CONTEMPORARY CONCEPTS OF INDUSTRIAL ARTS AS PERCEIVED BY TEACHERS AND TEACHER EDUCATORS IN OKLAHOMA

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Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
DOCTOR OF EDUCATION
July, 1980

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ACKNOWLEDGMENTS

The investigator wishes to formally and officially express his appreciation and gratitude to the many people who contributed their time and assistance to this study.

Sincere appreciation is expressed to Dr. Lloyd L. Wiggins, the researcher's major adviser, for his understanding and guidance and for the opportunity to work and learn from his leadership throughout the duration of the study. Appreciation is extended to the committee members: Dr. Cecil W. Dugger, Dr. D. Elaine Jorgenson, and Dr. Harold J. Polk, for their professional expertise and assistance during the study.

Special thanks is given to the staff of the State Department of Vocational-Technical Education, including Mr. Harold J. Winburn for sharing his knowledge and experiences concerning industrial arts, Dr. W. Don Frazier for his guidance and suggestions concerning the research data, and the entire staff within the Graphics Division for assisting in the formulation and reproduction of the research instrument.

The investigator is especially grateful to Paula Smith for consenting to type the draft and final copies of the study.

To the industrial arts teachers and teacher educators included in this study, a note of gratitude is extended for their cooperation and participation.

The writer also wishes to thank his parents, John L. and Jeanne, sister Janie, and newphew Mark, for their encouragement, understanding, and sacrifices. To his wife Brenda, for her patience, constant

assistance, and personal sacrifices, the writer can only attempt to express his appreciation. It is to his family that the investigator dedicates this study.

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CHAPTER I

INTRODUCTION

The contemporary, rapidly changing technological society in America demands a much different set of skills or competencies, in order for an individual to become a productive member of society, than any generation viewed in the past. It must be realized that students graduating today will be a part of the work force well past the year 2000. Educators have the obligation not only of preparing them adequately for today's market, but of preparing them so that they can change with the times and not become obsolete before their time (Clemmons, 1975). There exists a critical need to teach so that what is learned can successfully be transferred to many situations, to meet many needs, and provide alternatives in meeting those needs.

The question arrives, how can the institutional system called education do its job and what role can or should industrial arts play? The uniqueness of industrial arts in its role of meeting the needs of the student in the educational process must be considered. As Fuglsby (1978) states:

> People will continue to use tools, machines, energy, materials, and communications. They will apply various processes. Our strength and uniqueness is that through the use of tools, machines, materials, energy, communications and the application of processes, we can teach people to think and act, to meet their needs now and in the future, and to expand their potential (p. 22).

The increasing technological society has focused attention on industrial arts as a curriculum area particularly suited to fulfill its

requirements (Good, 1979). In view of the contemporary concepts presently being implemented into industrial arts programs across our nation, involving the job clusters of construction, manufacturing, transportation and energy, and communications and media, as well as the incorporation of the American Industrial Arts Student Association (AIASA), industrial arts is one of the most educationally beneficial and rewarding subject areas in which a student can be involved (Litherland, 1979). Students participating in the innovative curriculum of today's industrial arts programs are provided with the opportunity to (1) explore many occupational choices, as well as experiment with the tasks and skills needed to perform those jobs, (2) develop leadership abilities and civic responsibilities through membership in AIASA, and (3) develop craftsmanship and pride in their work through hands-on manipulative skills.

However, no matter how beneficial these contemporary concepts of industrial arts are to the rest of the nation, the industrial arts teachers in Oklahoma, are not implementing these innovative curricula into their programs, with the exception of a minimal number of exemplary or pilot programs (Winburn, 1979). Is it the traditionalism of Oklahoma industrial arts teachers that is responsible for the non-acceptance of the new concepts? Is it the unfamiliarity of the new concepts? Is it the extra work of learning the new materials, scheduling guest speakers and field trips, and staying abreast of the modern technological changes? Or is it apathy? In any case, industrial arts teachers in this state should reevaluate their current curricular functions and objectives in regard to what best reflects modern technological trends. Current practices in familiar areas such as woodworking

and metal working must respond to recent innovations (A Guide for Industrial Arts Education in Oklahoma, 1979).

In order to assist and enable industrial arts teachers to better understand the contemporary concepts of the curriculum and become one unified area of discipline, as compared to each teacher developing his/her own program, a curriculum committee, comprised of industrial arts leaders from within our state, has developed a state plan, A Guide for Industrial Arts Education in Oklahoma (1979). This guide, which had been in the developmental stage for several years, is supported by the State Department of Education and the State Department of Vocational and Technical Education.

Included within this plan are statements of policy, goals, and minimum standards for industrial arts programs. In addition, the guide reflects the relationship of industrial arts to general education, vocational education, and career education, along with the current federal legislation concerning industrial arts. And finally it includes the scope and methodology needed when implementing the innovative curricula, the recommendations and instrumentation of utilizing the American Industrial Arts Student Association as an integral part of the curriculum, and the explanation of the functions of the industrial arts teacher education programs within the state.

The provisions set forth in this guide should denote far-reaching and significant implications on the industrial arts teachers and programs across our state. Although, whether or not the industrial arts teachers in Oklahoma acknowledge these recommendations is yet to be seen.

Statement of the Problem

Today's educational system in Oklahoma is in need of a discipline that will allow students to become aware of, to explore, and to experiment with several different occupations before they graduate from the public school system, thus enabling them to have a much broader base of experience in which to make career decisions (Reynolds, 1978). Industrial arts education does provide contemporary curriculum concepts to accomplish this need. Although, in general, the industrial arts public school teachers and teacher educators in Oklahoma have not acknowledged the implementation of these contemporary concepts and innovative curricula as reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. As a result, there is a definite lack of contemporary programs existing within the field of industrial arts throughout the state.

Purpose and Objectives of the Study

The purpose of this study is to identify the opinions that industrial arts teachers have relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. The specific objectives of the study were:

1. Identify any relationship between the personal and professional characteristics of industrial arts teachers and their opinions about the curriculum content as reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.
2. Identify any relationship between the personal and professional characteristics of industrial arts teachers and their opinions

about the content within the job clusters of industrial arts as reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

3. Make recommendations for planning, programming, and further research based upon the findings of this study.

Hypotheses

The null hypotheses for the study will test certain personal and professional characteristics that may be impacting upon the opinions of industrial arts teachers toward the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. Items 8 through 38 on the opinionnaire (see Appendix A) lent themselves to be analyzed utilizing statistical treatment as revealed in the hypotheses to follow. Questions 39 through 50 on the opinionnaire did not lend themselves to statistical treatment, thus a weighted ranking system was used. (See Presentation of Additional Data for more information.) The following seven hypotheses will be tested:

H_1: There is no significant difference between the opinions of industrial arts teachers compared to their years of age, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. (This hypothesis refers to objective one.)

H_2: There is no significant difference between the opinions of industrial arts teachers compared to their attained level of education, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

H_3: There is no significant difference between the opinions of industrial arts teachers compared to their number of years having taught industrial arts, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. (This hypothesis refers to objective one.)

H_4: There is no significant difference between the opinions of industrial arts teachers compared to the type of program being taught, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

H_5: There is no significant difference between the opinions of industrial arts teachers at the various levels of teaching industrial arts, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. (This hypothesis refers to objective one.)

H_6: There is no significant difference between the opinions of industrial arts teachers compared to their years of industrial experience, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. (This hypothesis refers to objective one.)

H_7: There is no significant difference between the opinions of industrial arts public school teachers and those of industrial arts teacher educators, on any given item, relative to the curriculum content reflected in the state plan, A Guide for

Industrial Arts Education in Oklahoma. (This hypothesis refers to objective one.)

The researcher set a .05 level of significance for acceptance or non-acceptance of the hypotheses.

Presentation of Additional Data

In addition to the testing of the aforestated hypotheses, it was necessary, due to the nature of the type of information desired, to analyze the responses to questions 39 through 50 on the opinionnaire (see Appendix A), utilizing a weighted ranking method of comparison. The desired information is as follows:

1. To show the relationship between the personal and professional characteristics of industrial arts teachers and their opinions about the ranking of the cluster topics, as reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. (This information refers to objective two.)

And finally, it was necessary, due to the nature of the type of information desired, to directly match the various responses from two categories of personal and professional characteristics on the opinionnaire, as opposed to utilizing a statistical test. The desired information is as follows:

2. To determine the relationship between the industrial arts teachers' opinions of their administrators' view about industrial arts, as compared to the actual type of program being taught in the school.

Assumptions

The following assumptions are pertinent to the conduct of the study. They are:

1. The responses to the opinionnaire by the subjects are spontaneous, conscientious expressions of their attitudes, opinions and beliefs.
2. The subjects who provide data have read or are familiar with the state plan, A Guide for Industrial Arts Education in Oklahoma and are familiar with the American Industrial Arts Student Association (AIASA).
3. The instrument used in this study was adequate for allowing industrial arts teachers to report their opinions concerning the state plan, A Guide for Industrial Arts Education in Oklahoma.

Limitations of the Study

The sample selected for this study is limited to industrial arts teachers at the public school level and industrial arts teacher educators within the nine industrial arts degree granting universities in Oklahoma. The instrument to obtain the data has been developed by the researcher with assistance from the researcher's major adviser and the State Supervisor of Industrial Arts in Oklahoma in accordance with the state plan, A Guide for Industrial Arts Education in Oklahoma. The data obtained are limited to those instruments which have been returned from an initial mailing and a follow-up mailing.

Definition of Terms

The following terms are defined for clarification of their use in the study, and should not be regarded as an attempt to assign universal meaning to these terms:

Career Orientation: This term, sometimes referred to as career development, includes the major functions of providing opportunities for developing and implementing an accurate self-concept, teaching basic decision-making skills, providing vocational information and exploratory experiences, and helping students choose and locate appropriate curricula or occupational training (Matheny, 1969).

Contemporary Concepts of Industrial Arts: This term refers to a relatively new approach to industrial arts education based on four selected clusters of jobs--construction, transportation, communication, manufacturing--and which heavily emphasizes career exploration. This approach expands the scope of industrial arts experiences from "Woodworking, Metals, and Drafting" to a variety of exploratory industrial and occupational activities.

Exploratory: In industrial arts, "exploratory" is the term used to define the concept of a broad approach to the various curricular areas in order to provide the students with experiences which help to assess abilities, interests, and potentialities for preparation and employment as a contribution to educational and vocational guidance (Silvius and Bohn, 1961).

Industrial Arts: Industrial arts is an essential part of the total educational process. Its programs make valuable contributions to career decision making and assist all students from elementary through higher education to develop an understanding about the

technical, consumer, occupational, recreational, organizational, managerial, social, historical and cultural aspects of industry and technology (Fisher, 1979).

Industrial arts is also a significant part of vocational education. It helps students prepare for a living in an industrial society and provides a foundation for specific occupational and educational opportunities. It is not confined to the learning of a specific trade or skill as emphasized in vocational education, but educates boys and girls to become versatile and adaptable to the rapidly changing world (Tuttle, 1979).

Industrial Education: This is a generic term used in referring to vocational education, industrial arts, technical education, apprenticeship, and the offerings of private trade schools; it is concerned with all education which has been adapted to meet the needs of industrial technology (Silvius and Curry, 1965).

Occupational Education: For the purposes of this study, the term occupational education should be considered to mean the total program of career development activities including career orientation, practical arts, and industrial education for grades K-16.

Traditional Approach: This approach to industrial arts education implements an historical industrial arts program where students are taught to operate machines and equipment so that individually custom-built projects might be completed. The curriculum, which has experienced very little change throughout the last century, primarily focuses attention on woodworking, metals, and drafting.

Vocational Education: A generic term, vocational education embraces all the experiences an individual needs to prepare for some useful

occupation. Vocational education presupposes that the student is beyond the exploratory stage and that his/her special interests are primarily directed to occupational preparation (Giachino and Gallington, 1967).

CHAPTER II

REVIEW OF LITERATURE

Introduction

The contents within this chapter are related to the contemporary concepts of industrial arts to provide background information that establishes a need for this study. The review has been divided into three major areas: Professional Discussion at the National Level; Contemporary Curriculum Concepts--Elementary School Level, Junior High and Middle School Level, Senior and Mid-High Level; and the American Industrial Arts Student Association.

Professional Discussion at the National Level

Insight into past technological changes which have significantly influenced industrial arts education is offered by Clemmons (1975) who states:

> Prior to World War II, where there were more men and women and fewer machines, the industrial arts concept of developing skilled machine operators who would go into industry, take pride in their work, and turn out one quality part at a time was a good concept. But during the war, technologists and engineers placed their efforts into developing machinery which could produce more, quicker, better, and cheaper than individuals were able to with antiquated machinery. There was no stopping the rapid growth and expansion of technology in industry, and since the end of the war, technology has advanced so rapidly that it has become impossible to keep up with its growth (p. 37).

And yet industrial arts, the one educational discipline which has the responsibility of enabling students to understand the various

aspects of an industrial society, often to this day is limited to teaching students to operate machines and equipment to only turn out individual custom-built projects. As Hackett (1975) suggests, for this kind of curriculum in this day and age, perhaps industrial arts should return to the title of "Manual Training."

Rather than do this, Clemmons (1975) encourages educators to take a look at what educators should be doing to fulfill this task. Ironically, a definition of industrial arts which exemplifies an approach to confront this problem was given by Wilber in 1948 and has become the basis for most contemporary definitions. He defines industrial arts:

> . . . as those phases of general education which deal with industry--its organization, materials, occupations, processes and products--and with the problems resulting from the industrial and technological nature of society (Wilber, 1948, p. 7).

In order to fulfill the tasks of industrial arts education, numerous contemporary curricular concepts have been developed and implemented throughout the nation, in an attempt to combine the craftsmanship approach of the past with the new more modern directions concerning practical application. The innovative concepts of today's industrial arts programs reveal methods and materials pertaining to the technological changes of industry as well as areas such as career awareness, orientation, exploration, and experimentation of occupational choices (Sievert, 1975).

The expanded goals and objectives of the contemporary concepts of industrial arts education will enable students from grades K-16 to benefit from hands-on skills relating to industrial processes accompanied by information pertaining to the "behind the scenes" working conditions of various occupations (Mitchell, 1975). In addition, students

participating in an industrial arts program of this nature and magnitude will have a much broader base of experience in which to make career decisions concerning the direction they select to pursue in view of vocational education and higher education.

The long awaited arrival of a contemporary curriculum for industrial arts programs which will better serve the student in this age of rapidly changing technological advancements, increasing unemployment rates, spiraling inflation, and occupational misdirection, is welcomed with open arms (Seher, 1979). As revealed in the book, Career Education: A Guide for School Administrators (1977), racial unrest, violence, and unemployment of youth have their roots in inadequate education.

Contemporary Curricular Concepts

As emphasized in the brochure "Why Your Child Needs Industrial Arts" (1978):

> TECHNOLOGY, with all its splendor and complexities has established itself as an integral part of our American culture. The impelling integration of men and machines, or ideas, and of industrial procedures has been viewed as something creative, dynamic, threatening, perplexing, and revolutionary. The mysteries of industrial-scientific innovations that affect our daily way of life can be unfolded only through a study of industry and technology, both of which have roots in industrial arts (p. 1).

In the context aforestated, industrial arts provides systematic study and understanding of the industrialized and technological society in which people live at all of the educational systems including grades K-12. At each educational level, the subject is organized so as to serve the interests and needs of the student (A Guide for Industrial Arts Education in Oklahoma, 1979).

Elementary School Level

How new is this concept of implementing industrial arts into the elementary curriculum? To answer this question, the author will reflect on a statement from W.R. Miller (1979).

> In the first quarter of the 20th Century, two individuals, Frederick G. Bonser and Lois C. Mossman of Teacher's College, Columbia University, were recognized as leaders attempting to apply the social philosophy of John Dewey to the elementary school program through the 'industrial arts.' In their book, Industrial Arts for Elementary Schools (1923), they attempted to apply the content and methods of industrial arts to the elementary education program (p. 44).

So this approach of implementing industrial arts at the elementary level is definitely not a new concept, although how and by what process should it be incorporated in today's educational process should be considered.

Industrial arts curricula in the elementary grades should be articulated with the general education instructional units and become an integral part of the elementary program. Through the use of easy-to-form materials, role playing, working with others, studying parents' occupations, and other occupational awareness experiences, children have an opportunity to express themselves creatively in the construction of two and three dimensional objects (A Guide for Industrial Arts Education in Oklahoma, 1979). From such learning experiences and activities, children not only benefit from the study of occupations, but also from the opportunity for self-expression, self-awareness, and self-discovery. In addition, the child develops considerable insight into his/her own interests and talents.

Elementary industrial arts also fosters positive attitudes about work and exemplifies some of the rewards of continued employment.

Awareness of the world of work and the thousands of occupational opportunities available to the child are included in exploring the four career clusters (Sievert, 1975).

Throughout this awareness and orientation phase, the curricula enables a child to explore a large number of occupations and to fantasize occupational roles. This may vary from the child play-acting a fireman in kindergarten to a more refined salesperson role in the sixth grade.

Industrial arts in the elementary grades is generally considered the responsibility of the local classroom teacher. Although, to enable children to develop more realistic images of industrial occupations, the program may also be supplemented by other teachers, people from the community, and industrial representatives.

