type of industrial arts program elementary teachers prefer, and (5) determine the need for in-service workshops in elementary industrial arts education for elementary teachers.

The research was designed to answer the following questions:

1. Which elementary schools offer a program in elementary industrial arts?
2. Do the elementary teachers feel that a program in elementary industrial arts would be beneficial in their school?
3. What type of elementary industrial arts program do elementary teachers prefer?
4. Do the elementary teachers prefer an integrated or a separate program in industrial arts?
5. How many teachers feel that students majoring in elementary education should be required to take a course in elementary industrial arts while in college?
6. Is there a demand for an in-service workshop, at the elementary school level, as it relates to career education and career awareness; and if so, when would the elementary teacher prefer to have it offered?

Nature and Explanation of the Study

Elementary schools are now becoming aware of the significance of industrial arts in their educational programs. However, the implementation of the industrial arts programs has been slow.

In order to provide information about the attitude of the elementary teacher toward the significance of industrial arts at the elementary school level, a portion of this study was devoted to obtaining data relative to the attitude of the elementary teacher toward industrial arts and its benefit to instruction at their grade level. This information could be used as a basis for implementation of industrial arts into the curriculum of the elementary schools of the Grand Forks school system, provided the school system desired to develop this phase of career education.

Many types of programs have been used to implement industrial arts in the curriculum of the elementary school. One example of such a program would include an elementary teacher who has had a course in elementary industrial arts as the instructor. In other cases the elementary teacher has been teamed with an industrial arts teacher as a means of facilitating the development of the industrial arts program. Mobile industrial arts laboratories serving many schools have been used for providing instruction at the elementary level. This study has attempted to obtain data on the type of industrial arts program which could best be used to implement an industrial arts program in the elementary schools of the Grand Forks school system.

Some colleges (2, p. 51) are requiring undergraduates majoring in elementary education to take instruction in elementary industrial arts. Other institutions offer in-service workshops on elementary

industrial arts for those who desire this type of education. This study was intended to determine the need of elementary teachers in the Grand Forks school system for an in-service workshop on elementary industrial arts. It is proposed that this information could be used by the Industrial Technology Department of the University of North Dakota in designing and setting up an in-service program for the elementary teachers in the Grand Forks school system.

Need and Purpose

Career education has had a significant impact on our educational system in recent years. It has been stated (3, p. 4) that nearly 2.5 million students leave the formal educational system of the United States each year without adequate preparation for entry into the world of work. In 1970-71 (2, p. 4) there were 850,000 elementary and secondary school drop-outs, 750,000 general curriculum high school graduates who did not attend college, and 850,000 high school students who entered college in 1967 but did not complete the baccalaureate degree or an organized occupational program. This has created a demand for more career oriented education.

Industrial arts has in the past and will in the future undoubtedly continue to play a vital role in the orientation of a child toward a career choice. James and Mary Good stated (4, p. 201),

> Activity oriented industrial arts, through its commitment to student involvement, provides a natural basis for the assimilation and integration of facts, principles, and concepts related to career education for all students of all ability levels at each phase of development. It is only within an activity-oriented environment that a student can realistically assess personal potential for success in a variety of occupational fields through practical experience with tools, materials, and jobs of industry.

One major problem has been that industrial arts education has been stressed mainly at the secondary level. The elementary schools must be included in career oriented education if it is to fulfill the role for which it is intended. Thus, there is an apparent need for the inclusion of industrial arts at the elementary school level as one form of career education.

The past has proven that many students do not remain in school until career oriented education is made available to them. It is imperative that education be provided for these students which will fulfill their expectations, their immediate projected needs and intice them to continue their education.

Industrial arts can make a major contribution to education at the elementary school level. In the past industrial arts has been overlooked in most elementary schools, but an increasing number of educators are now becoming aware of the need for industrial arts in the elementary schools.

Hoots (5, p. 106) found that,

> Industrial arts at the elementary school level is an essential part of the education of a child. It deals with ways in which man thinks about and applies scientific theory and principles to change his physical environment to meet his utilitarian needs. It provides opportunities for developing concepts through concrete experiences which include manipulation of materials, tools, and processes, and other methods of discovery. It includes knowledge about technology and its processes, personal development of psycomotor skills and attitudes and an understanding of how technology influences society.

Selvidge (2, p. 51) asserted that,

> In the past industrial arts education has been given more emphasis in the secondary school programs than in the elementary school program. . . . Many in our profession would agree that meaningful experiences in industrial arts education must be made available at the earliest elementary level.

At the University of North Dakota, the Industrial Technology Department has been placing student teachers, on a rotating basis, in selected Grand Forks Elementary Schools. The purpose of this phase of the student teaching experience is to provide the students with the necessary background for implementing a program in industrial arts at the elementary school level. Many of the student teachers participating in this program have reported that it was very rewarding and beneficial. The elementary teachers have also expressed enthusiasm for the experimental student teacher program which has placed industrial arts student teachers in the elementary schools. As yet, there is not a specific program in industrial arts at the elementary school level in the Grand Forks school system.

Interest in this study was expressed by Dr. Wayne Zook, Chairman of the Department of Industrial Technology at the University of North Dakota, and by various teachers in the elementary schools in the Grand Forks school system. This, combined with the author's interest created through the previously described differentiated student teaching experience, served as the catalyst for conducting the study.

Scope and Limitations

The findings reported in this study were based on the responses of 123 elementary teachers who volunteered to complete the questionnaire. The responses represented 59 per cent of the elementary teachers of the Grand Forks school system.

The study was limited to data from the questionnaires of the 123 elementary teachers who responded on or before March 28, when it was felt all anticipated responses had been received.