Since industrial arts is concerned with the techniques and processes that are a part of everyday life, activities should not be offered as an isolated and separate subject area. Industrial arts at this level should be thought of as one of the essential experiences children need in order to understand the industrial and technical elements of the industrial society in which we live. The most appropriate methods and techniques utilized to implement the contemporary curriculum concepts may be determined by the individual teacher in order to best meet the childrens' needs.

The major goals of elementary industrial arts, as stated in A Guide for Industrial Arts Education in Oklahoma (1979), are as follows:

(1) Support, enrich, and vitalize the academic curriculum and make general education experiences more meaningful to students.

(2) Develop cooperative attitudes and self-reliance through problem solving situations.

(3) Develop an understanding and appreciation for the dignity of honest work.

(4) Learn how to modify materials to meet students' needs by using basic tools and materials.

(5) Expose students, at an early age, to career opportunities in a variety of fields (p. 19).

The value of industrial arts activities in stimulating the child's learning of abstract academic content is recognized and acknowledged. The use of basic tools, materials, and processes have application in enriching subject matter in all areas of learning (Winburn, 1979).

Junior High and Middle School Level

Junior high and middle school industrial arts may well be one of the most beneficial and significant programs in which a student may enroll and participate at this level in his/her educational process. As reflected in A Guide for Industrial Arts Education in Oklahoma (1979):

> Industrial arts at the junior high or middle school level should be organized in content and activities so as to provide manipulative operations and experiments with tools, materials, processes, and products, directly related to the occupational clusters of construction, power and transportation, communications and media, and manufacturing (p. 20).

The curriculum provides for the development of attitudes, abilities, skills, interests, and the acquisition of information pertaining to professions, occupations, and career decision-making. Through experiences in the industrial arts laboratories, the student can develop knowledge of industrial design, quality of work, safe work habits, orderly procedures, and an understanding of common tools, machines, and devices (A Guide for Industrial Arts Education in Oklahoma, 1979). In addition, students through membership in the American Industrial Arts Student Association are provided the opportunity to develop leadership abilities

and responsibilities as well as learning how to conduct and participate in business meetings throughout his/her future endeavors.

The classroom and laboratory classes may be enhanced through means of formal communications, such as film strips, manuals, and television, and through the use of community resources. Furthermore, it is widely accepted that reliable occupational information is gained by on-the-job visitations, work experience, and guest speakers from industry.

The junior high and middle school contemporary concept of industrial arts includes industrial career orientation programs which enable students to identify and list known specific occupations. Since interests and concerns are of extreme significance in career exploration, the curriculum focuses on the developing nature of the student rather than the content and skills to be learned (Russell, 1978).

The occupational clusters approach provides the vehicle for broad exploration of the industries related to technical and trade and industrial education with the major goals being those of:

(1) Providing all students with the opportunity to explore industry and the world of work.

(2) Providing opportunities for attaining knowledge of industrial vocational and related pursuits.

(3) Improving the ability of the student with regard to choosing, buying, and using the goods and services of industry.

(4) Providing experiences for students to assist in evaluation of personal interests, abilities, values, and needs related to career goals (A Guide for Industrial Arts Education in Oklahoma, 1979, p. 20).

Industrial arts at the junior high and middle school also includes realistic learning opportunities as well as providing youth with the opportunities to work individually, and in groups in order to discover

their talents, interests, and abilities. This exploratory methodology constitutes a most significant aspect of the total industrial arts function.

Senior High School Level

Industrial arts curriculum at the senior high school level provides students continued exploration, indepth experimentation, and prespecialization experiences. It involves a study of industry and its technology and provides broad general background studies for some students and at the same time prepares others for entry into vocational and technical education programs (A Guide for Industrial Arts Education in Oklahoma, 1979).

This curriculum enables students through experience and self-examination to clarify and begin to verbalize their self-concepts (Sievert, 1975). The program also provides relevant experiences so students may find out what outlets exist in society for those who seek to play a given role. Thus, they can then modify their self-concepts to bring them in line with reality.

The goals of the contemporary industrial arts program at the senior high school level as reflected in A Guide for Industrial Arts Education (1979), are to:

(1) Provide for basic instruction to meet the needs of at least four types of students.

   a. Those desiring to explore further the vocational, cultural understandings and consumer concepts of American industry;

   b. Those planning to pursue advanced study and careers in such areas as applied and technical science;

   c. Those who will be entering the labor force before graduation or immediately thereafter; and

d. Those seeking instructional opportunities for developing leisure time activities.

(2) Provide practical situations pertaining to the industrial world of work and its competitive nature.

(3) Provide basic skills which are useful in a variety of occupations and for occupational adjustment (p. 21).

Innovative industrial arts programs at this level should compliment the vocational program in the comprehensive high school and area vocational-technical schools by including such topics as: (1) general life styles, (2) job entry requirements, (3) job availability, (4) educational requirements, (5) how to apply for a job, (6) how to keep a job, (7) advancement, (8) salaries and benefits, (9) labor relations, and (10) general occupational outlook (A Guide for Industrial Arts Education in Oklahoma, 1979, p. 19).

A method of instruction which has been utilized by several teachers of industrial arts in order to implement these contemporary curricular concepts is that of individualized instruction or the "multiple activities" approach. Instead of being restricted to a single traditional subject area, such as woodworking or metalworking, as experienced in many existing programs, the student participating in a contemporary industrial arts program has the opportunity to become familiar with several subject areas, materials, and processes of industry. This approach is dependent upon the students' responsibility, abilities, interests, strengths, and weaknesses. The student is then allowed to progress at his/her own pace through a learning program designed to meet his/her particular needs.

Individualized instruction provides students with the opportunity to explore a given area until the student has received a "taste" of the subject matter within or enables the student to pursue the subject

content to extremely advanced stages, through the use of records, slide-tape presentations, or filmstrips. In addition, this type of instruction is characterized by the freedom from constant supervision by the instructor unless requested by the student.

A major benefit of this approach is that if through exploration and experimentation in a future occupational field, such as photography for example, a student finds he/she does not desire to pursue this occupation any further, due to various incompatibilities, then a significant learning experience has emerged. In a situation such as this, it is possible that even though his/her dad and both sisters are photographers, this individual does not have the same interests.

In order to successfully operate a program of this nature, the teacher must possess an ability to assess the learning style of the student as well as the goals and appropriate learning sequence necessary for the individual to accomplish these goals. Only refinement of teaching skills is required.

American Industrial Arts Student Association

The American Industrial Arts Student Association, AIASA, is an idea whose time has come, and the industrial arts profession can help the idea reach its potential (Hirsch, 1979). In fact, Jeff Short (1979), National AIASA President, suggests that AIASA is an idea whose time is long overdue and will definitely fill a void in industrial arts programs relating to the development of personal attributes of students. AIASA (pronounced I-A-Sa) is the only national student organization for elementary, middle school, junior high, and senior high students enrolled in or having completed industrial arts courses. In addition, it is the

only student organization designed to develop the leadership and personal abilities of industrial arts students as they relate to our industrial-technical world (AIASA Brochure, 1979).

AIASA was officially recognized by the United States Office of Education (USOE) and the American Vocational Association (AVA) in 1978, thus allowing AIASA to join the other seven vocational student organizations consisting of Distributive Education Clubs of America (DECA), Future Farmers of America (FFA), Future Business Leaders of America (FBLA)-Phi Beta Lambda, Future Homemakers of America (FHA-HERO), Health Occupations Students of America (HOSA), Office Education Association (OEA), and Vocational Industrial Clubs of America (VICA) (USOE Policy for Vocational Student Organizations, 1979). Due to this recognition, AIASA is now entitled to federal and state support similar to that given to the other such organizations. In addition, AIASA has more recently accepted an invitation from the National Coordinating Council for Vocational Student Organizations to become the seventh member of the council (Applegate, 1979).

As AIASA has recently completed its second year (1978-79), the membership reflects a substantial increase over that of the first year, with a total of over 14,000 members representing over 500 chapters and 26 states (Applegate, 1979). But when viewed in comparison with the total number of students enrolled in industrial arts programs in the United States, which is around eight million, these numbers are not as significant.

Exactly what do these disproportionate totals imply? What is the reason for this conspicuous lack of interest and participation? What exactly are the benefits to organizing a chapter? For the solution to

problems such as these, a brief analysis of the present situation follows.

For the teacher, a club represents several things. Sure, it's more work, but clubs can provide assistance to the teacher in many ways. Students can assist in the management of routine activities such as helping with supplies, records, and even peer instruction. In addition, students can become involved with machine maintenance, tool panels, and helping with basic functions just to name a few (Baker, 1977).

As far as benefits to the student, the list is seemingly endless. Members of AIASA are provided the concept "opportunity," through leadership development and teamwork, the building of values and positive attitudes toward citizenship, and inspiring students to respect the dignity of labor and to appreciate craftsmanship. In addition, AIASA, at the state and national levels, offers 15 competitive events in which students may become involved, ranging from public speaking--prepared and extemporaneous and parlimentary procedure teams, to safety poster and chapter record book contests (Applegate, 1979).

As for why is there a lack of participation thus far concerning AIASA, Baker (1977), a leader in the industrial arts student clubs movement, suggests that industrial arts as a field with more than 60,000 programs is unfortunately characterized by salary oriented teachers who never heard of AIASA; learned teacher educators who are above the necessity of involvement and promotion; and the combination of the two types of educators holding apathic views on the situation. In addition, it was earlier stated that in order to sponsor a club it takes more work not time, thus implying that AIASA should be incorporated into

the daily industrial arts curriculum as an integral part of the total curriculum just as FFA, FHA, VICA and other clubs are in their respective disciplines.

When viewed in the total perspective of the future of industrial arts pertaining to the present shortage of industrial arts teachers (Miller, 1978), many educators look upon AIASA as being a last resort to create new enthusiasm and interests in the field of industrial arts. The influx of AIASA members into universities and colleges in our nation will hopefully provide a means of alleviating the industrial arts teacher shortage.

CHAPTER III

METHODOLOGY

Introduction

The major purpose of this study is to identify the opinions that industrial arts teachers have concerning curriculum content as reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma. This chapter will be devoted to the collection and analysis of data pertaining to the purpose and objectives of the study, and will be divided into the following sections: (1) Type of Research, (2) Population, (3) Instrumentation, (4) Data Collection, and (5) Treatment of the Data.

Type of Research

In regard to research design, Kerlinger (1973) has this to say:

> Research sets up the framework for 'adequate' tests of the relations among variables. Design tells us, in a sense, what observations to make, how to make them, and how to analyze the quantitative representations of the observations. Strictly speaking, design does not 'tell' us precisely what to do, but rather 'suggests' the directions of observation-making and analysis. An adequate design 'suggests,' for example, how many observations should be made, and which variables are active and which are attribute. We can then act to manipulate the active variables and to categorize the attribute variables. A design tells us what type of statistical analysis to use. Finally, an adequate design outlines possible conclusions to be drawn from the statistical analysis (p. 301).

The research design is what makes a study an effective and productive mechanism for evaluation of data without well structured design the resultant data may be without value.

Due to the purpose, objectives, and methods used for obtaining data, this study is categorized as being descriptive in nature. Survey research as utilized in the descriptive study is described by Compton and Hall (1972, p. 139) as "having the principal contribution of describing current practices or beliefs with the intent of making intelligent plans for improving conditions or processes in a particular local situation." If survey research is explanatory or analytical in nature, inferences can be drawn from the whole population regarding prevalence, distribution, and interrelations of variables (Myers, 1978). As stated by Kerlinger (1964, p. 422), "Survey research is probably most commonly used to obtain the opinions and attitudes of individuals and to study social structure."

Population

This study enlisted the participation of all full-time industrial arts teachers from all levels of the educational system, including elementary schools, middle and junior high schools, senior and mid-high schools, as well as the nine industrial arts degree granting public state universities in Oklahoma. At the public school level, teachers of industrial arts classes who taught less than four hours were classified as "part-time" teachers and not included within the population. In addition, due to the extremely low respondence of elementary school industrial arts teachers, the decision was made to omit them from the study to eliminate complications imposed by minimum numbers requirements of the statistical tests procedures used.

According to the State Supervisor of Industrial Arts, as of February, 1980, there were 515 industrial arts teachers in the public schools of Oklahoma and 45 industrial arts teacher educators from public state universities in Oklahoma whose major responsibility was that of teaching courses directly related to the preparation of industrial arts teachers. The names and addresses for these teachers and teacher educators were obtained from the Industrial Arts Division of the State Department of Vocational-Technical Education, Stillwater, Oklahoma. The entire identified population was utilized in the study.

Instrumentation

Due to the fact that the study population was on the statewide level and there existed time and travel constraints, a mailout opinionnaire (see Appendix A) was utilized as the delivery system for the collection of responses. The opinionnaire was developed by the researcher with assistance from the researcher's major adviser and the State Supervisor of Industrial Arts, with recommendations from the researcher's advisory committee, based upon the state plan, A Guide for Industrial Arts Education in Oklahoma.

The objective of the opinionnaire was to allow all respondents the opportunity to express their opinions about the state plan, in regard to the following categories: (1) General Beliefs about Industrial Arts; (2) Experiences With Industrial Arts Teaching; (3) Elementary School Level Curriculum; (4) Middle and Junior High School Level Curriculum; and (5) Senior and Mid-High Level Curriculum. The respondents were asked to classify their opinions as being in one of the following

response groups: (1) Strongly Agree (SA); (2) Agree (A); (3) Uncertain (?); (4) Disagree (D); or (5) Strongly Disagree (SD). An additional sixth category was contained enabling the respondents to select a first, second, and third choice from a list of 10 to 11 topics depending upon which of the four clusters was in question, as listed in the state plan. The choice was based according to the perceived importance of each topic.

The items within each of the six categories listed above were taken directly from the state plan, A Guide for Industrial Arts Education in Oklahoma, with the exception of the first and second categories, of which contain questions conceived as being pertinent to this study by the State Supervisor of Industrial Arts, the researcher's advisory committee chairman and the researcher.

The desired personal and professional information, necessary to form the basis for a comparative analysis of the responses, was placed on the first page of the instrument in order to allow the respondent to answer questions he/she was certain and felt more comfortable in answering (Gorman, 1979). Personal and professional information desired included: age, level of education, years of teaching industrial arts, type of program being taught, grade level presently teaching, years of industrial experience, and the teacher's opinion of their administrator's view about industrial arts programs. The request for names was withheld due to numerous findings that respondents will answer the questions more openly and more candidly if not identified. Only a code number was assigned to each opinionnaire to enable a follow-up postcard to be mailed out to the nonrespondents of the initial mailout. In addition, on the final page of the opinionnaire, a statement was made announcing the results of the study would be available for those

persons requesting them, in order to allow interested participants the opportunity to obtain the findings of the study.

The cover letter (see Appendix B) which accompanied the opinionnaire contained a statement of purpose for the study, a brief amount of information about the state plan, and a data by which the completed opinionnaire should be returned. Also included was an endorsement of the study by Mr. Harold J. Winburn, State Supervisor of Industrial Arts in Oklahoma, in hopes of increasing participation among respondents. And most importantly, in further attempts to increase the percentage of returned opinionnaires, a stamped, pre-addressed envelope (see Appendix C) was included within the mailout.

Data Collection

The aforementioned opinionnaire and cover letter were mailed to 515 industrial arts public school teachers and 45 teacher educators during the last week in February, 1980. It was decided based upon recommendations by the Director of Research at the State Department of Vocational-Technical Education, Stillwater, Oklahoma, that a deadline date be set to allow the respondents two weeks in which to respond and return the opinionnaire. It was at this point in time that the researcher had received approximately 73 percent of the eventual 44 percent total return rate of the opinionnaires (see Table I). Immediately following the initial deadline date, a follow-up postcard (see Appendix C) was mailed to all nonresponding participants, with again a two week deadline, reminding them to complete and return the opinionnaire. Although, due to the constant flow of opinionnaires being returned after the second set deadline, it was most beneficial

not to maintain strict enforcement of a deadline date, and in so doing, accepted opinionnaires until the time the data were keypunched onto computer cards, being approximately three weeks after the second deadline.

Treatment of the Data

The opinionnaire (Appendix A) was comprised of 31 questions dealing with beliefs, experiences, and elementary, middle and junior high, and senior and mid-high school curricula, as well as 12 questions allowing respondents to rank topics within each of the four job clusters of industrial arts according to the perceived importance of each. In order to form a basis for comparisons of responses, seven questions were included concerning personal and professional information.

Concerning the 31 questions dealing with various topics, each respondent was asked to circle one of the symbols preceding each of the questions. The symbols were stated as follows: SA for Strongly Agree, A for Agree, ? for Uncertain, D for Disagree, and SD for Strongly Disagree. The symbols were then converted to point values shown as follows: SA equaled 5 points, A equaled 4 points, ? equaled 3 points, D equaled 2 points, and SD equaled 1 point. The point values were then entered onto fortran coding forms, keypunched onto computer cards and entered into the computer utilizing the chi-square statistical treatment. The chi-square test was selected because the data consisted of frequencies falling into distinct categories.

According to Runyon and Haber (1969):

> . . . it [chi-square test] permits us to determine whether or not a significant difference exists between the observed number of cases falling into each category, and the expected number of cases based on the null hypothesis. In other

> words, it permits us to answer the question, how well does our observed distribution fit the theoretical distribution (p. 242).