CHAPTER II

REVIEW OF RELATED LITERATURE

Discussion

A review of the literature revealed that relatively few research studies in the area of elementary industrial arts have been undertaken; however, there have been a large number of articles and books written pertaining to the subject. The majority of the literature dealt with the need for, types of programs, and teacher education, in elementary industrial arts.

Need for Elementary Industrial Arts

One of the controversial areas of education today is that of career education. Many educators are stressing the importance of career education at all levels of a student's education. Career education at the elementary school level is of increasing concern. Proponents of this type of education believe that the child develops most of his attitudes toward a variety of subjects and topics at the elementary school level.

Boyd (6, p. 218) stated,

> By the time a child reaches the secondary level, he has rather definite attitudes, whether positive or negative, toward a variety of occupations and professions. It is our responsibility as educators to provide educational experiences so the child will understand what the world of work and the many occupational fields are really like based on valid, usable information.

In developing the students at this level Boyd concluded, " . . .,

it should provide boys and girls with a 'readiness' when the time comes for making a tentative educational or career decision."

Steeb (7, p. 20) approached the relevance of career education at the elementary school level using a statement from United States Commissioner of Education, Dr. Sidney Marland, in which Marland stated:

> Career education is designed to give every youngster a genuine choice of college or job-entry as well as the intellectual and occupational skills necessary to back it up. Career education is not merely a substitute for vocational education or general education or college prepatory education; rather, it is a blending of all three into an entirely new curriculum. The fundamental concept of career education is that all educational experiences-curriculum, instructional, and counseling should be geared to preparation for economic dependence, personal fulfillment, and appreciation for the dignity of work.
>
> Career education will eliminate the artificial separation between things vocational . . ., it will permeate the entire spectrum of the youngsters education, from kindergarten through high school; and it will offer a much wider range of occupational choices than are now available in the regular vocational education program.

Where industrial arts fits into the career educational program has been discussed by many advocates of career education. Steeb spoke of industrial arts and career education as having a definite relationship to each other. Steeb (7, p. 262) suggested, "Industrial arts draws its content from industry and man's technological development. The content includes all elements of industry."

Industrial arts does play a major role in career education. Although there have been industrial arts programs in some elementary schools in the United States, industrial arts has been stressed mainly at the secondary level.

Further articles show a need for industrial arts at the elementary level. Boyd (6, p. 218) asserted, "The uniqueness of

elementary industrial arts lies in the fact that its activities can provide a greater variety of elements to enhance a career educational program than any other single educational discipline." Boyd believed that industrial arts activities provide hands-on activities and group experiences necessary for the motivation of children and giving them "true to life" experiences.

Boyd concluded (6, p. 219):

> Elementary industrial arts is at the threshold of becoming a very important and integral part of the curriculum at this level. If the profession will take advantage of the opportunity that now exists, the industrial arts program should expand rapidly and make a great impact on the elementary level of education.

In 1922 Edgerton (8, p. 7) conducted a study of industrial arts in 141 elementary schools in various states. His study included questions regarding the general purposes of industrial arts in the elementary schools, suggested types of activities, correlation and developing units of work, and methods of offering project-problem instruction. Edgerton (8, p. 7) found that the tendency for offering industrial arts at the elementary level was due to the positive relationship between elementary students involved in industrial arts and those elementary students with a knowledge and general intelligence of industry.

Thirty-six per cent (51) of the 141 schools included in Edgerton's (8, p. 8) study indicated that giving a basis for judgment in the selection and use of industrial products and service was their reason for offering industrial arts in the first six grades. Developing an appreciation for the economic and social phases of industry was selected by 27.3 per cent (39) of the respondents as their basis for offering industrial arts, while 32 (22.7 per cent) responded that

gaining sufficient experience in industrial processes to meet the pupil's needs and to illustrate the industry was their reason for offering elementary industrial arts.

Edgerton (8, pp. 15-16) attempted to discover whether industrial arts could be correlated with the subject matter in various elementary schools. One hundred and forty (99 per cent) of the schools involved in Edgerton's study indicated that art and industrial arts can be successfully correlated. English (96 per cent), history (77 per cent), and geography (82 per cent) were also indicated as subjects which could be correlated with industrial arts.

Also ascertained by Edgerton (8, p. 8) was that over 80 per cent of the school systems surveyed showed evidence of having undergone desirable reorganization in methods and procedure after the adoption of elementary industrial arts.

Hoots (9, p. 3) reporting on the National Conference on Elementary School Industrial Arts, asserted that the conference consensus of opinion was that industrial arts was essential at the elementary school level. Hoots (9, p. 6) contended,

> Industrial arts can satisfy the conditions for effective learning. The uniqueness of industrial arts lies in the fact that its activities can provide a greater variety of elements to enhance the learning process than any other single discipline.

Types of Industrial Arts Elementary Programs

Many types of programs have been used to implement industrial arts into the elementary school curriculum. Each has met with its own degree of success. A major discussion on implementing industrial arts into the elementary curriculum has been whether to incorporate it as a

separate unit of instruction or integrate it into the general curriculum of the elementary schools.

Larson and Delmore (10, p. 89) indicated that problems related to industrial processes need to be presented to all children by all teachers. They felt that industrial arts should be an integral part of the total curriculum, supplementing and supporting the curriculum with knowledge unique to the field of industrial arts. Larson and Delmore concluded that, "Industrial arts cannot be a separate subject because industry is inherent to all phases of life."

Hoots (11, p. 89) developed a course of study for industrial arts education at the elementary school level. From the findings of the study he recommended:

> The elements of industry are a vital part of the public school curriculum; . . . it is recommended that all elementary school administrators incorporate into their curriculum a study of industrial and technological aspects of our society.

Mitchell (12, p. 6) conducted a study of industrial arts and vocational education in grades kindergarten through twelve at Leflore County Schools. He suggested that the general purpose of industrial arts in the elementary grades was to help the school more effectively do what it is already doing.

Mitchell (12, p. 8) indicated that industrial arts must not be considered as an additional course but rather as a supplementary activity involving the use of industrial tools and materials which would tend to enrich the teaching process and provide a strong pupil motivation toward learning. Mitchell (12, p. 6) also stated,

> All projects or construction activities should stem from that which is being taught as a regular part of the curriculum and should be designed to bring to life some aspects of the content which would otherwise be left to the imagination of the pupil.

Hoots' (5, p. 107) statement relative to elementary industrial arts is very similar to Mitchell's statement when he contended:

> It is worthy of emphasis that industrial arts activities at the elementary level should be a part of the total curriculum; they should not be separate from reading, mathematics, social studies, art, science, or any other subjects. Since we live in a technologically-oriented society, technology is the bond that unites all of these into a meaningful whole, and industrial arts should fit naturally into the instructional program and should not be "just another subject."

When implementing industrial arts into the elementary school curriculum, a point of concern has been who can most effectively teach industrial arts at the elementary school level. Various suggestions have been presented in articles found in the review of literature, but most seem to agree that the essential medium in implementing industrial arts into the curriculum is the classroom teacher.

Hoots (5, p. 107) contended that the primary responsibility for developing industrial arts activities and implementing them into the curriculum of the elementary school lies with the classroom teacher. He believed the classroom teacher is more aware of both the needs of the individual pupil and the nature of the curriculum. Hoots emphasized, "The classroom teacher is best qualified to select and develop activities that will provide maximum benefit for the children."

Hunt (13, p. 34) aided by an advisory council, developed a program for implementing industrial arts into the elementary grades. In developing the program he found, "The key to success of implementing the program was the classroom teacher."

In Reading, Pennsylvania, an industrial arts program was introduced into the elementary school system. To aid in implementing this program, a special full-time industrial arts consultant was used to help the teachers develop and teach the program. Although the

industrial arts specialist was utilized fully and successfully, Raffaelli (14, p. 122) emphasized, "In all situations, the classroom teacher is retained as the key person in an elementary school industrial arts program and is assisted by the consultant."

Industrial arts consultants and specialists are important in the implementation of programs into the elementary school. The consultant's role ranges from education of elementary teachers through in-service workshops on elementary industrial arts, assisting in developing curriculum and activities for the elementary teachers, to securing tools and materials for the classroom.

Woolery (15, p. 72-73) reported for a state-wide committee representing educational leaders from various areas of the state of Iowa who were organized to develop guidelines for local school districts desiring to implement a "world of work" program in the elementary school systems. The committee proposed that a coordinator, a person with an industrial arts background and a proven record for working with elementary teachers, be appointed to assume leadership of the program. In regard to the importance of the coordinator in the implementation of the program the report stated, "Here again, the leadership of the coordinator in the workshop sessions was vital and necessary to the success of the program."

A wide variety of programs have been used to implement industrial arts into the elementary classroom. Ivery (16, pp. 55-57), in a report from a committee on implementation of elementary industrial arts, saw that there was a vast difference in programs used in implementation. Ivery's report included a variety of programs which had been successful. The following programs and explanation were listed by Ivery.

I. Limited Classroom Program
II. Comprehensive Classroom Program
III. Laboratory Program
IV. Traveling Teacher Program
V. Mobile Laboratory Program
VI. Central Laboratory Program
VII. Summer School Enrichment Program
VIII. Any combination of two or more of the above

The philosophy of the local school district, budget, time, classroom or laboratory space and personnel determine the approach to industrial arts which a school district might select.

Limited Classroom Program. The majority of elementary school industrial arts programs fall into this category. The term "limited" refers to the classroom time allowed for the subject, and to the direct assistance available from an industrial arts consultant. The activity is usually integrated with other subjects of the elementary curriculum through tools skills, experimentation, problem solving and the appreciations of various industrial processes.

This category can be characterized as follows:

(a) The program is directed by the classroom teacher.
(b) The work is correlated with other subjects.
(c) The activities are usually limited to blocks of time, units or episodes.
(d) A minimum number of hand tools is available.
(e) Tools and equipment are portable.
(f) The services of an industrial arts specialist are minimal.

Comprehensive Classroom Program. In this type of program the classroom teacher has the advantage of regular assistance from an industrial arts consultant. School visits by the consultant are frequent and usually many teachers of several grades are involved in the industrial arts program. A course of study is set up for all grades, and there is planned articulation from grade to grade. This program is characterized as follows:

(a) The classroom teacher directs the work in close cooperation with a specialist.
(b) The industrial arts activities relate to other subjects, to the study of technology, and to the discovery of personal abilities.
(c) The industrial arts specialist does not "take over" the program but does provide active assistance to classroom teachers and students.
(d) The activities and content dictate the numbers and kinds of tools that are needed.
(e) Tools and equipment are portable.
(f) The work is scheduled on the basis of a semester or a school year.
(g) Regular courses of in-service training are offered to teachers.

Laboratory Program. The trained industrial arts teacher who leads a laboratory program has a dual role to play in the elementary school. He directs a balanced industrial arts program for the children of the school in cooperation with the classroom teachers, and he gives these teachers sufficient in-service training to more nearly meet the total needs of the children.

The industrial arts teacher has an excellent opportunity to give children a variety of experiences which reflect modern technology and still maintain a balanced relationship with the elementary school curriculum.