The basic computation equation for chi-square is shown below:

$$X^2 = \frac{(\text{Observed Frequencies} - \text{Expected Frequencies})^2}{\text{Expected Frequencies}}$$

$$X^2 = \frac{(O - E)^2}{E}$$

The degrees of freedom for chi-square are computed as follows:

Degrees of Freedom = (Rows - 1)(Columns - 1) or

$df = (r - 1)(c - 1)$

A general requirement of the chi-square test is that frequencies in each cell should not be too small. Walker and Lev (1953) suggest the following

> . . . practical rules of thumb for testing significance by use of the tables of areas under Chi-Square:
>
> 1. If there are 2 or more degrees of freedom and expectations in each cell is more than 5, the Chi-Square table assures a good approximation of the exact probabilities.
>
> 2. If there are 2 or more degrees of freedom and roughly approximate probabilities are acceptable for the test of significance, an expectation of only 2 in a cell is sufficient.
>
> 3. If there are 2 or more degrees of freedom and the expectation in all the cells but one is 5 or more, then an expectation of only one in the remaining cell is sufficient to provide a fair approximation to the exact probabilities.
>
> 4. If the logic of the problem permits, combine some of the classes to increase the expectations in the cells when several cells have very small expectations (p. 107).

For this study, cells were collapsed where appropriate to meet at least one of the criteria listed above. However, in extreme cases in which to collapse the cells any further would distort or allow the meaning of the comparison to be lost, the Fisher's Exact Probability Test

was used. As Siegel (1956) suggests, the Fisher's Exact Probability Test is an extremely useful nonparametric technique for analyzing discrete data when the given responses are small in size. Cochran (1954), in his recommendations for alternative tests which may be used if the cell totals are too small to enable a proper and meaningful chi-square test, also suggests the use of the Fisher test.

The major concern in the statistical analysis of data in this study on questions 8 through 38 was to determine if there was agreement among those persons surveyed and, if not, whether the differences were significant. The degree of relationship was not considered to be a major factor.

Due to the nature of the ranking of topics in questions 39 through 50, it was not intended to utilize the chi-square or Fisher's Exact Probability statistical tests, thus based upon recommendation made by the Director of Research at the State Department of Vocational-Technical Education, a weighted ranking technique was used to establish a rank order of the topics within the four clusters of the industrial arts curriculum as reflected in the state plan. Each respondent was requested to select a first, second, and third choice from a list of 10 to 11 topics depending upon which of the clusters was in question. The assignment of points placed upon each choice was as follows: three points for first choice, two points for second choice, and one point for third choice. The final rank order was determined by compiling the total of all responses within each of the cluster areas (see Tablex X through XVI).

Still another method of data analysis utilized within the study involved a direct matching technique whereas the three types of industrial arts programs being taught were matched item for item with the

industrial arts teachers' opinions of their administrator's view about the type of program which should be taught within the school. The types of industrial arts programs listed as choices on the opinionnaire were (a) the cluster/exploration approach, (b) the traditional approach, and (c) a combination of both (a) and (b). The types of industrial arts programs as revealed on the opinionnaire concerning the administrator's view listed the same three choices with an additional topic stated as: (d) support is not directed to any particular area.

As programmed into the computer, when the "a" selection of the type of program was matched to the "a" selection of the administrator's opinion, the data was revealed as being in agreement. The same situation held true for the matching of "b" to "b" and "c" to "c." In the next matched group, the outcome data revealed a semi-agreement. Those matching were as follows: "a" to "c," "b" to "c," "c" to "a," and "c" to "b." The most important matched set, which revealed the "nonagreement" or "mismatched" programs, was programmed into the computer as "a" to "b" and "b" to "a." As stated before, the additional topic labeled "d" listed under the administrator's viewpoints, allowed teachers the opportunity to yet another way of explaining their administrator's opinion of industrial arts programs and was not utilized as a comparison variable. The results of this and other techniques of analyzing data are revealed in Chapter IV.

A final method of data analysis utilized within the study involved a presentation of the mean of the responses made by industrial arts public school teachers and industrial arts teacher educators (Table XVIII) on 31 items, numbered 8 through 38 on the opinionnaire. In order to provide a basis from which to compare these two groups, the

mean of all respondents was included within the presentation.

The individual mean scores were determined by first assigning point values to the item responses in the following manner, Strongly Agree (SA) equaled five points, Agree (A) equaled four points, Uncertain (?) equaled three points, Disagree (DA) equaled two points, and Strongly Disagree (SD) equaled one point. Next, the total number of responses in each of the five response categories was multiplied by the point value assigned to that response category. The sum of those five values was then divided by the total sum of all teachers responding to the item which determined the mean. Each mean score was rounded to the nearest hundredth. The higher the mean, the greater the agreement and the lower the mean, the lesser the agreement.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The purpose of this study is to ascertain the opinions of industrial arts teachers and teacher educators relative to the state plan, A Guide for Industrial Arts Education in Oklahoma. This chapter is devoted to the presentation and analysis of data relating to the seven hypotheses, as well as some additional types of information desired, as stated in Chapter I. The presentation and analysis is organized as follows: (1) Response Data, (2) Analysis of Chi-Square Test on Questions 8-38 Relating to Personal and Professional Characteristics, (3) Analysis of Ranked Topics on Questions 39-50 Relating to Personal and Professional Characteristics, (4) Analysis of Matched Comparisons Concerning the Type of Industrial Arts Program Being Taught, and (5) Mean Comparison of Opinions About Industrial Arts Between Industrial Arts Teachers and Teacher Educators.

Response Data

An opinionnaire (see Appendix A) based upon the state plan, A Guide for Industrial Arts Education in Oklahoma, with an appropriate cover letter (see Appendix B) were mailed to 560 industrial arts teachers in Oklahoma during the final week in February, 1980. After two weeks, a follow-up postcard was mailed to the nonrespondents and after another

five weeks, the returns were considered complete. No further attempt was made to collect the opinionnaires.

At the conclusion of the data collection 249 responses had been tallied. Of those, 244, or 44 percent of the total surveyed, were usable responses with five unusable responses being attributed to changes in the teacher's occupation and insufficient number of responses from elementary industrial arts teachers and industrial arts administrators in order to conduct valid statistical tests. Table I presents a frequency distribution and percentage breakdown of the returned responses of the industrial arts teachers at the public school level as well as the industrial arts teacher educators.

TABLE I

OPINIONNAIRE RESPONSES

Group	Total Population	Number Responses	Percentage Responses Within Group	Total Percentage of all Responses
IA Teachers at the Public Schools	515	216	42*	87*
IA Teacher Educators	45	28	62*	11*
Unusable Responses				2*
Total	560	244	44*	100

*rounded off to the nearest hundredth

On the initial page of the opinionnaire, seven questions were listed requesting information pertaining to personal and professional characteristics of each respondent. In order for the reader to view this study in total perspective, the following table is presented revealing the frequency distribution for the responses within the categories of age, level of education, years of teaching industrial arts, type of program being taught, grade level presently teaching, years of industrial experience, and the teacher's opinion of their administrator's view about industrial arts programs (Table II).

Analysis of Chi-Square Tests on Question 8 Through 38 Relating to Personal and Professional Characteristics

Based on the rationale stated in Chapter III, the chi-square test was utilized on the data obtained from items 8 through 38 on the opinionnaire. Cells were collapsed where appropriate to meet at least one of the criteria listed (see p. 31). Collapsing began by first combining the Strongly Disagree (SD) with Disagree (D) columns and the Strongly Agree (SA) with Agree (A) columns. If further collapsing was required, the researcher along with the Director of Research from the State Department of Vocational-Technical Education, Stillwater, Oklahoma, logically combined the classes within each of the categories of personal and professional characteristics being studied in order to obtain the most valid information possible. A final method of callapsing was to combine the Strongly Disagree (SD), Disagree (D), and Uncertain (?) categories together and the Agree (A) and Strongly Agree (SA) categories together forming only two major headings for comparison.

TABLE II

FREQUENCY DISTRIBUTIONS OF RESPONSES TO PERSONAL AND PROFESSIONAL CHARACTERISTICS

	Years of Age (Question 1)				
	21-30	31-40	41-50	Over 50	Total
Respondents	40	91	61	50	242

	Attained Level of Education (Question 2)				
	Bachelors	Masters	Masters + 30 hrs.	Doctorate	Total
Respondents	94	87	42	19	242

	Years Having Taught Industrial Arts (Question 3)				
	1-3	4-8	9-15	Over 15	Total
Respondents	35	64	62	81	242

	Type of Program Being Taught (Question 4)			
	Cluster/ Exploratory (C/E)	Traditional (T)	Combination of (C/E) & (T)	Total
Respondents	14	119	109	242

	Levels of Teaching Industrial Arts (Question 5)				
	Jr. High/ Middle	Senior/ Mid-High	Combination of Both	University	Total
Respondents	59	107	48	28	242

	Industrial Experience (Question 6)				
	Less than 1 yr.	1-2 yrs.	3-5 yrs.	Over 5 yrs.	Total
Respondents	30	41	70	99	240

	Teacher's Opinion of Administrator's View of Industrial Arts Program Within School (Question 7)				
	Cluster Exploratory (C/E)	Traditional (T)	Comb. of (C/E) & (T)	Support not directed to any area	Total
Respondents	15	87	67	73	242

NOTE: These responses include the industrial arts teachers at the public school and university levels.

In extreme cases in which to collapse any further would distort or totally change the meaning of the comparison, the Fisher's exact probability test was used. The .05 level was utilized in determining the significance of all statistical results obtained by both the chi-square and Fisher's exact probability tests.

The format employed for further presentation and analysis of the data consists of a restatement of each hypothesis followed by a brief discussion of those items which relate to that hypothesis. In addition, a tabulated presentation is made identifying questions eight through 38 in a paraphrased form and listed with the appropriate computed chi-square values or Fisher's exact probability values when necessary, as well as the determination of significant differences among the participating groups.

In Tables III through IX, the data collected are presented as follows: Column one, headed "Item," lists the actual item number as it was stated on the opinionnaire. Column two, which was headed "Topic," gives the paraphrased account of items eight through 38 as stated on the opinionnaire. The third column reveals the value derived as a result of placing the response data into the chi-square formula. The column headed "df" shows the degrees of freedom for each set of comparisons. The final column, headed "Probability," indicates the computed probability value which was compared to the .05 level of significance. An asterisk, (*), placed to the right of the computed probability value, designates those values which were statistically significant. An additional symbol which occasionally appears to the right of the computed probability value was a plus (+) which designates those instances where the Fisher's exact probability had to be computed.

Hypothesis One: There is no significant difference between the opinions of industrial arts teachers compared to their years of age, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

As revealed in Table III, the chi-square test revealed a significant difference on only one item within the 31 items listed. The item, number 26, was worded, "Industrial arts at the elementary level should expose students, at an early age, to career opportunities in a variety of fields." The degrees of freedom for this item were six. The cells were collapsed in order to increase the expected frequency of the cells which had very few responses and would not meet the chi-square requirements as stated in Chapter III, to read: Strongly Agree (SA) or Agree (A), Uncertain (?), and Strongly Disagree (SD) or Disagree (D). The column headings identifying age categories (see Table II) were unchanged. It was not necessary to use the Fisher's exact probability test on this set of data.

Due to the fact that the chi-square test revealed a significant difference to exist on one item of the 31 tested concerning the age levels of industrial arts teachers versus their opinions, the researcher rejects the null hypothesis.

Hypothesis Two: There is no significant difference between the opinions of industrial arts teachers compared to their attained level of education, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

As indicated in Table IV, the chi-square test revealed significant differences on two items within the 31 items tested. Those items, numbered 12 and 15, were worded as follows: item 12, "Every industrial

TABLE III

CHI-SQUARE COMPARISON OF OPINIONS ABOUT INDUSTRIAL ARTS AMONG ALL RESPONDENTS ACCORDING TO THEIR YEARS OF AGE

Item	Topic	X^2	df	Probability
	General Opinions			
8.	I.A. helps make career decisions	4.27	2	.1183
9.	Teachers should have ind. exp.	11.55	6	.0727
10.	Course on organizing clubs	2.72	6	.8431
11.	Curriculum guides for new teachers	.004	1	.9826
12.	All progs. need advisory councils	7.63	6	.2664
13.	AIASA-USOE's recognition is good	.0	6	1.0000
14.	AIASA--integral part of curriculum	8.62	6	.1960
15.	Clusters at junior high	11.87	6	.0649
16.	Beg. teachers have adequate trng.	6.43	6	.3764
17.	Parlimentary procedures part of IA	.75	6	.9933
	General Experiences			
18.	More info.--Cluster/Exploration	2.81	2	.2454
19.	Workshops--Cluster/Exploration	2.007	2	.3665
20.	State plan for teaching model	6.26	6	.3920
21.	Sponsor a club	3.58	6	.7321
	Elementary Curriculum			
22.	Support general education obj.	.0004	1	.9828
23.	Provides realistic experiences	.0	1	1.0000
24.	Construct dimensional objects	.36	2	.8454
25.	Responsibilities of elem. teacher	4.14	6	.6578
26.	Expose to career opportunities	13.39	6	.0373*
	Junior/Middle Curriculum			
27.	Explore industry and world of work	1.23	2	.5400
28.	Indus., voc., and other pursuits	.02	1	.8961
29.	Provides intro.--goods and services	.003	1	.9570
20.	Opportunity for AIASA	6.20	6	.4012
	Senior/Mid-High Curriculum			
31.	Provides cult. and cons. experience	.27	1	.6004
32.	Pursue advanced study	.006	1	.9371
33.	Provide labor force instruction	3.36	2	.1860
34.	Provide leisure time instruction	.36	1	.5485
35.	Provide practical situations	1.10	1	.3910
36.	Provide basic skills for jobs	1.86	1	.1730
37.	Compliment vocational programs	.06	2	.9723
38.	Opportunity for AIASA	.66	2	.7204

*Significant at the .05 level
+Calculated by Fisher's Exact Probability Procedure

TABLE IV

CHI-SQAURE COMPARISON OF OPINIONS ABOUT INDUSTRIAL ARTS AMONG ALL RESPONDENTS ACCORDING TO THEIR ATTAINED LEVEL OF EDUCATION

Item	Topic	X^2	df	Probability
	General Opinions			
8.	I.A. helps make career decisions	3.56	2	.1689
9.	Teachers should have ind. exp.	.92	4	.9210
10.	Course on organizing clubs	1.47	4	.8311
11.	Curriculum guides for new teachers	.05	1	.8195
12.	All progs. need advisory councils	11.13	4	.0251*
13.	AIASA-USOE's recognition is good	.001	1	.9750
14.	AIASA--integral part of curriculum	3.46	4	.4833
15.	Clusters at junior high	17.59	4	.0015*
16.	Beg. teachers have adequate trng.	.94	4	.9191
17.	Parlimentary procedure as part of IA	5.73	4	.2205
	General Experiences			
18.	More info.--Cluster/Exploration	1.07	2	.5856
19.	Workshops--Cluster/Exploration	.76	2	.6838
20.	State plan for teaching model	7.53	4	.1103
21.	Sponsor a club	6.38	4	.1725
	Elementary Curriculum			
22.	Support general educ. obj.			p> .1670+
23.	Provide realistic experiences			p> .2181+
24.	Construct dimensional objects	4.08	2	.1302
25.	Responsibility of elem. teacher	3.45	4	.4859
26.	Expose to career opportunities	2.46	4	.6517
	Junior/Middle Curriculum			
27.	Explore ind. and world of work	8.77	4	.0672
28.	Ind., voc., and other pursuits	.32	1	.5733
29.	Provide intro.--goods and services	.12	1	.7299
30.	Opportunity for AIASA	1.38	4	.8470
	Senior/Mid-High Curriculum			
31.	Provide cult. and cons. experiences	2.03	1	.1539
32.	Pursue advanced study	1.11	1	.2914
33.	Provide labor force instruction	.06	2	.9720
34.	Provide leisure time instruction	0.0	1	1.0000
35.	Provide practical situations	.001	1	.9808
36.	Provide basic skills for jobs	1.10	1	.2947
37.	Compliment vocational programs	3.87	2	.1443
38.	Opportunity for AIASA	4.78	4	.3107

*Significant at the .05 level
+Calculated by Fisher's Exact Probability Technique

arts program should have an advisory council," and item 15, "Industrial arts programs at the junior high or middle school level should be centered around the job clusters of construction, manufacturing, communications, and transportation." The degrees of freedom for each of these items were four. The cells were collapsed for the response headings in the same manner for both items, and made to read: Strongly Agree (SA) or Agree (A), Uncertain (?), and Strongly Disagree (SD) or Disagree (D). It was necessary and logical to collapse the headings for items 12 and 15 into three categories as stated in the following manner: (1) Bachelors, (2) Masters, and (3) Masters Plus 30 Hours and Doctorate

Due to the low numbers of responses which appeared in some of the cells after the above collapsing was completed, it was necessary to employ the Fisher's exact probability test on data from two other items. The items, numbers 22 and 23, were found to reveal no significant differences.

As a result of the significant differences found on two items within the 31 items tested relative to the levels of attained education by industrial arts teachers, the research rejects the null hypothesis.