The ideal laboratory teacher is one who has an industrial arts background and has had some training or experience in elementary education.

Laboratory programs are characterized as follows:

(a) The industrial arts teacher directs the activities.

(b) The classroom teacher cooperates in planning the work, and he assists in carrying out the objectives of the work.

(c) The industrial arts work is subject-oriented, yet it will complement the general elementary course of study.

(d) A regular schedule of classes is set up for each semester or for the school year.

(e) The course of study would be articulated by the cooperative efforts of the industrial arts teacher and the classroom teachers.

(f) Tools and equipment are appropriate to the content.

Traveling Teacher Program. The traveling industrial arts teacher functions in about the same way as the laboratory teacher in category III: he works in the classroom, laboratory or multi-purpose room.

The traveling industrial arts teacher:

(a) visits two or more schools on a regular schedule and teaches children;

(b) plans the program with the classroom teachers and the local administrator. (The work centers around local students.); and

(c) uses tools and equipment permanently assigned to each school.

Mobile Laboratory Program. The mobile laboratory has been used mostly in rural areas where schools are far apart and each school is unable to afford tools and equipment of its own. This mobile unit may serve as a laboratory, or tools and equipment may be moved to other work areas. The equipped van or trailer can serve as an in-service training facility for teachers at the end of the school day.

The mobile laboratory teacher:

(a) moves from school to school in a self-contained unit;

(b) works with children in the unit, in a classroom or other convenient work area;
(c) plans and works cooperatively with the faculty to serve the local needs;
(d) conducts in-service education for teachers; and
(e) provides workshop facilities for the construction of teaching aids and accessories.

Central Laboratory Program. Certain circumstances may require the establishment of a centralized industrial arts teacher in a facility designed for comprehensive industrial arts activities. A special effort must be made to coordinate industrial arts with classroom instruction.

Summer School Enrichment Program. Many school districts offer enrichment studies as well as remedial work in summer programs. Art, music, drama, science and industrial arts activities have been highly successful in various summer school organizations. Rather than spend a full summer school day on one subject, there have been some rather innovative combinations, such as theater arts, math, science and others, all combined with industrial arts.

The summer period provides many opportunities for experimentation in various programs, and for the in-service training of teachers.

Combination of two or more approaches as outlined above.

The third and final area of implementation for this report concerns the actual planning and conducting of activities and experiences for elementary school industrial arts.

The committee recognized a need for the formulation of a vehicle of instruction to guide teachers in planning learning experiences for students.

When the scope and sequence of an industrial arts program have been determined, suitable plans for maximum learning in an orderly environment need to be developed. . . .

Teacher Education

Throughout the discussion of types of programs used and methods of implementation, the classroom teacher has been considered the key element in the success of incorporating industrial arts into the elementary curriculum. The success of the elementary teacher was also dependent on his or her training in industrial arts as it related to the elementary school.

Thrower, (17, p. 197) in his address to the Twenty-Ninth Annual Convention of the American Industrial Arts Association, surmised that,

"elementary classroom teachers must be trained in the use of the tools and materials of industry." Thrower also suggested, "They must also be trained in the methods of utilizing industrial arts activities."

Kurth (18, pp. 8-13) indicated:

> In the elementary grades, industrial arts activities are the responsibility of the classroom teacher. . . . The preparation of the classroom teacher becomes the key to the program's success. Through lack of experience, many teachers hesitate to incorporate such work into their programs. Actually industrial arts techniques are natural and easy. Preservice courses, and in-service workshops are available to elementary teachers who need assistance.

Boyd (6, p. 218) also found the need for teacher education.

> In-service workshops at the local level as well as courses offered by teacher preparation institutions will greatly increase the chance of success in developing and implementing the industrial arts program and the role it can play in providing career education.

The need for in-service and teacher education is being noticed in many colleges in the United States. According to Ingham (19, p. 120) ". . . for over twenty years an elementary school industrial arts program has been an integral part of the requirements for elementary majors at Kent (Ohio) State University." The course is appropriately called "Industrial Arts for Children." Emphasis is placed on planning individual group activities which can be integrated with other areas of the elementary school curriculum.

Colleges are offering elementary industrial arts as an elective for elementary majors. Industrial arts is an elective for elementary majors at Ohio University (20, p. 222). The course is based upon the individual student who possesses the ability to originate teacher techniques that will foster the goals of elementary education. Hawk (20, p. 222) pointed out, "As an elective, it has attracted many students each semester."

The review of literature has revealed concern of educators for implementation of industrial arts into the elementary school curriculum. The review of literature has also shown a relationship between industrial arts and career education. It has indicated that there is a definite need for teacher education at the elementary level and that the success of implementation of an industrial arts program in the elementary schools depends upon the elementary teacher.

CHAPTER III

METHOD AND PROCEDURE

Type of Research

The type of research used in conducting this survey was descriptive, using the survey as the method of research and the questionnaire as the survey instrument. The survey method was considered the most applicable method because of its ability to collect desired information from large groups of people.

Participant Selection

The persons selected to participate in this study were in-service elementary teachers in the Grand Forks school system. They were chosen because they had selected elementary education as their profession and also understood the needs and desires of their students. All elementary teachers currently employed were included in the initial distribution of the questionnaire.

Address Compilation

The questionnaire was distributed to the 225 elementary teachers by the principals of the Grand Forks elementary schools. No address compilation was necessary because of this method of identifying the population for the study.

Questionnaire Design

The questionnaire designed for this study was of the closed form style, modified to include two open-ended questions to ascertain information which could not otherwise be obtained. The questionnaire consisted of a single sheet printed on one side. It was designed so that a minimum number of questions would evoke the maximum amount of data.