Hypothesis Three: There is no significant difference between the opinions of industrial arts teachers compared to their number of years having taught industrial arts, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

As shown in Table V, the chi-square test revealed significant differences on two items within the 31 items tested. Those items, numbered 20 and 27, were worded as follows: item 20, "I feel industrial arts teachers should use the state plan for industrial arts as a model for

TABLE V

CHI-SQUARE COMPARISON OF OPINIONS ABOUT INDUSTRIAL ARTS AMONG ALL RESPONDENTS ACCORDING TO THEIR NUMBER OF YEARS HAVING TAUGHT INDUSTRIAL ARTS

Item	Topic	X^2	df	Probability
	General Opinions			
8.	I.A. helps make career decisions	4.27	2	.1183
9.	Teachers should have ind. exp.	8.45	6	.2059
10.	Course on organizing clubs	1.73	6	.9432
11.	Curr. guides for new teachers	.15	1	.6979
12.	All progs. need advisory councils	4.75	6	.5757
13.	AIASA-USOE's recognition is good	0.0	1	1.0000
14.	AIASA--integral part of curr.	2.90	6	.8213
15.	Clusters at junior high	10.58	6	.1022
16.	Beg. teachers have adequate trng.	3.75	6	.7101
17.	Parlimentary proced. as part of IA	6.07	6	.4150
	General Experiences			
18.	More info.--Cluster/Exploration	3.46	2	.1769
19.	Workshops--Cluster/Exploration	5.03	2	.0809
20.	State plan for teaching model	16.46	6	.0115*
21.	Sponsor a club	11.16	6	.0834
	Elementary Curriculum			
22.	Support general educ. obj.			p > .23
23.	Provide realistic experiences			p > .23
24.	Construct dimensional objects	1.12	2	.5700
25.	Responsibility of elem. teacher	9.37	6	.1539
26.	Expose to career opportunities	5.65	6	.4632
	Junior/Middle Curriculum			
27.	Explore ind. and world of work	6.79	2	.0335*
28.	Ind., voc., and other pursuits	0.0	1	1.0000
29.	Provide intro.--goods and services	0.0	1	1.0000
30.	Opportunity for AIASA	4.98	6	.5467
	Senior/Mid-High Curriculum			
31.	Provide cult. and cons. exp.	.04	1	.8437
32.	Pursue advanced study	0.0	1	1.0000
33.	Provide labor force instruction	2.47	2	.2909
34.	Provide leisure time instruction	0.0	1	1.0000
35.	Provide practical situations	0.0	1	1.0000
36.	Provide basic skills for jobs	.87	1	.3518
37.	Compliment vocational programs	1.09	2	.5794
38.	Opportunity for AIASA	1.54	2	.4621

*Significant at the .05 level
+Calculated by Fisher's Exact Probability Technique

teaching industrial arts in Oklahoma," and item 27, "Industrial arts at the middle or junior high level should provide all students with the opportunity to explore industry and the world of work." The degrees of freedom for each of the items differed considerably. The following is an analysis of each of the two items of significance.

Concerning item 20, the degrees of freedom totaled six. The degrees of freedom were determined by collapsing the response headings to read: Strongly Agree (SA) or Agree (A), Uncertain (?), and Strongly Disagree (SD) or Disagree (D). The column headings identifying the number of years having taught industrial arts (see Table II) were unchanged.

Concerning item 27, the degrees of freedom totaled two. The collapsing of the response headings was exactly the same as in item 20 above, although the collapsing of the column headings was somewhat extreme leaving only two columns as the following reveals: 9-15 years and over 50 years. It was not necessary to employ the Fisher's exact probability test on any of the data concerned with this hypothesis.

Due to the fact that the chi-square test revealed a significant difference to exist on two items of the 31 tested, concerning the number of years having taught industrial arts by industrial arts teachers compared to their respective opinions, the researcher rejects the null hypothesis.

Hypothesis Four: There is no significant difference between the opinions of industrial arts teachers compared to the type of program being taught, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

As indicated in Table VI, the chi-square test revealed no significant differences between the various types of programs being taught by industrial arts teachers compared to their respective opinions. The degrees of freedom were either two or one depending upon the item, and never exceeded two, revealing that most every attempt was made to collapse the cells to the point of revealing a significant difference. Although in 10 items the degrees of freedom equaled one, indicating the Fisher's exact probability test may be utilized as a supplemental test with chi-square, it was not necessary in which to employ.

Due to the fact that the chi-square test revealed no significant difference to exist on any of the 31 items tested concerning the type of program being taught by the industrial arts teacher compared to their respective opinions, the researcher failed to reject the null hypothesis.

Hypothesis Five: There is no significant difference between the opinions of industrial arts teachers at the various levels of teaching industrial arts, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

As shown in Table VII, the chi-square tests revealed significant differences on eight items within the 31 items tested. Those items, numbered 10, 15, 20, 21, 26, 32, 35, and 38, were worded as follows: item 10, "Industrial arts programs at the university level should provide the study of how to organize and manage student clubs;" item 15, "Industrial arts programs at the junior high or middle school level should be centered around the job clusters of construction, manufacturing, communications, and transportation;" item 20, "I feel industrial arts teachers should use the state plan for industrial arts as a model

TABLE VI

CHI-SQUARE COMPARISON OF OPINIONS ABOUT INDUSTRIAL ARTS AMONG ALL RESPONDENTS ACCORDING TO THEIR PERCEPTION OF THE TYPE OF PROGRAMS THEY TEACH

Item	Topic	X^2	df	Probability
	General Opinions			
8.	I.A. helps make career decisions	2.03	2	.3625
9.	Teachers should have ind. exp.	.84	2	.6560
10.	Course on organizing clubs	.17	2	.9175
11.	Curr. guides for new teachers	.49	2	.7846
12.	All progs. need advisory councils	3.96	2	.1378
13.	AIASA-USOE's recognition is good	.03	1	.8592
14.	AIASA--integral part of curriculum	.05	2	.9733
15.	Clusters at junior high	2.02	2	.3651
16.	Beg. teachers have adequate trng.	1.66	2	.4361
17.	Parlimentary procedure as part of IA	3.13	2	.2090
	General Experiences			
18.	More info.--Cluster/Exploration	.37	2	.8301
19.	Workshops--Cluster/Exploration	.86	2	.6492
20.	State plan for teaching model	1.71	2	.4240
21.	Sponsor a club	.85	2	.6536
	Elementary Curriculum			
22.	Support general educ. obj.	.08	1	.7670
23.	Provide realistic experiences	.79	1	.3740
24.	Construct dimensional objects	3.77	2	.1515
25.	Responsibility of elem. teacher	1.54	2	.4635
26.	Expose to career opportunities	1.38	2	.8390
	Junior/Middle Curriculum			
27.	Explore ind. and world of work	2.24	2	.3259
28.	Ind., voc., and other pursuits	3.36	1	.0667
29.	Provide intro.--goods and services	.04	1	.8390
30.	Opportunity for AIASA	1.28	2	.5281
	Senior/Mid-High Curriculum			
31.	Provide cult. and cons. exp.	.36	1	.5489
32.	Pursue advanced study	.29	1	.5919
33.	Provide labor force instruction	2.25	2	.3239
34.	Provide leisure time instruction	.39	1	.5331
35.	Provide practical situations	.22	1	.6391
36.	Provide basic skills for jobs	0.0	1	1.0000
37.	Compliment vocational programs	.25	2	.8810
38.	Opportunity for AIASA	.74	2	.6920

*Significant at the .05 level
+Calculated by Fisher's Exact Probability Technique

TABLE VII

CHI-SQUARE COMPARISON OF OPINIONS ABOUT INDUSTRIAL ARTS AMONG ALL RESPONDENTS ACCORDING TO THEIR LEVELS OF TEACHING INDUSTRIAL ARTS

Item	Topic	X^2	df	Probability
	General Opinions			
8.	I.A. helps make career decisions	4.75	4	.3144
9.	Teachers should have ind. exp.	12.54	6	.0509
10.	Course on organizing clubs	13.95	6	.0302*
11.	Curr. guides for new teachers	2.76	2	.2512
12.	All progs. need advisory councils	6.28	6	.3930
13.	AIASA-USOE's recognition is good	1.97	2	.3739
14.	AIASA--integral part of curr.	9.14	6	.1657
15.	Clusters at junior high	35.36	6	0.0000*
16.	Beg. teachers have adequate trng.	2.80	6	.8333
17.	Parlimentary procedure as part of IA	1.63	6	.9500
	General Experiences			
18.	More info.--Cluster/Exploration	.69	4	.7092
19.	Workshops--Cluster/Exploration	5.10	4	.2774
20.	State plan for teaching model	16.80	6	.0101*
21.	Sponsor a club	16.60	6	.0109*
	Elementary Curriculum			
22.	Support general educ. obj.	2.06	2	.3576
23.	Provide realistic experiences	.17	2	.9177
24.	Construct dimensional objects	6.05	6	.4178
25.	Responsibility of elem. teacher	3.52	6	.7419
26.	Expose to career opportunities	12.83	6	.0459*
	Junior/Middle Curriculum			
27.	Explore ind. and world of work	5.92	6	.1154
28.	Ind., voc., and other pursuits	4.16	2	.1245
29.	Provide intro.--goods and services	4.44	2	.1085
30.	Opportunity for AIASA	8.57	6	.1992
	Senior/Mid-High Curriculum			
31.	Provide cult. and cons. exp.	2.64	2	.2673
32.	Pursue advanced study	9.19	2	.0101*
33.	Provide labor force instruction	1.14	6	.7686
34.	Provide leisure time instruction	.01	2	.9911
35.	Provide practical situations	6.51	2	.0336*
36.	Provide basic skills for jobs	-	-	- #
37.	Compliment vocational programs	3.00	6	.8085
38.	Opportunity for AIASA	15.02	4	.0047*

*Significant at the .05 level
+Calculated by Fisher's Exact Probability Technique
#Would have to collapse further in which case would be same as data in the type of program category

for teaching industrial arts in Oklahoma;" item 21, "I feel industrial arts teachers should sponsor an industrial arts club;" item 26, "Industrial arts at the elementary level should expose students, at an early age, to career opportunities in a variety of fields;" item 32, "Industrial arts at the senior high level should provide basic instruction to students planning to pursue advanced study and careers in such areas as applied and technical science;" item 35, "Industrial arts at the senior high level should provide practical situations pertaining to the industrial world of work and its competitive nature;" and item 38, "Industrial arts at the senior high level should provide students with the opportunity to participate in the American Industrial Arts Student Association (AIASA)."

The degrees of freedom for eight items found to be significant varied according to the amount of collapsing which had to be employed in order to conduct legitimate chi-square tests. Of the eight items, three groups emerged having like degrees of freedom. Group one contained five items which had six degrees of freedom each, group two contained one item which had four degrees of freedom, and group three contained two items which had two degrees of freedom each. The following is an analysis of the three groups concerning the collapsing of the cells within each.

Concerning group one, containing items 10, 15, 20, 21, and 26, the collapsing of the cells involved combining the response headings to read: Strongly Agree (SA) or Agree (A), Uncertain (?), and Strongly Disagree (SD) or Disagree (D). The column headings identifying the various grade levels of teaching industrial arts (see Table II) were unchanged. The degrees of freedom for the above items totaled six.

Concerning group two, containing item 38, the collapsing of the cells involved combining the response headings in the exact same manner as listed for group one, although the collapsing of the column headings was necessary. The column headings were collapsed as follows: column one, Junior High or Middle School (B); column two, High or Mid-High School (C) or a combination of both (B) and (C); and column three, University. The degrees of freedom for the above item totaled four.

Concerning group three, containing items 32 and 35, the collapsing of cells involved combining the response headings to read as follows: Strongly Agree (SA) or Agree (A) and Strongly Disagree (SD), Disagree (D), or Uncertain (?). The column headings identifying the various grade levels of teaching industrial arts were collapsed in the exact same manner as those listed in group two. The degrees of freedom for the above items totaled two. In addition, it was not necessary to employ the Fisher's exact probability test on any of the data concerned with this hypothesis.

And finally this particular set of data from Table VII revealed a situation uncommon to any of the data discussed. When collapsing the cells for item 36, worded "Industrial arts at the senior high level should provide basic skills which are useful in a variety of occupations and for occupational adjustments," it was not possible, due to the extremely low responses in two of the categories, to utilize the chi-square or the Fisher's exact probability test. The rationale was based upon the fact that any further collapsing of the cells would form the exact same comparison as is revealed in the Type of Program comparison Table VI, thus providing a duplication of tests.

Due to the fact that the chi-square tests revealed a significant difference to exist on eight items of the 31 tested, concerning the various grade levels of teaching industrial arts compared to their opinions, the researcher rejected the null hypothesis.

Hypothesis Six: There is no significant difference between the opinions of industrial arts teachers compared to their years of industrial experience, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

An examination of Table VIII reveals significant differences on three items within the 31 items tested. Those items numbered 9, 12, and 32, were worded as follows: item 9, "Industrial arts teachers should have industrial experience;" item 12, "Every industrial arts program should have an advisory council;" and item 32, "Industrial arts at the senior high level should provide basic instruction to students planning to pursue advanced study and careers in such areas as applied and technical science." The degrees of freedom for items 9 and 12 were found to be four, while item 32 had only two degrees of freedom.

Concerning items 9 and 12, the degrees of freedom were determined by collapsing the response headings to read: Strongly Agree (SA) or Agree (A), Uncertain (?), and Strongly Disagree (SD) or Disagree (D). The column headings identifying the number of years of industrial experience were collapsed to read: column one, Less Than 1 Year or 1-2 Years; column two, 3-5 Years; and column three, Over 5 Years.

Concerning item 32, the degrees of freedom were determined by collapsing the response headings to read: Strongly Agree (SA) or Agree (A), and Uncertain (?), Strongly Disagree (SD) or Disagree (D). The column

TABLE VIII

CHI-SQUARE COMPARISON OF OPINIONS ABOUT INDUSTRIAL ARTS AMONG ALL RESPONDENTS ACCORDING TO THEIR YEARS OF INDUSTRIAL EXPERIENCE

Item	Topic	X^2	df	Probability
	General Opinions			
8.	I.A. helps make career decisions	4.04	2	.1325
9.	Teachers should have ind. exp.	30.88	4	p < .0001*
10.	Course on organizing clubs	8.35	4	.0793
11.	Curr. guides for new teachers	.20	1	.6576
12.	All progs. need advisory councils	10.37	4	.0347*
13.	AIASA-USOE's recognition is good	0.0	1	1.0000
14.	AIASA--integral part of curr.	1.71	4	.7889
15.	Clusters at junior high	6.84	4	.1447
16.	Beg. teachers have adequate trng.	4.84	4	.3043
17.	Parlimentary procedures as part of IA	4.88	4	.2998
	General Experiences			
18.	More info.--Cluster/Exploration	2.69	2	.2608
19.	Workshops--Cluster/Exploration	4.66	2	.0972
20.	State plan for teaching model	1.50	4	.8272
21.	Sponsor a club	1.67	4	.7965
	Elementary Curriculum			
22.	Support general educ. obj.	-	-	p > .2135+
23.	Provide realistic experiences	-	-	p > .3497+
24.	Construct dimensional objects	2.77	2	.2500
25.	Responsibility of elem. teacher	2.56	4	.6341
26.	Expose to career opportunities	4.24	4	.3747
	Junior/Middle Curriculum			
27.	Explore ind. and world of work	2.52	2	.2833
28.	Ind., voc., and other pursuits	.14	1	.7089
29.	Provide intro.--goods and services	.45	1	.5042
30.	Opportunity for AIASA	3.85	4	.4260
	Senior/Mid-High Curriculum			
31.	Provide cult. and cons. exp.	0.0	1	1.0000
32.	Pursue advanced study	8.73	2	.0127*
33.	Provide labor force instruction	1.78	2	.4116
34.	Provide leisure time instruction	6.78	4	.1480
35.	Provide practical situations	.47	1	.4933
36.	Provide basic skills for jobs	-	-	p > .2543+
37.	Compliment vocational programs	.42	2	.8084
38.	Opportunity for AIASA	1.14	2	.5650

*Significant at the .05 level
+Calculated by Fisher's Exact Probability Technique

headings remained exactly the same as those for items 9 and 12.

There did exist, concerning three additional items, the need to compute the Fisher's exact probability test. Although in each test, there was no significant differences found to exist.

Due to the fact that the chi-square test revealed a significant difference to exist on three items of the 31 tested, concerning the number of years of industrial experience compared to their respective opinion, the researcher rejects the null hypothesis.