The questionnaire was reviewed and approved by the author's graduate committee prior to printing (Appendix I, p. 37).

Cover Letter

A cover letter accompanied each questionnaire to inform the elementary teachers of the purpose of the study and ask for their cooperation in completing the questionnaire. The cover letter was signed by the author to demonstrate a personal interest in their responses (Appendix II).

Distribution

The questionnaire was presented and discussed with Mr. Gordon York, Elementary Coordinator for the Grand Forks schools. In discussing the procedure which should be taken to ensure delivery of the questionnaires to the elementary teachers, Mr. York suggested that distribution be done on a voluntary basis. Because of his interest in the study, Mr. York offered to present the questionnaires to the principals at their meeting and ask them to distribute them to the elementary teachers. Mr. York also explained to the principals that he supported the study and was interested in its findings. It was decided at the meeting that the author would collect the questionnaires

on March 7, 1973, at the office of the principal of each elementary school. A notice was placed in the newsletter sent to the elementary schools in the Grand Forks school system stating that the author would collect the questionnaires on that date.

Data Treatment

On March 7, 1973, the author collected the questionnaires which had been completed. At this time, 104 teachers had completed the questionnaires.

Questionnaires completed after March 7, 1973, were collected on March 18, which was established in advance as the last date for returning the questionnaire. Response to the survey was voluntary. The number of respondents totaled 123, which represented 54 per cent of the possible respondents.

The data were subjected to a descriptive analysis with each topic discussed in a narrative summary. Certain data were recorded in tables according to its nature and were discussed.

A final summary of the study was sent to each elementary principal in the Grand Forks school system.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

This study was designed to ascertain the following: (1) the extent to which industrial arts is included in the curriculum of the elementary schools of the Grand Forks school system, (2) the benefits of an elementary industrial arts program in the Grand Forks schools, as viewed by the elementary teachers, (3) the type of industrial arts program elementary teachers would like to see implemented in their schools if a program were offered, (4) whether a program in elementary industrial arts should be taught as a separate or a correlated unit of instruction, (5) whether elementary teachers feel that a course in elementary industrial arts should be a requirement for a major in elementary education, (6) the need for an in-service workshop on elementary industrial arts for elementary teachers.

Findings

Elementary Schools Offering Programs

One hundred and four of the 123 elementary teachers responding to the question: "Does your elementary school offer a program in elementary industrial arts?," indicated that their school does not offer a program in elementary industrial arts. Eighteen responded that the school at which they are teaching does offer a program in elementary industrial arts.

Significance of Industrial Arts Program

In response to the question: "Do you feel industrial arts instruction in your school would be beneficial?," 114 (98.5 per cent) of the 116 respondents indicated that industrial arts would benefit their school system. Two (1.7 per cent) indicated the program would not benefit their school.

TABLE 1

PREFERRED-PROGRAM OFFERINGS[a]

Program	Responses
Industrial arts program directed by a student teacher	61
Limited classroom program directed by an elementary teacher	20
Self-contained interest center in industrial arts	51

[a]Elementary teachers could check more than one program.

The types of programs which have been used for industrial arts instruction at the elementary level are listed in Table 1. Those who responded yes to Question 2 were then asked to specify the type of program they would prefer. Sixty-one checked that an industrial arts student teacher was their preference, while a self-contained interest center in industrial arts was preferred by 51 of the respondents. Twenty respondents preferred a limited classroom program directed by an elementary teacher.

Curriculum Relationship

Responding to the question: "If a program in industrial arts were to be offered in your school, which of the following would you prefer?," 73 (59.5 per cent) indicated that industrial arts should be integrated with other curricular activities of the elementary school. Forty-nine (39.9 per cent) preferred industrial arts taught as a separate unit of instruction.

TABLE 2

PREFERRED INSTRUCTION FOR IMPLEMENTATION OF AN INDUSTRIAL ARTS PROGRAM[a]

Type of Instruction	Respondents
Elementary teacher who has had course work in elementary industrial arts	20
Industrial arts program taught by an industrial arts student teacher	44
Elementary teacher teamed with an industrial arts teacher	33
Elementary teacher working with an industrial arts coordinator	17
Elementary teacher with a minor or equivalent in industrial arts	12
A self-contained industrial arts interest center with activities directed by the classroom teacher	22

[a]Elementary teachers could check more than one instructional program.

The responses to what types of instruction could best be used to implement an industrial arts program in the elementary school curriculum are shown in Table 2. Percentages were not computed for

these responses because the elementary teachers could check more than one program.

The instructional program which the elementary teachers felt could best be used to implement an industrial arts program into the elementary school curriculum was a program directed by an industrial arts student teacher (44 citations), followed by an elementary teacher teamed with an industrial arts teacher (33 citations). A self-contained interest center with activities directed by the classroom teacher was cited by 22 teachers while 17 teachers preferred an elementary teacher working cooperatively with an industrial arts coordinator for the elementary schools of Grand Forks.

Elementary Educational Requirement

Seventy-five (61 per cent) of the teachers responding to the question, "Do you feel that students majoring in elementary education should be required to take instruction in industrial arts?," indicated that elementary majors should be required to take instruction in industrial arts during their college preparation, while 43 (35 per cent) felt that elementary majors should not be required to take industrial arts instruction at the college level. Thirty-four of the 43 respondents who indicated that elementary majors in elementary education should not be required to take a course in industrial arts have not had a course of this kind at the college level. Seventy two per cent (28) of the 35 respondents who have had an elementary industrial arts course indicated that elementary majors should be required to take instruction in industrial arts at the college level.