Hypothesis Seven: There is no significant difference between the opinions of industrial arts public school teachers and those of industrial arts teacher educators, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

An examination of Table IX reveals the most significant differences occurring between any group of respondents thus far studied. The number of significant differences totaled nine within the 31 items tested. It was necessary on this set of response data to employ the Fisher's exact probability test, in addition to the chi-square test, on 17 of the items. Of the nine items found to be significant, seven were determined by utilizing the chi-square test and two determined by the use of the Fisher's exact probability test. Those items found significant, numbered 10, 14, 15, 20, 21, 27, 28, 30, and 38, were worded as follows: item 10, "Industrial arts programs at the university level should provide the study of how to organize and manage student clubs;" item 14, "Student organizations (AIASA) should be an integral part of the industrial arts curriculum;" item 15, "Industrial arts programs at the junior high or middle school level should be centered around the job

TABLE IX

CHI-SQUARE COMPARISON OF OPINIONS ABOUT INDUSTRIAL ARTS BETWEEN INDUSTRIAL ARTS TEACHERS AND TEACHER EDUCATORS

Item	Topic	X^2	df	Probability
	General Opinions			
8.	I.A. helps make career decisions	-	-	.0650+
9.	Teachers should have ind. exp.	2.20	2	.1380
10.	Course on organizing clubs	6.20	2	.0450*
11.	Curr. guides for new teachers	-	-	.5720+
12.	All progs. need advisory councils	4.39	2	.1112
13.	AIASA-USOE's recognition is good	-	-	.4725+
14.	AIASA--integral part of curr.	6.85	2	.0325*
15.	Clusters at junior high	21.25	2	p< .0001*
16.	Beg. teachers have adequate trng.	1.34	2	.5119
17.	Parlimentary procedure as part of IA	.46	2	.7937
	General Experiences			
18.	More info.--Cluster/Exploration	.89	2	.3100
19.	Workshops--Cluster/Exploration	-	-	.0114+
20.	State plan for teaching model	8.27	2	.0160*
21.	Sponsor a club	12.72	2	.0017*
	Elementary Curriculum			
22.	Support general educ. obj.	-	-	.2255+
23.	Provide realistic experiences	-	-	p> .3786+
24.	Construct dimensional objects	-	-	p> .1042+
25.	Responsibility of elem. teacher	.62	2	.7345
26.	Expose to career opportunities	3.39	1	.0655
	Junior/Middle Curriculum			
27.	Explore ind. and world of work	-	-	.0276+*
28.	Ind., voc., and other pursuits	-	-	.0376+*
29.	Provide intro.--goods and services	-	-	.0690+
30.	Opportunity for AIASA	7.28	2	.0262*
	Senior/Mid-High Curriculum			
31.	Provide cult. and cons. exp.	-	-	.1849+
32.	Pursue advanced study	-	-	.0900+
33.	Provide labor force instruction	-	-	p> .1290+
34.	Provide leisure time instruction	-	-	p> .2969+
35.	Provide practical situations	-	-	p> .2078+
36.	Provide basic skills for jobs	-	-	p> .3255+
37.	Compliment vocational programs	-	-	p> .2230+
38.	Opportunity for AIASA	9.83	2	.0073*

*Significant at the .05 level
+Calculated by Fisher's Exact Probability Technique

clusters of construction, manufacturing, communications, and transportation;" item 20, "I feel industrial arts teachers should use the state plan for industrial arts as a model for teaching industrial arts in Oklahoma;" item 21, "I feel industrial arts teachers should sponsor an industrial arts club;" item 27, "Industrial arts at the middle or junior high level should provide all students with the opportunity to explore industry and the world of work;" item 28, "Industrial arts at the middle or junior high level should provide opportunities for attaining knowledge of industrial, vocational, and related pursuits;" item 30, "Industrial arts at the middle or junior high level should provide students with the opportunity to participate in the American Industrial Arts Student Association (AIASA);" and finally, item 38, "Industrial arts at the senior high level should provide students with the opportunity to participate in the American Industrial Arts Student Association (AIASA)."

The degrees of freedom for each of the seven items found to be significant using the chi-square test totaled two. The cells were collapsed for the response headings for all seven items in the same manner and made to read: Strongly Agree (SA) or Agree (A), Uncertain (?), and Strongly Disagree (SD) or Disagree (D). The column headings which totaled only two for this comparison remained unchanged, reading: Industrial Arts Teachers at the Public School Level and Industrial Arts Teacher Educators. Due to the nature of the Fisher's exact probability test, there were no degrees of freedom established for the two items found to exhibit significant differences.

As a result of the significant differences found on nine items of the 31 items tested, concerning the two categories of industrial arts

teachers compared to their respective opinions, the research rejects the null hypothesis.

Analysis of Ranked Topics on Questions 39-50 Relating to Personal and Professional Characteristics

As reflected in the Presentation of the Additional Data section within Chapter I, information was desired pertaining to the ranking of topics within the area of industrial arts curriculum content. Due to the nature of this type of information, it was necessary to analyze the responses to items 39 through 50 on the opinionnaire (see Appendix A) utilizing a weighted ranking method of comparison. The information sought was as follows: To show the relationship between the personal and professional characteristics of industrial arts teachers and their opinions about the ranking of the cluster topics, as reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

The weighted ranking procedure was utilized in order to establish a final rank order for the topics within the clusters of construction, transportation, communications, and manufacturing, as reported by respondents in the following seven categories: (1) Years of Age, (2) Attained Level of Education, (3) Years Having Taught Industrial Arts, (4) Type of Programs Being Taught, (5) Grade Levels of Teaching Industrial Arts, (6) Years of Industrial Experience, and (7) Industrial Arts Public School Teachers and Industrial Arts Teacher Educators. Three points were assigned to each first choice response, two points to each second choice response, and one point to each third choice response. The respondents

were to select from a list of 10 to 11 topics depending upon which cluster was in question.

The format employed for further presentation and analysis of the response data consists of a statement concerning the type of information sought within each category followed by a discussion of the first, second, and third choices made within each cluster by respondents within the seven categories aforementioned. Tables X through XVI are included in order to enable the reader to see the final, all inclusive, rank order according to the perceived importance of each, for all topics listed within each of the four clusters. The data collected within the tables are presented as follows: Column one, headed "Topic No.," designates the actual item numbers for the topics as found on the opinionnaire. Column two, headed "Topics," lists the four cluster titles of Construction, Transportation, Communications, and Manufacturing. Directly under each of the cluster titles appears the respective topics, which were the actual chapter headings found in the state plan. The third column reveals the final rank order of the topics as determined by all respondents. The remainder of the columns found in the tables will vary between two and four depending upon the number of subheadings appearing within each of the seven categories. The lower the rank order number the greater the importance of each.

Category One: Years of Age: As revealed in Table X, concerning the responses of industrial arts teachers as reported according to their years of age, the final rank order of the topics was consistent in nature. An analysis of each of the four clusters follows:

Construction Cluster (Questions 39, 40, and 41): The final rank order of topics compiled by all respondents combined placed "Design"

TABLE X

TOPICS RANKED ACCORDING TO PERCEIVED IMPORTANCE WITHIN CLUSTERS CONTAINED IN THE STATE PLAN AS REPORTED BY ALL RESPONDENTS ACCORDING TO THEIR YEARS OF AGE

Topic No.	Topics	Ranking From All Respondents	Years of Age			
			21-30	31-40	41-50	Over 50
	Construction Cluster (Questions 39, 40, 41)	(216)*	(37)*	(81)*	(55)*	(43)*
1.	Design	1	2	1	1	1
2.	Preparing to Build	3	3	4	3	3
3.	Clearing a Site	8	10	8	9.5	8.5
4.	Excavation	10	10	9	9.5	10.5
5.	Comp. of Concrete	10	7	11	11	8.5
6.	Concrete--Form./Finish.	6	5	6	7	7
7.	Wood Frame Construction	2	1	2	2	2
8.	Electrical Wiring	5	6	5	5	5
9.	Pluming	7	8	7	6	6
10.	Masonry	10	10	10	8	10.5
11.	Obtaining a Job	4	4	3	4	4
	Transportation Cluster (Questions 42, 43, 44)	(214)*	(38)*	(82)*	(53)*	(41)*
1.	History of Transportation	2	1	2	2	2
2.	Land Transportation	4	5	4	4	3
3.	Local/Suburban Transit	6	6	6	9	6
4.	Highway Transportation	5	4	5	5	5
5.	Rail Transportation	9.5	8	10	10	8
6.	Unions--Collective Bargaining	8	7	9	7	9.5
7.	Aerospace Transportation	7	9	7	6	7
8.	Water Transportation	9.5	10	8	8	9.5
9.	Future Transportation	3	2	3	3	4
10.	Occupations in Trans. Cluster	1	3	1	1	1
	Communication Cluster (Questions 45, 46, 47)	(208)*	(36)*	(81)*	(50)*	(41)*
1.	Television Broadcasting	2	2	1	1	2
2.	Radio Broadcasting	5	7.5	4	5	5
3.	Publishing	7	9	8.5	3	8
4.	Graphic Arts	1	1	2	2	1
5.	Journalism	6	4	7	7	3
6.	Commercial Art	8	6	6	8.5	9
7.	Camera Tech./Film Proc.	4	3	5	6	4
8.	Fund. of Photo. Printing	10	10	10	10	10
9.	Development of the Telephone	11	11	11	11	11
10.	Telephone Communication	9	7.5	8.5	8.5	6.5
11.	Data Transmission	3	5	3	4	6.5
	Manufacturing Cluster (Questions 48, 49, 50)	(219)*	(37)*	(84)*	(56)*	(42)*
1.	Research and Design	1	1	1	1	2
2.	Getting a Job	3	3	3	3	3
3.	Materials and Processes	2	2	2	2	1
4.	Casting and Molding	7	8	6.5	9	10
5.	Forming	9	10	9	8	6.5
6.	Separating	10	11	10	10	8.5
7.	Combining	11	11	10	10	8.5
8.	Assembling	5	4.5	4	4.5	5
9.	Finishing	8	7	8	7	8.5
10.	Ind. Prod. Man.	4	6	5	6	4
11.	Personnel Management	6	4.5	6.5	4.5	6.5

*Number of respondents in each category.

NOTE: The lower the number, the greater the importance.

first, "Wood Frame Construction" second, and "Preparing to Build" third. The 41-50 years and over 50 years groups also placed the above topics in that order, while the 31-40 year group agreed with the above first and second topics yet selected as their third choice "Obtaining a Job." The final age group of 21-30 years rearranged the initial three topics stated above to read "Wood Frame Construction" first, "Design" second, and "Preparing to Build" third. A total of 216 teachers responded to this set of rankings.

Transportation Cluster (Questions 42, 43, and 44): The final rank order of topics compiled by all respondents combined placed "Occupations in the Transportation Cluster" first, "History of Transportation" second, and "Future Transportation" third. The age groups of 31-40 years and 41-50 years agreed precisely with the above rank order while the over 50 years group selected the above first choice yet reversed their second and third choices. The final group of 21-30 years rearranged the initial three topics stated above to read "History of Transportation" first, "Future Transportation" second, and "Occupations in the Transportation Cluster" third. A total of 216 teachers responded to this set of rankings.

Communications Cluster (Questions 45, 46, and 47): The final rank order of topics compiled by all respondents combined placed as first choice "Graphic Arts;" second choice, "Television Broadcasting;" and third choice, "Data Transmission." There was no group which agreed with precisely the same rank order as listed above, although the age group of 21-30 years and over 50 years was in agreement with the first and second choices. Only the third choices differed as being "Camera Techniques and Film Processing" and "Journalism" respectively. The remaining two age groups of 31-40 years and 41-50 years were found to be in agreement

on the first and second choices revealing "Television Broadcasting" first and "Graphic Arts" second. The third choice differed for each group as the 31-40 years group selected "Data Transmission" and the 41-50 years group chose "Publishing." A total of 208 teachers responded to this set of rankings.

Manufacturing Cluster (Questions 48, 49, and 50): The final rank order of topics compiled by all respondents combined placed "Research and Design" first, "Materials and Porcesses" second, and "Getting a Job" third. In agreement more so than in any cluster thus far, the age groups of 21-30 years, 31-40 years, and 41-50 years ranked the topics in precisely the manner as stated above. Only the over 50 years group differed in their selection, but consisted only of a rearrangement of the first and second choices. A total of 219 teachers responded to this set of rankings.

Category Two: Attained Level of Education: As revealed in Table XI, concerning the responses of industrial arts teachers as compared to their attained level of education, the final rank order of the topics was consistent in nature. An analysis of the four clusters follows:

Construction Cluster (Questions 39, 40, and 41): The final rank order of topics compiled by all respondents combined placed "Design" first, "Wood Frame Construction" second, and "Preparing to Build" third. The group of teachers with bachelor's degrees agreed precisely with the above topic placement while the responses from teachers with masters and doctor's degrees revealed a tie for first choice, indicated in Table XI as 1.5 on each, between the first and second choices listed above. The third choice for these two groups was the same as indicated in the third

TABLE XI

TOPICS RANKED ACCORDING TO PERCEIVED IMPORTANCE WITHIN CLUSTERS CONTAINED IN THE STATE PLAN AS REPORTED BY ALL RESPONDENTS ACCORDING TO THEIR ATTAINED LEVEL OF EDUCATION

Topic No.	Topics	Ranking From All Respondents	Attained Level of Education			
			Bach. Degree	Masters Degree	Masters + 30 Hrs.	Doctors Degree
	Construction Cluster (Questions 39, 40, 41)	(217)*	(88)*	(76)*	(37)*	(16)*
1.	Design	1	1	1.5	1	1.5
2.	Preparing to Build	3	3	3	3	3
3.	Clearing a Site	8	8	10	9	7
4.	Excavation	9	9.5	9	9	9.5
5.	Comp. of Concrete	10.5	9.5	11	7	9.5
6.	Concrete--Form./Finish.	6	6	6	9	5.5
7.	Wood Frame Construct.	2	2	1.5	4	1.5
8.	Electrical Wiring	5	5	5	5	5.5
9.	Plumbing	7	7	7	6	9.5
10.	Masonry	10.5	11	8	11	9.5
11.	Obtaining a Job	4	4	4	2	4
	Transportation Cluster (Questions 42, 43, 44)	(215)*	(89)*	(73)*	(36)*	(17)*
1.	History of Transportation	2	2	2	1	3
2.	Land Transportation	3	4	3	6	4
3.	Local/Suburban Transit	6	6	8	5	8
4.	Highway Transportation	5	5	4	3.5	6
5.	Rail Transportation	9	8.5	9	10	9.5
6.	Unions--Collective Bargaining	8	7	7	9	6
7.	Aerospace Transportation	7	8.5	6	7	6
8.	Water Transportation	10	10	10	8	9.5
9.	Future Transportation	4	3	5	3.5	2
10.	Occupations in Trans. Cluster	1	1	1	2	1
	Communication Cluster (Questions 45, 46, 47)	(209)*	(85)*	(73)*	(37)*	(14)*
1.	Television Broadcasting	2	1	1	4	2.5
2.	Radio Broadcasting	5	5	3	8.5	4
3.	Publishing	7	5	8	5	3.5
4.	Graphic Arts	1	2	2	1	1
5.	Journalism	6	3	7	7	5.5
6.	Commercial Art	8	9	6	6	10.5
7.	Camera Tech./Film Proc.	4	7	5	3	5.5
8.	Fund. of Photo. Print.	10	11	10	10	7
9.	Development of the Telephone	11	10	11	11	8.5
10.	Telephone Communication	9	8	9	8.5	10.5
11.	Data Transmission	3	5	4	2	2.5
	Manufacturing Cluster (Questions 48, 49, 50)	(220)*	(88)*	(77)*	(38)*	(17)*
1.	Research and Design	1	1	1	1	2
2.	Getting a Job	3	3	3	3	4
3.	Materials and Processes	2	2	2	2	1
4.	Casting and Molding	7	8	6	10.5	7.5
5.	Forming	9	9	8	8	10
6.	Separating	10	11	10	10.5	10
7.	Combining	11	10	11	9	10
8.	Assembling	5	4	5	6	6
9.	Finishing	8	7	9	7	7.5
10.	Ind. Proc. Man.	4	6	4	4	3
11.	Personnel Management	6	5	7	5	5

*Number of respondents in each category.

NOTE: The lower the number, the greater the importance.

choice above. The final group of teachers, being those with a master's degree plus 30 hours, agreed with the first and third choices from above although differed entirely on the second choice, being that of "Obtaining a Job." A total of 217 teachers responded to this set of rankings.

Transportation Cluster (Questions 42, 43, and 44): The final rank order of topics compiled by all respondents combined placed "Occupations in the Transportation Cluster" first, "History of Transportation" second, and "Land Transportation" third. The teachers with master's degrees agreed precisely with the aforestated rank order, while the teachers with bachelor's degrees agreed with only the first and second choices, and selected a third of "Future Transportation." The ranking from teachers holding master's degrees plus 30 hours differed from the initially stated final rank order in that the first and second choices were reversed. Their third choice was tabulated to find a tie between "Future Transportation" and "Highway Transportation." The tie is indicated in Table XI as a 3.5 ranking for each of the topics. The final group of teachers being those holding doctors degrees indicated a first choice as being the same as compiled by all respondents stated earlier, although ranking as a second choice, "Future Transportation," and a third choice of "History of Transportation." A total of 215 teachers responded to this set of rankings.

Communications Cluster (Questions 45, 46, and 47): The final rank order of topics compiled by all respondents combined placed as first choice "Graphic Arts;" second choice, "Television Broadcasting;" and third choice, "Data Transmission." The group of teachers which ranked the topics most closely to those ranked by all respondents together, were those teachers with doctor's degrees. The first choice of that

group agreed precisely with the aforestated first choice, while the second and third choices actually were tabulated to reveal a tie between the second and third choices aforelisted. The tie is indicated in Table XI as a 2.5 ranking for each topic. Teachers holding a master's degree plus 30 hours revealed as a first choice "Graphic Arts;" a second choice of "Data Transmission;" and a third choice of "Camera Techniques and Film Processing." And finally, the groups of teachers with bachelor's and master's degrees listed "Television Broadcasting" as the first choice, and "Graphic Arts" second choice. Only the third choices differed as being "Journalism" and "Radio Broadcasting" respectively. A total of 209 teachers responded to this set of rankings.

Manufacturing Cluster (Questions 48, 49, and 50): The final rank order to topics compiled by all respondents combined placed "Research and Design" first, "Materials and Processes" second, and "Getting a Job" third. The groups of teachers with bachelor's and master's degrees as well as those with master's degrees plus 30 hours revealed total and precise agreement with the aforestated rank order. Only the teachers holding doctor's degrees differed in their responses as revealed by a reversal in the first and second choices along with a third choice of "Industrial Product Management." A total of 220 teachers responded to the set of rankings.

Category Three: Years Having Taught Industrial Arts: As revealed in Table XII, concerning the responses of industrial arts teachers as compared according to their number of years having taught industrial arts, the final rank order of the topics was consistent in nature. An analysis of each of the four clusters follows.

TABLE XII

TOPICS RANKED ACCORDING TO PERCEIVED IMPORTANCE WITHIN CLUSTERS CONTAINED IN THE STATE PLAN AS REPORTED BY ALL RESPONDENTS ACCORDING TO THEIR NUMBER OF YEARS HAVING TAUGHT INDUSTRIAL ARTS

Topic No.	Topics	Ranking From All Respondents	Years Having Taught Industrial Arts			
			1-3 Years	4-8 Years	9-5 Years	Over 15 Years
	Construction Cluster (Questions 39, 40, 41)	(217)*	(30)*	(60)*	(58)*	(69)*
1.	Design	1	1	2	1	1
2.	Preparing to Build	3	3	3	4	3
3.	Clearing a Site	8	8	11	7	8
4.	Excavation	9	10.5	9.5	9	11
5.	Comp. of Concrete	10.5	10.5	8	10.5	9.5
6.	Concrete—Form./Finish.	6	5	6	6	6
7.	Wood Frame Construct.	2	2	1	2	2
8.	Electrical Wiring	5	6	5	5	5
9.	Plumbing	7	7	7	8	7
10.	Masonry	10.5	9	9.5	10.5	9.5
11.	Obtaining a Job	4	4	4	3	4
	Transportation Cluster (Questions 42, 43, 44)	(215)*	(31)*	(60)*	(56)*	(68)*
1.	History of Transportation	2	3	2	3	3
2.	Land Transportation	4	5	3	4	2
3.	Local/Suburban Transit	6	6.5	7	6	6
4.	Highway Transportation	5	4	5	5	5
5.	Rail Transportation	9	9	8	9.5	9
6.	Unions--Collective Bargaining	8	6.5	9	7	10
7.	Aerospace Transportation	7	8	6	8	7
8.	Water Transportation	10	10	10	9.5	8
9.	Future Transportation	3	2	4	2	4
10.	Occupations in Trans. Cluster	1	1	1	1	1
	Communication Cluster (Questions 45, 46, 47)	(209)*	(28)*	(59)*	(56)*	(66)*
1.	Television Broadcasting	2	1	1	2	2
2.	Radio Broadcasting	5	8	4.5	5	6
3.	Publishing	7	7	8	7.5	5
4.	Graphic Arts	1	2	2	1	1
5.	Journalism	6	3	7	7.5	4
6.	Commercial Art	8	6	6	6	9
7.	Camera Tech./Film Proc.	4	4	4.5	4	8
8.	Fund. of Photo. Print.	10	10.5	10	9	10
9.	Development of the Telephone	11	10.5	11	10	11
10.	Telephone Communication	9	9	9	11	7
11.	Data Transmission	3	5	3	3	3
	Manufacturing Cluster (Questions 48, 49, 50)	(220)*	(31)*	(59)*	(60)*	(70)*
1.	Research and Design	1	1	1	1	1
2.	Getting a Job	3	3	3	3	3
3.	Materials and Processes	2	2	2	2	2
4.	Casting and Molding	7	7	8	6	9
5.	Forming	9	9	9.5	9	7
6.	Separating	10	10	11	10	10
7.	Combining	11	11	9.5	11	11
8.	Assembling	5	6	4	5	5
9.	Finishing	8	8	7	8	8
10.	Ind. Prod. Man.	4	5	6	4	4
11.	Personnel Management	6	4	5	7	6

*Number of respondents in each category.

NOTE: The lower the number, the greater the importance.

Construction Cluster (Questions 39, 40, and 41): The final rank order of topics compiled by all respondents combined placed "Design" first, "Wood Frame Construction" second, and "Preparing to Build" third. The teachers in the 1-3 years and over 15 years of teaching experience groups also placed the above topics in that order, while the group with 4-8 years reversed the first and second choices leaving their third choice unchanged. The final group of teachers which had 9-15 years of industrial arts teaching experience agreed with the initial first and second place ranking aforestated, although selected as their third choice "Obtaining a Job." A total of 217 teachers responded to this set of rankings.

Transportation Cluster (Questions 42, 43, and 44): The final rank order of topics compiled by all respondents combined placed "Occupations in the Transportation Cluster" first, "History of Transportation" second, and "Future Transportation" third. The group of teachers with 4-8 years of experience agreed precisely with the first and second choices, yet selected "Land Transportation" as their third choice. As reported by the teachers in the 1-3 years and 9-15 year groups, the first choice remained the same as was revealed by all respondents, yet the second and third choices were reversed. The group of teachers in the over 15 years category also agreed with the first choice aforelisted, although selected as a second choice "Land Transportation" and "History of Transportation" third. A total of 215 teachers responded to this set of rankings.

Communication Cluster (Questions 45, 46, and 47): The final rank order of topics compiled by all respondents combined placed "Graphic Arts" first, "Television Broadcasting" second, and "Data Transmission" third. The teachers within the groups of 9-15 years and over 15 years

of industrial arts teaching experience also placed the above topics in that order, while the group which had 4-8 years reversed the first and second choice, leaving their third choice unchanged. The final group of teachers, which had 1-3 years of experience, again reversed the first and second choices although they selected "Journalism" as their third choice. A total of 209 teachers responded to this set of rankings.

Manufacturing Cluster (Questions 48, 49, and 50): The final rank order of the topics compiled by all respondents combined placed "Research and Design" first, "Materials and Processes" second, and "Getting a Job" third. A somewhat unique situation exists concerning this set of data, in that, the first, second, and third choices made by each of the different categories of years of industrial arts teaching, unanimously agreed with the aforestated rank order. A total of 220 teachers responded to this set of rankings.

Category Four: Type of Program Being Taught: As revealed in Table XIII, concerning the responses of industrial arts teachers as reported according to the type of industrial arts program being taught, the final rank order of the topics was consistent in nature. An analysis of the four clusters follows.

Construction Cluster (Questions 39, 40, and 41): The final rank order of topics compiled by all respondents combined placed "Design" first, "Wood Frame Construction" second, and "Preparing to Build" third. An uncommon situation exists concerning the responses to this set of data, in that the first, second, and third choices made by each of the teachers in the Cluster/Exploration, Traditional, and Combination of both types of programs agreed precisely with the aforestated rank order. A total of 217 teachers responded to this set of rankings.

TABLE XIII

TOPICS RANKED ACCORDING TO PERCEIVED IMPORTANCE WITHIN CLUSTERS CONTAINED IN THE STATE PLAN AS REPORTED BY ALL RESPONDENTS ACCORDING TO THEIR PERCEPTION OF THE TYPES OF PROGRAMS THEY TEACH

Topic No.	Topics	Ranking From All Respondents	Types of Programs: Cluster/ Expl. (C/E)	Traditional (T)	Comb. of C/E & T
	Construction Cluster (Questions 39, 40, 41)	(217)*	(14)*	(106)*	(97)*
1.	Design	1	1	1	1
2.	Preparing to Build	3	3	3	3
3.	Clearing a Site	8	8	8	8.5
4.	Excavation	9	10	11	8.5
5.	Comp. of Concrete	10.5	10	9	11
6.	Concrete--Form./Finish	6	4.5	7	5.5
7.	Wood Frame Construct.	2	2	2	2
8.	Electrical Wiring	5	6	5	5.5
9.	Plumbing	7	7	6	7
10.	Masonry	10.5	10	10	10
11.	Obtaining a Job	4	4.5	4	4
	Transportation Cluster (Questions 42, 43, 44)	(215)*	(14)*	(103)*	(98)*
1.	History of Transportation	2	3	2	2
2.	Land Transportation	4	4.5	4	3
3.	Local/Suburban Transit	6	7	6	7.5
4.	High Transportation	5	6	5	5
5.	Rail Transportation	9	10	8	9.5
6.	Unions--Collective Bargaining	8	4.5	3	7.5
7.	Aerospace Transportation	7	9	7	6
8.	Water Transportation	10	8	10	9.5
9.	Future Transportation	3	1	3	4
10.	Occupations in Trans. Cluster	1	2	1	1
	Communication Cluster (Questions 45, 46, 47)	(209)*	(14)*	(102)*	(93)*
1.	Television Broadcasting	2	3	2	1
2.	Radio Broadcasting	5	9	3.5	5
3.	Publishing	7	5	6	6
4.	Graphic Arts	1	1	1	2
5.	Journalism	6	5	5	7
6.	Commercial Art	8	5	8	8
7.	Camera Tech./Film Proc.	4	2	9	4
8.	Fund. of Photo. Print.	10	7.5	10.5	10
9.	Development of the Telephone	11	11	10.5	11
10.	Telephone Communication	9	10	7	9
11.	Data Transmission	3	7.5	3.5	3
	Manufacturing Cluster (Questions 48, 49, 50)	(220)*	(14)*	(106)*	(100)*
1.	Research and Design	1	1	1	1
2.	Getting a Job	3	3	3	3
3.	Materials and Processes	2	2	2	2
4.	Casting and Molding	7	8	8	7
5.	Forming	9	11	9	8
6.	Separating	10	11	9	8
7.	Combining	11	8	11	10
8.	Assembling	5	8	4	5.5
9.	Finishing	8	8	7	9
10.	Ind. Prod. Man.	4	4.5	5	4
11.	Personnel Management	6	4.5	6	5.5

*Number of respondents in each category.

NOTE: The lower the number, the greater the importance.

Transportation Cluster (Questions 42, 43, and 44): The final rank order of topics compiled by all respondents combined placed "Occupations in the Transportation Cluster" first, "History of Transportation" second, and "Future Transportation" third. The teachers within the traditional programs precisely agreed with the topic order as listed above, while the teachers in the combination of both types of programs agreed with the above first and second choices yet selected "Future Transportation" as a third choice. The final group of teachers in the cluster/exploration programs selected as the first choice "Future Transportation;" second choice, "Occupations in the Transportation Cluster;" and third choice, "History of Transportation." A total of 215 teachers responded to this set of rankings.

Communications Cluster (Questions 45, 46, and 47): The final rank order of topics compiled by all respondents combined placed "Graphic Arts" first, "Television Broadcasting" second and "Data Transmission" third. The teachers within the traditional programs ranked the topics as shown above yet due to a tie in the third choice added to the rank order "Radio Broadcasting." The tie was indicated in Table XIII as a 3.5 ranking on each topic. The teachers in the cluster/exploration programs agreed with the first choice in the above listing but selected as a second choice "Camera Techniques and Film Processing" and a third choice of "Television Broadcasting." The final group of teachers in the combination of both types of programs reversed the first and second choices in the initial aforestated rank order, while revealing their third choice as "Data Transmission." A total of 209 teachers responded to this set of rankings.

Manufacturing Cluster (Questions 48, 49, and 50): The final rank order of the topics compiled by all respondents combined placed "Research and Design" first, "Materials and Processes" second, and "Getting a Job" third. The response data indicates that throughout this set of rankings, the first, second, and third choices, made by each of the three groups of teachers being studied, agreed precisely with the aforestated rank order. A total of 220 teachers responded to this set of rankings.

Category Five: Grade Levels of Teaching Industrial Arts: As revealed in Table XIV, concerning the responses of industrial arts teachers as reported according to the various grade levels of teaching industrial arts, the final rank order of the topics was consistent in nature. An analysis of each of the four clusters follows.

Construction Cluster (Questions 39, 40, and 41): The final rank order of topics compiled by all respondents combined placed "Design" first, "Wood Frame Construction" second, and "Preparing to Build" third. The teachers in the categories of senior and mid-high level and university level agreed precisely with the above placement of topics, while the teachers teaching in the combination of both levels agreed with the first and second choices, yet selected "Obtaining a Job" as a third choice. The final category, being the junior high and middle school levels, listed the first and second choices in a reversed order from those listed above, while selecting "Preparing to Build" as their third choice. A total of 219 teachers responded to this set of rankings.

Transportation Cluster (Questions 42, 43, and 44): The final rank order of topics compiled by all respondents combined placed "Occupations in the Transportation Cluster" first, "History of Transportation" second,

TABLE XIV

TOPICS RANKED ACCORDING TO PERCEIVED IMPORTANCE WITHIN CLUSTERS CONTAINED IN THE STATE PLAN AS REPORTED BY ALL RESPONDENTS ACCORDING TO THEIR LEVELS OF TEACHING INDUSTRIAL ARTS

Topic No.	Topic	Ranking From All Respondents	Levels of Teaching Industrial Arts			
			Jr. High/ Middle	Senior/ Mid-High	Comb. of Both	University
	Construction Cluster (Questions 39, 40, 41)	(215)*	(53)*	(96)*	(42)*	(24)*
1.	Design	1	2	1	1	1
2.	Preparing to Build	3	3	3	4	3
3.	Clearing a Site	8	8.5	8	7	7
4.	Excavation	9	8.5	8	7	7
5.	Comp. of Concrete	10.5	11	9.5	9.5	10
6.	Concrete--Form./Finish.	6	6	6	5	6
7.	Wood Frame Construct.	2	1	2	2	2
8.	Electrical Wiring	5	5	5	6	5
9.	Plumbing	7	7	7	8	8
10.	Masonry	10.5	10	9.5	11	10
11.	Obtaining a Job	4	4	4	3	4
	Transportation Cluster (Questions 42, 43, 44)	(214)*	(52)*	(94)*	(42)*	(24)*
1.	History of Transportation	2	5	2	1	2
2.	Land Transportation	4	3	4	3	4
3.	Local/Suburban Transit	6	6	6	8	7
4.	Highway Transportation	5	4	5	5	5.5
5.	Rail Transportation	9	8	10	9	9
6.	Unions--Collective Bargaining	8	10	8	6	5.5
7.	Aerospace Transportation	7	7	7	7	8
8.	Water Transportation	10	9	9	10	10
9.	Future Transportation	3	2	3	4	3
10.	Occupations in Trans. Cluster	1	1	1	2	1
	Communication Cluster (Questions 45, 46, 47)	(208)*	(51)*	(94)*	(39)*	(22)*
1.	Television Broadcasting	2	1	2	1	2
2.	Radio Broadcasting	5	3	8	8.5	4
3.	Publishing	7	6	7	6.5	8
4.	Graphic Arts	1	2	1	2	1
5.	Journalism	6	7	4	5	6.5
6.	Commercial Art	8	10	5.5	3	9.5
7.	Camera Tech./Film. Proc.	4	4	5.5	8.5	5
8.	Fund. of Photo. Print.	10	8	10	10	6.5
9.	Development of the Telephone	11	10	11	11	9.5
10.	Telephone Communication	9	10	9	4	11
11.	Data Transmission	3	5	3	6.5	3
	Manufacturing Cluster (Questions 48, 49, 50)	(219)*	(53)*	(98)*	(41)*	(25)*
1.	Research and Design	1	1	1	1	2
2.	Getting a Job	3	3	3	3	4
3.	Materials and Processes	2	2	2	2	1
4.	Casting and Molding	7	5	8	7	7.5
5.	Fomring	9	8.5	9	8	10
6.	Separating	10	10	11	10	10
7.	Combining	11	11	11	10	10
8.	Assembling	5	4	5	6	6
9.	Finishing	8	7	7	9	7.5
10.	Ind. Prod. Man.	4	8.5	4	4.5	3
11.	Personnel Management	6	6	6	4.5	5

*Number of respondents in each category.

NOTE: The lower the number, the greater the importance.

and "Future Transportation" third. The teachers in the categories of senior or mid-high levels and university level agreed precisely with the above placement of topics. The teachers within the category of a combination of both levels of teaching selected as their first and second choices , the reversed order as aforestated, and ranked as a third choice "Land Transportation." The final category, being the junior high or middle school level selected as the first choice "Occupations in the Transportation Cluster;" second choice, "Future Transportation;" and third choice, "Land Transportation." A total of 214 teachers responded to this set of rankings.

Communication Cluster (Questions 45, 46, and 47): The final rank order of topics compiled by all respondents combined placed "Graphic Arts" first, "Television Broadcasting" second, and "Data Transmission" third. Again, as reflected in the Construction and Transportation Clusters, the teachers in the categories of senior or mid-high levels and university level agreed precisely with the rank order as established by all respondents combined. The teachers identified as teaching in the junior high or middle school level and the combination of both levels of programs reversed the first and second choices listed initially, and selected as their third choices "Radio Broadcasting" and "Commercial Art" respectively. A total of 208 teachers responded to this set of rankings.