Elementary Industrial Arts Education

The preparation of the elementary teachers in industrial arts was one of the major concerns of this study. Responding to the question: "Have you taken a course in elementary industrial arts at the college level?," 84 (68.3 per cent) indicated they had not taken a course of this nature, while 39 (31.7 per cent) responded they had taken a course of this nature.

TABLE 3

YEAR ENROLLED IN INDUSTRIAL ARTS COURSE[a]

Year	Total	Year	Total
1940	1	1962	5
1945	1	1964	1
1954	1	1965	1
1956	1	1966	1
1957	1	1967	5
1958	1	1968	6
1959	2	1969	2
1960	4	1970	5
1961	3	1971	1

[a]Respondents could check more than one year.

Year Enrolled in Industrial Arts Course

Those who responded yes to Question 7 were asked to specify the year in which they had taken the course. It is shown in Table 3 in which years the respondents enrolled in an industrial arts course in their college preparation. Some respondents indicated having enrolled in an industrial arts course in more than one year, and because of this percentages were not computed for this question. The responses showed the majority have taken a course within the last 15 years. The most recent enrollment in an industrial arts course was 1971.

In-Service Education

Respondents who indicated yes to the question: "Would you be interested in an industrial arts in-service workshop as it relates to career education and career awareness?," numbered 97, or 80 per cent of the 123 respondents. Twenty-three (18.6 per cent) did not feel a course was needed. Of the 23 indicating no interest in the course, 18 have not taken a course in industrial arts.

Course Offerings

Those who responded yes to Question 9 were asked to specify at which time they would like the workshop offered. Possible times at which a workshop in elementary industrial arts could be offered to coincide with the desires of the majority of the interested teachers are illustrated in Table 4. Data were not computed in percentages

TABLE 4

COURSE OFFERINGS[a]

Time of Course	Total
During summer school offered as an eight-week course	5
During summer school offered as a four-week course	16
During summer school offered as a two-week course	28
Offered as a night class during the school year	54
Offered on Saturdays during the school year	10

[a]Elementary teachers could check more than one course offering.

because the respondents could check more than one alternative. An elementary industrial arts class offered as a night class during the

school year was chosen by the elementary teachers 54 times. A two-week summer school course was preferred by 28 respondents. It was noted from the responses given to the question that only 5 of the respondents preferred eight-week summer course offerings when given other alternatives.

Included in the question was an opportunity for the respondents to indicate the number of credit hours they would like to receive for taking the class. The question could be checked more than once, so percentages were not compiled. Fifty-three indicated that they preferred a two hour course offering, while 22 of those completing the question desired a one hour course.

The responses to the question: "Which grade(s) do you teach?," are listed in Table 5. Percentages for Table 5 were not compiled because some of the elementary teachers taught more than one grade level. Fifth grade was checked most by the respondents (32 times), followed closely by grade two (30 times), grade six (25 times), grade four (24 times), grade three (22 times), and grade one (20 times).

TABLE 5

GRADE LEVELS TAUGHT BY RESPONDENTS[a]

Grade Level	Total
Kindergarten	10
Grade One	20
Grade Two	30
Grade Three	22
Grade Four	24
Grade Five	32
Grade Six	25

[a]Elementary teachers could check more than one grade level.

Curriculum Correlation

In response to the question: "How would industrial arts complement the instruction at your grade level?" many suggestions were given. This was an open-ended question because it was felt that industrial arts could complement the instruction at the elementary level in a variety of ways. Seventy-seven (62.5 per cent) of the teachers answered the question.

Because of the wide variety of responses, a selection of the most representative comments will be made in the following presentation.

"It could be integrated with science and social studies units."

> It would provide more activities and enrichment to our current program. It would help make the subject area material more meaningful if it were integrated with the subject matter of the elementary school curriculum.

"It would help reinforce geometric and measurement concepts."

"It would be a very valuable addition to our curriculum. The students need the opportunity to work and make things with small hand tools."

"It would provide another media to expand concepts and to encourage individual expression."

> I think industrial arts could complement the instruction by helping children to be creative with different tools and materials. I think it would be beneficial teaching children the value of vocational education instead of always placing emphasis on college.

"Industrial arts could make social studies or study of work more meaningful."

> I can see industrial arts used effectively with social studies, math and art. Perhaps this would give those underachievers a chance to reach a goal. It would be a way for them to develop and test whether or not they have career interests along these lines.

General Comments

Included in the questionnaire was an opportunity for the elementary teachers to express themselves on any topic they considered applicable. Thirty-five (27.5 per cent) of the respondents used this opportunity to express themselves on the benefits of an industrial arts program in their school, as well as comments on the problems of implementing such a program.

The following is a selected list of comments made by the elementary teachers relating to the need for and the benefits of an industrial arts program:

"Industrial arts provides the opportunity to express in one more way creativity. It also helps to build small motor skills."

> We have had an industrial arts student teacher all year. They have been a great help in our school. These people have become involved in other aspects of our school besides industrial arts, such as mini courses, intramurals, etc.
>
> We surely enjoy having them and really think they are a great asset to our school. We want them to continue.

"Children need to work with their hands and develop muscular coordination. Industrial arts is one of the programs that does this and is fun too!"

> Once I knew a boy in Third Grade. Reading was the least of his concern. Through his grandfather he became interested in building bird houses. We found books with directions for building the houses. He at least found some need to read. He soon became a good reader because he found he had to read directions in order to be a good "carpenter."
>
> Another problem child was left alone in the evenings. While his mother was away he became interested in craft books. It helped him fill in his time and the interest stayed with him. He is now a window decorator in a large city--(the joys of an "old" teacher).