Manufacturing Cluster (Questions 48, 49, and 50): The final rank order of topics compiled by all respondents combined placed "Research and Design" first, "Materials and Processes" second, and "Getting a Job" third. The teachers identified as teaching in the categories of junior high or middle, senior or mid-high, and a combination of both, agreed

precisely with the rank order initially stated, whereas the university level teacher's responses differed, in that their first and second choices were found to be reversed. As a third choice, the university level teachers selected "Industrial Product Managment." A total of 219 teachers responded to this set of rankings.

Category Six: Years of Industrial Experience: As revealed in Table XV, concerning the responses of industrial arts teachers as reported according to the number of years of industrial experience, the final rank order of the topics was consistent in nature. An analysis of each of the four clusters follows.

Construction Cluster (Questions 39, 40, and 41): The final rank order of topic compiled by all respondents combined placed "Design" first, "Wood Frame Construction" second, and "Preparing to Build" third. The teachers in the category of having less than one year of industrial experience also placed the above topics in that order, while the responses from the 3-5 year group revealed a tie for the first and second choices, indicated in Table XV as a 1.5 on each topic, between the first and second choices listed above. The third choice for the group was in agreement with the third choice from above. The group of teachers in the 1-2 years category differed in their selection, but consisted only of a reversal of the first and second choices as listed by all respondents. The final group, being of over 5 years of industrial experience revealed an agreement with the first and second choices yet selected "Obtaining a Job" as a third choice. A total of 216 teachers responded to this set of rankings.

Transportation Cluster (Questions 42, 43, and 44): The final rank order of topics compiled by all respondents combined placed "Occupations

TABLE XV

TOPICS RANKED ACCORDING TO PERCEIVED IMPORTANCE WITHIN CLUSTERS CONTAINED IN THE STATE PLAN AS REPORTED BY ALL RESPONDENTS ACCORDING TO THEIR YEARS OF INDUSTRIAL EXPERIENCE

Topic No.	Topics	Ranking From All Respondents	Years of Industrial Experience: Less Than 1 Yr.	1-2 Yrs.	3-5 Yrs.	Over 5 Yrs.
	Construction Cluster (Questions 39, 40, 41)	(216)*	(29)*	(35)*	(61)*	(91)*
1.	Design	1	1	2	1.5	1
2.	Preparing to Build	3	3	3	3	4
3.	Clearing a Site	8	9	9.5	8	8
4.	Excavation	9	8	11	11	9
5.	Comp. of Concrete	10.5	10.5	8	10	10.5
6.	Concrete--Form./Finish.	6	6	5	5	7
7.	Wood Frame Construction	2	2	1	1.5	2
8.	Electrical Wiring	5	5	6	6	5
9.	Plumbing	7	7	7	7	6
10.	Masonry	10.5	10.5	9.5	9	10.5
11.	Obtaining a Job	4	4	4	4	3
	Transportation Cluster (Questions 42, 43, 48)	(214)*	(29)*	(34)*	(61)*	(90)*
1.	History of Transportation	2	4	1	2	2
2.	Land Transportation	4	3	3	4.5	3
3.	Local/Suburban Transit	6	10	6	7	6
4.	Highway Transportation	5	5	5	4.5	5
5.	Rail Transportation	9	8.5	7	10	10
6.	Unions--Collective Bargaining	8	6	9	8	8
7.	Aerospace Transportation	7	7	8	6	7
8.	Water Transportation	10	8.5	10	9	9
9.	Future Transportation	3	2	4	3	4
10.	Occupations in Trans. Cluster	1	1	2	1	1
	Communication Cluster (Questions 45, 46, 47)	(208)*	(28)*	(34)*	(60)*	(86)*
1.	Television Broadcasting	2	2.5	2	1	2
2.	Radio Broadcasting	5	5.5	6	4	9
3.	Publishing	7	8	8	8	3.5
4.	Graphic Arts	1	1	1	2	1
5.	Journalism	6	7	4.5	6	5
6.	Commercial Art	8	4	7	9	8
7.	Camera Tech./Film Proc.	4	2.5	3	5	6
8.	Fund. of Photo. Print.	10	10.5	10	10.5	10
9.	Development of the Telephone	11	9	11	10.5	11
10.	Telephone Communication	9	10.5	9	7	7
11.	Data Transmission	3	5.5	4.5	3	3.5
	Manufacturing Cluster (Questions 48, 49, 50)	(219)*	(29)*	(35)*	(63)*	(92)*
1.	Research and Design	1	1	1	1	1
2.	Getting a Job	3	3	3	3	3
3.	Materials and Processes	2	2	2	2	2
4.	Casting and Molding	7	7	6.5	6	9
5.	Forming	9	11	8	9	8
6.	Separating	10	9.5	10	10.5	10
7.	Combining	11	8	11	10.5	11
8.	Assembling	5	5.5	4	5	5.5
9.	Finishing	8	9.5	9	8	7
10.	Ind. Prod. Man.	4	4	5	4	5.5
11.	Personnel Management	6	5.5	6.5	7	4

*Number of respondents in each category.

NOTE: The lower the number, the greater the importance

in the Transportation Cluster" first, "History of Transportation" second, and "Future Transportation" third. The teachers within the category of having 3-5 years of industrial experience were in total agreement with the above listing, whereas the over 5 year group agreed with the first and second choices, yet selected "Land Transportation" as a third choice. The teachers with 1-2 years of industrial experience reversed the above rank order of the first and second choices, but left their third rank choice unchanged from that listed before. The final group, teachers with less than 1 year of industrial experience, agreed with only the first choice initially stated, and selected as second and third choices, "Future Transportation" and "Land Transportation" respectively. A total of 214 teachers responded to this set of rankings.

Communication Cluster (Questions 45, 46, and 47): The final rank order of topics compiled by all respondents combined placed "Graphic Arts" first, "Television Broadcasting" second, and "Data Transmission" third. There was no group which agreed precisely with the same rank order as listed above, although the groups of teachers in the 1-2 years and over 5 years categories did agree with the first and second choices. As a third choice the 1-2 year group selected "Camera Techniques and Film Processing" while the over 5 years group revealed a tie between "Publishing" and "Data Transmission." The teachers with less than 1 year of industrial experience agreed with the initial first choice as stated, yet their responses revealed a tie for second choice between "Television Broadcasting" and "Camera Techniques and Film Processing." The final group of 3-5 years reversed the order of the initially stated rank order concerning the first and second choices, while selecting "Camera Techniques and Film Processing" as a third choice. A total of

208 teachers responded to this set of rankings.

Manufacturing Cluster (Questions 48, 49, and 50): The final rank order of topics compiled by all respondents combined placed "Research and Design" first, "Materials and Processes" second, and "Getting a Job" third. The response data indicates that throughout this set of rankings, the first, second, and third choices, made by each of the four groups of teachers being studied, agreed precisely with the aforestated rank order. A total of 220 teachers responded to this set of rankings.

Category Seven: Industrial Arts Public School Teachers and Industrial Arts Teacher Educators: As revealed in Table XVI, concerning the responses of industrial arts teachers at the public school elvel as compared to the industrial arts teachers at the university level, the final rank order of the topics was consistent in nature. An analysis of each of the four clusters follows as pertaining to each of the groups previously stated.

Construction Cluster (Questions 39, 40, and 41): The final rank order of topics compiled by both groups combined placed "Design" first, "Wood Frame Construction" second, and "Preparing to Build" third. As indicated by the response data, there existed total agreement between the two groups of teachers with the above rankings. A total of 191 industrial arts teachers and 24 teacher educators responded within their respective categories.

Transportation Cluster (Questions 42, 43, and 44): The final rank order of topics compiled by both groups combined placed "Occupations in the Transportation Cluster" first, "History of Transportation" second, and "Future Transportation" third. The group of teacher educators agreed precisely with the above rankings, while the group of

TABLE XVI

TOPICS RANKED ACCORDING TO PERCEIVED IMPORTANCE WITHIN CLUSTERS CONTAINED IN THE STATE PLAN AS REPORTED BY INDUSTRIAL ARTS TEACHERS AND TEACHER EDUCATORS

Topic No.	Topics	Ranking From All Respondents	Levels of Teaching	
			Industrial Arts Teachers	Teacher Educators
	Construction Cluster (Questions 39, 40, 41)	(215)*	(191)*	(24)*
1.	Design	1	1	1
2.	Preparing to Build	3	3	3
3.	Clearing a Site	8	8	7
4.	Excavation	9	9	10
5.	Comp. of Concrete	10.5	10.5	10
6.	Concrete--Form./Finish.	6	6	6
7.	Wood Frame Construct.	2	2	2
8.	Electrical Wiring	5	5	5
9.	Plumbing	7	7	8
10.	Masonry	10.5	10.5	10
11.	Obtaining a Job	4	4	4
	Transportation Cluster (Questions 42, 43, 44)	(212)*	(188)*	(24)*
1.	History of Transportation	2	3	2
2.	Land Transportation	4	4	4
3.	Local/Suburban Transit	6	6	7
4.	Highway Transportation	5	5	5.5
5.	Rail Transportation	9	9	9
6.	Unions--Collective Bargaining	8	8	5.5
7.	Aerospace Transportation	7	7	8
8.	Water Transportation	10	10	10
9.	Future Transportation	3	2	3
10.	Occupations in Trans. Cluster	1	1	1
	Communication Cluster (Questions 45, 46, 47)	(206)*	(184)*	(22)*
1.	Television Broadcasting	2	1	2
2.	Radio Broadcasting	5	5	4
3.	Publishing	7	7	8
4.	Graphic Arts	1	2	1
5.	Journalism	6	6	6.5
6.	Commercial Art	8	8	9.5
7.	Camera Tech./Film Proc.	4	4	5
8.	Fund. of Photo. Print.	10	10	6.5
9.	Development of the Telphone	11	11	9.5
10.	Telephone Communication	9	9	11
11.	Data Transmission	3	3	3
	Manufacturing Cluster (Questions 48, 49, 50)	(217)*	(192)*	(25)*
1.	Research and Design	1	1	2
2.	Getting a Job	3	3	4
3.	Materials and Processes	2	2	1
4.	Casting and Molding	7	7	7.5
5.	Forming	9	9	10
6.	Separating	10	10	10
7.	Combining	11	11	10
8.	Assembling	5	4	6
9.	Finishing	8	8	7.5
10.	Ind. Prod. Man.	4	5	3
11.	Personnel Management	6	6	5

*Number of respondents in each category.

NOTE: The lower the number, the greater the importance

industrial arts teachers agreed only with the first choice and reversed the second and third choices. A total of 188 industrial arts teachers and 24 teacher educators responded within their respective categories.

Communications Cluster (Question 45, 46, and 47): The final rank order of topic compiled by both groups combined placed "Graphic Arts" first, "Television Broadcasting" second, and "Data Transmission" third. Again the group of teacher educators agreed precisely with the above rankings, while the group of industrial arts teachers reversed the order of the first and second choices yet left the third choice to be in agreement. A total of 184 industrial arts teachers and 22 teacher educators responded within their respective categories.

Manufacturing Cluster (Questions 48, 49, and 50): The final rank order of topics compiled by both groups combined placed "Research and Design" first, "Materials and Processes" second, and "Getting a Job" third. The industrial arts teachers' group agreed precisely with the above rankings, while the group of teacher educators reversed the order of the first and second choices above and determined as a third choice, "Industrial Product Managment." A total of 192 industrial arts teachers and 25 teacher educators responded within their respective categories.

Analysis of Matched Comparisons Concerning The Type of Industrial Arts Program Being Taught

It was necessary, due to the nature of the type of information desired, to directly match the various responses from two categories of personal and professional characteristics on the opinionnaire, as opposed to utilizing a statistical test. This rationale was based

upon recommendations made by the Director of Research from the State Department of Vocational-Technical Education and was explained in detail in Chapter III. An analysis of the findings from the matched sets of data follows.

As programmed into the computer, concerning the "type of program" category, was (a) the cluster/exploration approach, (b) the traditional approach, and (c) a combination of both (a) and (b), whereas concerning the administrator's viewpoints, was (a) the cluster/exploration approach, (b) the traditional approach, and (c) a combination of both (a) and (b). The additional category of (d) support is not directed to any particular area, was not utilized as a comparison variable.

The matched pairs were as follows: "a" to "a," "b" to "b," and "c" to "c" equals "agreement;" "a" to "c," "b" to "c," "c" to "a," and "c" to "b" equals "semi-agreement," and finally to reveal unlike opinions about the industrial arts programs being taught, "a" to "b" and "b" to "a," equals "nonagreement" or "mismatch."

As shown in Table XVII, the matched pairs of responses in the "agreement" category revealed the following number of responses: (Note: The teachers' opinions of their program was stated first, and the teacher's opinions of their administrator's view of the program was stated second throughout this discussion.) "Cluster/Exploration" matched to "Cluster/Exploration" totaled seven responses, "Traditional" matched to "Traditional" totaled 72 responses, and the "Combination of Both (a) and (b)" matched to "Combination of Both (a) and (b)" totaled 51. A total of 130 teachers responded within this category.

Concerning the "semi-agreement" category, the data reveals "Cluster/Exploration" matched to "Combination of Both (a) and (b)" totaled only

TABLE XVII

MATCHED COMPARISON BETWEEN THE TYPE OF INDUSTRIAL ARTS PROGRAM BEING TAUGHT AND THE INDUSTRIAL ARTS TEACHER'S OPINION OF THEIR ADMINISTRATOR'S VIEW ABOUT THE ACTUAL TYPE OF PROGRAM BEING TAUGHT

Teachers' Opinions of Own Program	Compared to	Teachers' Opinions of Administrators' View of Program	Number of Respondents in each Category
AGREEMENT			
(a) Cluster/Exploration.....	(a)	Cluster/Exploration	7
(b) Traditional.....	(b)	Traditional	72
(c) Combination of a & b.....	(c)	Combination of a & b	51
		Total Responding	130
SEMI-AGREEMENT			
(a) Cluster/Exploration.....	(c)	Combination of a & b	2
(b) Traditional.....	(c)	Combination of a & b	14
(c) Combination of a & b.....	(a)	Cluster/Exploration	8
(d) Combination of a & b.....	(b)	Traditional	12
		Total Responding	36
NONAGREEMENT (MISMATCH)			
(a) Cluster/Exploration.....	(b)	Traditional	3
(b) Traditional.....	(a)	Cluster/Exploration	0
		Total Responding	3

two responses, "Traditional" matched to "Combination of Both (a) and (b)" totals 14 responses, "Combination of Both (a) and (b)" matched to "Cluster/Exploration" totals eight responses, and finally "Combination of Both (a) and (b)" matched to "Traditional" totals 12 responses. A total of 36 teachers responded within this category.

The final set of matched pairs was that revealing the "Nonagreement" or "Mismatch" category. The comparison found "Cluster/Exploration" matched to "Traditional" totaling three responses, when reversing the order to read "Traditional" matched to "Cluster/Exploration" there existed no responses. A total of three teachers responded within this category.

Mean Comparison of Opinions About Industrial Arts Between Industrial Arts Teachers and Teacher Educators

The final section of this chapter is devoted to a presentation of mean responses between industrial arts teachers at the public school level and industrial arts teacher educators, as reflected on items 8 through 38 on the opinionnaire. Table XVIII, while listing the above information, also provides a list of the mean responses made by all respondents to each of the items, in order to provide a basis from which to make further comparisons. As discussed in Chapter III, in the presentation of the procedure utilized to find the mean values, the higher the mean, the greater the agreement and the lower the mean, the lesser the agreement. Since the central or midpoint of the response scale was 3.00, any upward variance was indicative of an agreement between the opinions and respective item, whereas any

TABLE XVIII

MEAN COMPARISON OF OPINIONS ABOUT INDUSTRIAL ARTS BETWEEN INDUSTRIAL ARTS TEACHERS AND TEACHER EDUCATORS

Item	Topic	Mean of All Respondents	Mean Responses of Teachers	Mean Responses of Teacher Educators
	General Opinions			
8.	I.A. helps make career decisions	4.25	4.21	4.60
9.	Teachers should have ind. exp.	3.65	3.68	3.32
10.	Course on organizing clubs	3.40	3.32	4.04
11.	Curr. guides for new teachers	4.18	4.16	4.32
12.	All progs. need advisory councils	3.16	3.20	2.76
13.	AIASA-USOE's recognition is good	4.04	4.02	4.20
14.	AIASA--integral part of curriculum	3.31	3.28	3.56
15.	Clusters at junior high	3.24	3.13	4.16
16.	Beg. teachers have adequate trng.	3.01	2.99	3.20
17.	Parlimentary procedures as part of IA	3.02	3.01	3.16
	General Experiences			
18.	More info.--Cluster/Exploration	3.77	3.73	4.08
19.	Workshops--Cluster/Exploration	3.93	3.88	4.40
20.	State plan for teaching model	3.26	3.20	3.80
21.	Sponsor a club	3.12	3.04	3.80
	Elementary Curriculum			
22.	Support general educ. obj.	4.22	4.17	4.64
23.	Provide realistic experiences	4.29	4.25	4.56
24.	Construct dimen. objects	4.11	4.06	4.52
25.	Responsibility of elem. teacher	3.09	3.06	3.32
26.	Expose to career opportunities	3.79	3.75	4.20
	Junior/Middle Curriculum			
27.	Explore ind. & world of work	4.00	3.93	4.60
28.	Ind., voc., & other pursuits	4.11	4.05	4.60
29.	Prov. intro.--goods & services	4.21	4.15	4.72
30.	Opportunity for AIASA	3.49	3.45	3.88
	Senior/Mid-High Curriculum			
31.	Provide cult. & cons. experience	4.19	4.17	4.44
32.	Pursue advanced study	4.21	4.18	4.52
33.	Provide labor force instruction	4.14	4.15	4.04
34.	Provide leisure time instruction	4.21	4.21	4.24
35.	Provide practical situations	4.11	4.09	4.28
36.	Provide basic skills for jobs	4.33	4.31	4.52
37.	Compliment vocational programs	4.07	4.06	4.08
38.	Opportunity for AIASA	3.74	3.65	4.24
		3.80*	3.76*	4.09*
		3.01-4.33**	2.99-4.31**	2.76-4.64**

*The mean of the mean scores
**Range of mean scores
NOTE: The higher the mean, the greater the agreement; the lower the mean, the lesser the agreement

downward variance signified a disagreement between the opinions and respective item.