Some of the problems of implementing an industrial arts program were expressed by the elementary teachers. The following selected statements were made by the elementary teachers:

"The instructor needs to have some 'know-how' for relating to the elementary age children as well as his technical training."

Deterring factors at the present would be: (1) lack of funds, (2) lack of space, (3) classroom teacher does not have time or sometimes experience to implement such a program.

"I'm not so sure the schools would supply supplies and equipment."

This type of program would be beneficial at the elementary level if there were proper tools, materials, and instruction along with concrete goals and objectives. Haphazard integration with inferior equipment, a lack of practical objectives and knowledgeable instructors is a waste of time. Also, adequate funding is essential.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The review of related literature revealed the importance of career education at the elementary grade level. Industrial arts was also shown by experts in the field as having a definite relationship to career education.

Means of implementing industrial arts into the elementary curriculum were also discussed. It was cited in the literature that most authorities in the field agree that industrial arts should be correlated into the elementary school curriculum, and that the key to success of the elementary program is the classroom teacher. It was also expressed that there appears to be a need for offering in-service workshops for the elementary teachers in regard to elementary industrial arts.

Method and Procedure

The descriptive method of research was used in this study, using the survey as the method of research and the questionnaire as the survey instrument. Data were collected from 123 of 225 elementary teachers in the Grand Forks school system. Related literature was reviewed to observe types of programs, implementation and the needs determined by similar articles and studies of this nature. Data was presented in a narrative form with certain data presented in tabular form followed by a narrative description according to its nature.

Summary and Findings

This study was designed to ascertain the following:

1. the extent to which industrial arts is included in the curriculum of the elementary schools of the Grand Forks school system--the study revealed that the majority of the elementary schools are not offering a program in elementary industrial arts at the present time;
2. the benefits of an elementary industrial arts program in the Grand Forks elementary schools--it was found that 114 (98.5 per cent) of the respondents indicated such a program would be beneficial;
3. the type of industrial arts program elementary teachers would like to see implemented in their schools if a program were offered--it was found that a student teacher assigned to teach industrial arts at the elementary school level was the preferred method of implementation of such a program;
4. if a program in elementary industrial arts should be taught as a seperate or a correlated unit of instruction--the findings indicated that industrial arts should be correlated with the elementary curriculum;
5. whether elementary teachers felt that a course in elementary industrial arts should be a requirement for a major in elementary education--the study revealed that 75 (61 per cent) of the respondents indicated that industrial arts should be a requirement for elementary majors;

6. the need for an in-service workshop on elementary industrial arts for elementary teachers--the findings revealed that 84 had not taken a course in elementary industrial arts and that 97 (80 per cent) desired an in-service workshop on elementary industrial arts.

Conclusions

1. It can be concluded from the findings that incorporating industrial arts in the elementary school curriculum of the Grand Forks school system would be beneficial to the elementary schools.

2. Industrial arts should be integrated with the subject matter of the elementary schools when implementing an industrial arts program in the elementary schools.

3. A student teacher assigned to teach elementary industrial arts at the elementary level was preferred by the elementary teachers for implementation of an industrial arts program.

4. It can be concluded from the findings that elementary majors should be required to take a course in elementary industrial arts in their college preparation.

5. It can be concluded from the findings that there is a need for an in-service workshop concerning elementary industrial arts by the elementary teachers.

6. One can conclude from the findings that an in-service workshop on elementary industrial arts should be offered as a night class during the school year as a two semester hour course.

7. It can be concluded from the findings that industrial arts can be successfully correlated with the subject matter of the elementary schools.

Recommendations

It is recommended that the elementary schools consider the addition of a program in industrial arts. The needs and expectations of the elementary teachers should be given consideration when putting this program into effect.

Whereas the majority of the elementary teachers felt that students now pursuing an elementary education major should be required to take instruction in industrial arts, it is recommended that the elementary education majors in the Center for Teaching and Learning be required to take a course of this nature.

It is recommended that the Industrial Technology Department continue placing industrial arts student teachers in the elementary school setting. In placing the student teachers at the elementary level guidelines should be developed by a cooperative effort between the Industrial Technology Department and the elementary schools. Thereafter expansion of the program would be beneficial.

Because of the large demand for an in-service workshop on elementary industrial arts, it is recommended that the Industrial Technology Department place emphasis on providing an in-service workshop for the elementary teachers. It is also suggested that this class be a two-semester hour course offered in the evenings during the school year.

It is recommended that a study of this type be conducted again, when the impact of elementary industrial arts is felt by the elementary teachers through more exposure to this type of program.

It is recommended that other specialized programs such as home economics and business education conduct similar studies in the elementary schools to ascertain the implications of career education for their discipline.

APPENDIX I

1. Does your elementary school offer a program in elementary industrial arts? _____Yes _____No

2. Do you feel that industrial arts instruction in your school would be beneficial? _____Yes _____No

3. If your answer to question number two was yes, what type of program should be offered?

   _____industrial arts program directed by an industrial arts student teacher

   _____limited classroom program directed by an elementary teacher

   _____self-contained interest center in industrial arts

4. If a program in industrial arts were to be offered in your school, which of the following would you prefer?

   _____industrial arts instruction integrated with other curricular activities

   _____industrial arts taught as a separate unit of instruction

5. What type of instruction would best be used to implement the industrial arts program in number four?

   _____elementary teacher who has had course work in elementary industrial arts

   _____industrial arts program taught by an industrial arts teacher at your school

   _____elementary teacher teamed with an industrial arts teacher

   _____elementary teacher working cooperatively with an industrial arts coordinator for elementary schools in the Grand Forks area

   _____elementary teacher with a minor or equivalent in industrial arts

   _____a self-contained industrial arts interest center with activities directed by the classroom teacher

6. Do you feel that students majoring in elementary education should be required to take instruction in industrial arts?

   _____Yes_____No

7. Have you taken a course in elementary industrial arts at the college level?

   _____Yes_____No

8. If your answer to question number seven was yes, in what year did you take the course?

_____

9. Would you be interested in an industrial arts in-service workshop at the elementary school level as it relates to career education and career awareness?

_____Yes_____No

10. If your answer to question number nine was yes, at which of the following times would you like the workshop offered?

_____during summer school offered as an eight-week course

_____during summer school offered as a four-week course

_____during summer school offered as a two-week course

_____offered as a night class during the school year

_____offered on Saturdays during the school year

specify the number of semester hours of credit desired

_____0 _____1 _____2 _____3

11. Which grade(s) do you teach? K_____ 1_____ 2_____ 3_____ 4_____

5_____ 6_____

12. How would industrial arts complement the instruction at your grade level?

13. Comments.

APPENDIX II

Elementary Teachers:

Increased emphasis on career education has created a demand for more career oriented education. This type of instruction encompasses all levels from kindergarten through the high school.

While there are many contributions made by industrial arts to the education of students in junior and senior high schools, we are now recognizing the role industrial arts can play in bringing an awareness of future career opportunities to elementary students.

Please read the goals of elementary industrial arts listed below before completing the enclosed questionnaire. These goals are meant to give the reader an idea of how industrial arts may assist in orienting the elementary student toward future career choices.

1. To motivate, enrich, reinforce, and increase learning through the manipulation of tools, and materials and activities closely related to the elementary school curriculum.
2. To assist the student in understanding the roles of technology in contemporary society.
3. To develop and demonstrate self expression, creativity, problem solving skills and successful accomplishments through the fabrication of industrial materials.
4. To develop and demonstrate positive attitudes toward work.
5. To develop safe habits through the use of tools.
6. To develop cooperative attitudes toward other students.

The purpose of this questionnaire is to ascertain: (1) the extent of industrial arts in the elementary schools in the Grand Forks school system. (2) the need for industrial arts in the elementary schools in the Grand Forks school system. (3) a method elementary teachers could

use to incorporate an industrial arts program in their school.

(4) what type of industrial arts program elementary teachers prefer.

(5) the need for in-service workshops on elementary industrial arts for elementary teachers.

Your cooperation in completing the enclosed questionnaire, with the objectives of industrial arts in mind, and returning the questionnaire to the principal of your school as soon as possible will be appreciated. All individual responses will be kept anonymous. Upon completion of the questionnaire, a summary will be made and sent to the principal of your school.

Thank you for your cooperation in completing the questionnaire.

Sincerely,

Douglas Holm

Douglas Holm
Graduate Student
Dept. of Industrial Technology
University of North Dakota

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A STUDY TO ASCERTAIN THE NEED FOR INDUSTRIAL ARTS IN THE ELEMENTARY SCHOOLS OF GRAND FORKS

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The University of North Dakota, 1973

Faculty Advisor: Dr. Wayne H. Zook

This study was designed to ascertain the following: (1) the extent to which industrial arts is included in the curriculum of the elementary schools of the Grand Forks school system, (2) the benefits of an elementary industrial arts program in the Grand Forks schools, as viewed by the elementary teachers, (3) the type of industrial arts program elementary teachers would like to see implemented in their schools if a program were offered, (4) whether a program in elementary industrial arts should be taught as a separate or a correlated unit of instruction, (5) whether elementary teachers feel that a course in elementary industrial arts should be a requirement for a major in elementary education, (6) the need for an in-service workshop on elementary industrial arts for elementary teachers.

Methods

The descriptive method of research was used in this study, using the survey as the method of research and the questionnaire as the survey instrument. Data were collected from 123 of 225 elementary teachers in the Grand Forks school system. Related literature was reviewed to

observe types of programs, implementation and the needs determined by similar articles and studies of this nature. Data were presented in a narrative form with certain data presented in tabular form followed by a narrative description according to its nature.

Conclusions

Several conclusions can be drawn from the findings of this study:

1. It can be concluded from the findings that incorporating industrial arts in the elementary school curriculum of the Grand Forks school system would be beneficial to the elementary schools.
2. Industrial arts should be integrated with the subject matter of the elementary schools when implementing an industrial arts program in the elementary schools.
3. A student teacher assigned to teach elementary industrial arts at the elementary level was preferred by the elementary teachers for implementation of an industrial arts program.
4. It can be concluded from the findings that elementary majors should be required to take a course in elementary industrial arts in their college preparation.
5. It can be concluded from the findings that there is a need for an in-service workshop concerning elementary industrial arts by the elementary teachers.
6. One can conclude from the findings that an in-service workshop on elementary industrial arts should be offered as a night course during the school year as a two-semester hour course.

7. It can be concluded from the findings that industrial arts can be successfully correlated with the subject matter of the elementary schools.

Recommendations

It is recommended that the elementary schools consider the addition of a program in industrial arts. The needs and expectations of the elementary teachers should be given consideration when putting this program into effect.

Whereas the majority of the elementary teachers felt that students now pursuing an elementary education major should be required to take instruction in industrial arts, it is recommended that the elementary education majors in the Center for Teaching and Learning be required to take a course of this nature.

It is recommended that the Industrial Technology Department continue placing industrial arts student teachers in the elementary school setting. In placing the student teachers at the elementary level guidelines should be developed by a cooperative effort between the Industrial Technology Department and the elementary schools. Thereafter expansion of the program would be beneficial.

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