As indicated in Table XVIII, almost all of the mean values appear to be in agreement with each of the 31 items in question. Only on two occasions, did the mean values appear to be in disagreement with the item as stated. The first occasion dealt with the group of teacher educators as they revealed a mean of 2.76 when related to item 12, "Every industrial arts program should have an advisory council." The second occasion dealt with the industrial arts teachers at the public school level indicating a disagreement by one hundredth of a point, stated as 2.99, on item 16, "The teacher education departments in Oklahoma are adequately preparing industrial arts teachers to know what they should teach as they begin their first few years of teaching."

On all but three of the items within the 31 involved, the teacher educator's mean responses were an average of .36 points higher than those of industrial arts public school teachers. The three items which the public school industrial arts teachers rated higher than teacher educators were items 9, 12, and 33, stated as follows: item 9, "Industrial arts teachers should have industrial experience;" item 12, "Every industrial arts program should have an advisory council;" and item 33, "Industrial arts at the senior high level should provide basic instruction to students entering the labor force before graduation or immediately thereafter." The differences in the mean responses made by the teachers at the public school level on these three items was an average .30 points higher than those of teacher educators.

A final analysis of the mean of the mean responses to all items revealed the teacher educators to be in stronger agreement with the entire

set of items than those of public school teachers. The mean of the means totaled 4.09 for the teacher educators and 3.76 for the teachers at the public school level.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary

The problem with which this study is concerned is the lack of innovative or contemporary curricula existing within the industrial arts programs throughout the state. Regardless of the contemporary curricular concepts of industrial arts being outlined in the state plan, teachers, in general, have not acknowledged the implementation of the new approach. The main purpose, therefore, it to identify the opinions that industrial arts teachers have relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

The opinions of the industrial arts teachers were identified by responses made to a developed opinionnaire based upon the state plan. This study enlisted the participation of all full-time industrial arts teachers from all levels of the educational system, elementary through university level. Of the 560 opinionnaires mailed to 515 public school industrial arts teachers and 45 teacher educators, a return rate resulted in a combined total of 244, or 44 percent, usable responses.

The following seven categories of personal and professional characteristics were requested on the opinionnaire: (1) age, (2) highest level of education attained, (3) years of teaching industrial arts, (4) type of program being taught, (5) grade level presently teaching,

(6) years of industrial experience, and (7) the teacher's opinion of their administrator's view of the type of program which should be taught. This information along with the responses to each of the 41 items which appeared on the opinionnaire provided input for statistical analysis.

Due to the type of information sought within the study, four methods were utilized for the statistical analysis of the response data. The four methods were (1) chi-square and/or Fisher's exact probability test, (2) a weighted ranking technique, (3) a matched pair analysis, and (4) a comparison of the mean responses.

Findings

The first method concerning the chi-square and Fisher's exact probability test, the .05 level was used to determine whether or not a significant difference existed between responses as stated in the seven hypotheses as follows:

H_1: There is no significant difference between the opinions of industrial arts teachers compared to their years of age, on any given question, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

In looking at the findings related to Hypothesis One, it has been revealed that there is a significant difference between the opinions of industrial arts teachers compared to their years of age, on one item, relative to the curriculum content reflected in the state plan. Industrial arts teachers, depending upon their years of age, had significantly different

opinions about exposing students, at any early age, to career opportunities in a variety of fields within the elementary level of industrial arts. It is important to recognize that although a significant difference was detected, a majority of each group generally agreed with the item.

H_2: There is no significant difference between the opinions of industrial arts teachers compared to their attained level of education, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

Indicative of the findings related to Hypothesis Two, it has been found that there is a significant difference between the opinions of industrial arts teachers compared to their attained level of education, on two items, relative to the state plan. Industrial arts teachers, depending upon their attained level of education, had significantly different opinions about (1) whether or not industrial arts programs should have advisory councils, as well as (2) industrial arts programs at the junior high or middle school level being centered around the job clusters of construction, manufacturing, communications, and transportation. The response data indicated that, in general, the group of teachers who had bachelors and masters degrees seemed to agree more with the industrial arts programs having an advisory council than did those teachers having masters degrees plus 30 hours and doctorate degrees. Although the groups reversed their selections of agreement and disagreement on the later stated item, as the teachers with masters degrees

plus 30 hours and doctor's degrees were found to be more in agreement with the item than those teachers with bachelors and masters degrees.

H_3: There is no signficiant difference between the opinions of industrial arts teachers compared to their number of years having taught industrial arts, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

Related to Hypothesis Three, the findings reveal that there is a significant difference between the opinions of industrial arts teachers compared to their number of years having taught industrial arts, on two items, relative to the curriculum content reflected in the state plan. Industrial arts teachers, depending upon the number of years having taught industrial arts, had significantly different opinions about (1) the use of the state plan for industrial arts as a model for teaching industrial arts in Oklahoma, as well as (2) industrial arts providing all students with the opportunity to explore industry and the world of work at the middle or junior high level. The majority of the teachers with four to 15 years of teaching experience were found to either disagree or have uncertain opinions about the use of the state plan as opposed to the teachers with one to three years and over 15 years of teaching experience in general being in agreement with the item. Concerning the second item listed, the data was indicative that although a significant difference was detected, a majority of the groups were in agreement with the item.

H_4: There is no significant difference between the opinions of industrial arts teachers compared to the type of program being taught, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

In looking at the findings related to Hypothesis Four, it has been revealed that there is no significant difference between the opinions of industrial arts teachers compared to the type of program being taught, on any given item, relative to the curriculum content reflected in the state plan. Industrial arts teachers in all types of programs had no significant differences of opinions concerning any item on the opinionnaire.

H_5: There is no significant difference between the opinions of industrial arts teachers at the various levels of teaching industrial arts, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

Indicative of the findings related to Hypothesis Five, it has been found that there is a significant difference between the opinions of industrial arts teachers at the various levels of teaching industrial arts, on eight items, relative to the curriculum content reflected in the state plan. Industrial arts teachers at various levels of teaching, had significantly different opinions about (1) industrial arts programs at the university level providing the study of how to organize and manage student clubs; (2) industrial arts programs at the junior high or middle school level being centered around the

job clusters of construction, manufacturing, communications, and transportation; (3) industrial arts teachers using the state plan for industrial arts as a model for teaching industrial arts in Oklahoma; (4) industrial arts teachers sponsoring an industrial arts club; (5) industrial arts at the elementary level exposing students, at an early age, to career opportunities in a variety of fields; and finally industrial arts at the senior high level providing (6) basic instruction to students entering the labor force before graduation or immediately thereafter, (7) practical situations pertaining to the industrial world of work and its competitive nature, and (8) students with the opportunity to participate in the American Industrial Arts Student Association (AIASA).

H_6: There is no significant difference between the opinions of industrial arts teachers compared to their industrial experience, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

Related to Hypothesis Six, the findings reveal that there is a significant difference between the opinions of industrial arts teachers compared to their years of industrial experience, on three items, related to the curriculum content reflected in the state plan. Industrial arts teachers, depending upon their years of industrial experience, had significantly different opinions about industrial arts teachers (1) having industrial experience, (2) having advisory councils, and (3) providing

basic instruction to students planning to pursue advanced studies and careers in such areas as applied and technical science. The data indicates that, in general, the more years of industrial experience a teacher has, the more that teacher agrees with items (1) and (3) above. This conclusion was not necessarily true for item (2) above.

H_7: There is no significant difference between the opinions of industrial arts public school teachers and those of industrial arts teacher educators, on any given item, relative to the curriculum content reflected in the state plan, A Guide for Industrial Arts Education in Oklahoma.

Indicative of the findings related to Hypothesis Seven, it may be concluded that there is a significant difference between the opinions of industrial arts public school teachers and teacher educators, on nine items, relative to the curriculum content reflected in the state plan. Industrial arts public school teachers and teacher educators had significantly different opinions about (1) industrial arts programs at the university level providing the study of how to organize and manage student clubs, (2) student organizations (AIASA) being an integral part of the industrial arts curriculum, (3) industrial arts programs at the junior high or middle school level being centered around the job clusters of construction, manufacturing, communications and transportation, (4) using the state plan for industrial arts as a model for teaching industrial arts in Oklahoma, (5) sponsoring a club, providing all students at the middle or junior high level the opportunity

to (6) explore industry and the world of work, (7) to attain knowledge of industrial, vocational, and related services, and (8) to participate in the American Industrial Arts Student Association (AIASA), and finally (9) providing all students at the senior high level the opportunity to participate in the American Industrial Arts Student Association (AIASA).

The second method involved a weighted ranking technique which was used on responses from items 39 through 50 on the opinionnaire. This section of items dealt with the ranking of topics, according to perceived importance of each, within the clusters of construction, transportation, communications, and manufacturing. Three points were assigned to each first choice response, two points to each second choice response, and one point to each third choice response. The responses were to be selected from a list of 10 to 11 topics depending upon which of the clusters was in question. A final rank order was then determined by totaling the responses after the point values had been assigned.

According to the findings pertaining to the final rank order of cluster topics, in relation to the seven categories of personal and professional characteristics, the industrial arts teachers in Oklahoma are in agreement concerning the first, second, and third choices of topics ranked according to their perceived importance within the four clusters with only one exception. The industrial arts teachers agree that within the Construction Cluster, the most important topic is "Design," followed by "Wood Frame Construction" and "Preparing to Build;" within the Transportation Cluster, the most important topic is "Occupations in the Transportation Cluster," followed by "History of Transportation" and "Future Transportation" and in the case of the exception

"Land Transportation;" within the Communication Cluster, the most important topic is "Graphic Arts," followed by "Television Broadcasting" and "Data Transmission;" and finally within the Manufacturing Cluster, the most important topic is "Research and Design," followed by "Materials and Processes," and "Getting a Job."

A third method of statistical analysis involved the use of a matched pairs analysis between the industrial arts teachers' opinions of their administrators' views about industrial arts, as compared to the actual type of program being taught in the school. Three categories were formed in which the results were listed as being either in agreement, semi-agreement, or nonagreement.

Concerning the responses to the matched pairs analysis used to determine the relationship between the industrial arts teachers' opinions of their administrators' views about industrial arts, as compared to the actual type of program being taught in the school, it has been found that in the teacher's opinion the majority of the administrators are in agreement or in semi-agreement with the type of program being taught. Although, there exists at least three situations where teachers have implemented the "Cluster/Exploration" type of program, but according to the teachers' opinions, their administrators' views about the type of program which should be taught was revealed to be "Traditional."

The fourth and final method employed was a comparison of the mean responses to items eight through 38 on the opinionnaire, between industrial arts public school teachers and industrial arts teacher educators. In addition, the means from both groups combined were analyzed in order to allow a basis from which to make further comparisons.

According to the findings concerning the mean responses to each of the items listed on the opinionnaire by public school teachers and teacher educators, it has been revealed that both groups are in general agreement with the curriculum content as reflected in the state plan. Responses also indicate that the teacher educators agree more strongly with the curriculum content reflected in the state plan than do public school teachers with the exception of three items. The teacher educators (1) agree less that industrial arts teachers should have industrial experience, (2) agree less that industrial arts at the senior high level should provide basic instruction to students entering the labor force before graduation or immediately thereafter, and (3) not only agree less, but as the responses indicate, they disagree that industrial arts programs should have advisory councils. Further findings indicate that both groups feel more information should be provided about the cluster/exploration type of programs, and agree that teachers should have the opportunity to attend workshops and seminars on this topic. Concerning the American Industrial Arts Student Association (AIASA), the teacher educators have revealed being in full agreement with public school teachers providing students with the opportunity to participate, yet the public school teachers, although revealing an agreement to this item, were not in as strong agreement. The public school teachers also reflected a difference of opinions from the teacher educators, as they generally disagreed that teacher education departments in Oklahoma are adequately preparing industrial arts teachers to know what they should teach as they begin their first few years of teaching. And finally concerning the use of the state plan, A Guide for Industrial Arts Education in Oklahoma, as a model for teaching industrial arts in Oklahoma,

the teacher educators again agreed more strongly than did public school teachers whose responses revealed only a very slight agreement with its use.

Conclusions

The following conclusions were drawn based on interpretation of data relative to this study:

1. Indicative of the findings pertaining to the seven hypotheses, the industrial arts teachers in Oklahoma do have differing opinions about the state plan for industrial arts. These differences are possibly due to their individual teaching situations, the philosophical base from which they believe, or the lack of understanding they have concerning the contemporary approach. Thus, it may be concluded that there does exist a need for more information to be provided to all industrial arts teachers concerning the theory and implementation of the contents within the state plan.
2. As revealed in the findings, the industrial arts teachers at the public school level reflect a need to be more adequately prepared to teach industrial arts upon graduation from a teacher education program. The first few years of teaching industrial arts seem to be the most critical years for adequate preparation as reflected by responses to a question of this nature being the lowest of all mean responses recorded within the survey.
3. From the findings revealed from the weighted ranking technique used to determine the rank order of topics within the four

job clusters, it may be concluded that there is a need for a task force of teacher educators, public school teachers and industrial arts supervisors, and state department personnel be organized to review the established curriculum guides presently being utilized within the state to acknowledge whether or not emphasis is being placed in the appropriate areas.

4. The greater than average agreement to items related to AIASA on the opinionnaire compared to the actual number of organized chapters in the state leads the researcher to believe that the industrial arts teachers in Oklahoma need more information concerning the implementation and incorporation of AIASA within the industrial arts programs.

5. Due to the findings relative to the industrial arts teachers' opinions about their administrators' views concerning the type of industrial arts programs which should be taught within the schools, it may be concluded that there exists a need for administrators to be provided with more information concerning the curriculum content for industrial arts as reflected in the state plan. The traditional approach, as the majority of the teachers feel their administrator is in agreement with, is definitely a proven and acceptable approach, but with a better understanding of the state plan for industrial arts the administrators might see the need for a change to the cluster/exploration approach.

6. Indicative of the findings from the comparison of mean scores from public school industrial arts teachers as compared to teacher educators, the teacher educators were consistently found to be in greater agreement with the state plan than were

the public school teachers. This difference could possibly be attributed to (1) the teacher educators' professionalism as they see the need to change from the traditional to the cluster/exploration approach, (2) the incongruency between the cluster/exploration curriculum and the purpose and objectives within a particular school system, (3) the lack of familiarity the public school teachers may have with the new approach, or even (4) the feeling of traditionalism on the part of public school teachers. Thus it is concluded that further study should be made in order to ascertain these unanswered questions, as well as other factors which may have an impact on the situation.

Recommendations

In view of the data the following recommendations seem appropriate. The recommendations are aimed at curriculum improvement and enhancement of the industrial arts programs in Oklahoma:

1. Workshops and seminars should be provided based on the theory and implementation of the cluster/exploration curriculum concepts, as well as involving aspects of career education.
2. Teacher education preservice curricula should be reviewed and updated in order to more adequately prepare industrial arts teachers to know that they should teach as they begin their first few years of teaching.
3. A task force should be implemented to review the established state department curriculum materials for industrial arts in light of the findings of this study. Particular investigation should be made in regard to the cohesiveness of the topics

ranked by teachers within each job cluster and those emphasized with the curriculum guides.

4. Teacher education courses, workshops, seminars, and programs should be provided concerning pertinent information and implementation guidelines pertaining to the American Industrial Arts Student Association (AIASA).
5. Administrators need to be provided with more information about the cluster/exploration approach to industrial arts. The fact that 36 percent of the teachers felt that their administrators thought the traditional approach should be utilized may reveal that each lacks familiarity with the innovative approach.
6. Further study should be conducted relating to the differences of opinions between teacher educators and public school teachers relative to the industrial arts curriculum content within both the public school and teacher education programs. This study has produced data revealing the teacher educator's opinions to be consistently more in agreement concerning the various aspects of industrial arts than those of public school teachers.
7. Further study should be conducted in other states which have a similar state plan for industrial arts, in order to ascertain the opinions of their respective teachers concerning the curriculum suggested within.

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APPENDIX A

OPINIONNAIRE

-- OPINIONNAIRE --

FOR SEEKING OKLAHOMA

INDUSTRIAL ARTS TEACHERS' OPINIONS

RETURN DATE
MARCH 7, 1980

Introduction

The purpose of this study is to identify beliefs and perceptions of industrial arts teachers relating to the curriculum content of industrial arts in the public schools in Oklahoma. It is not necessary to put your name on this questionnaire. The number in the upper right hand corner of this page is only to enable a follow-up mailout to be sent to you.

A. General Information

Directions: Please check the appropriate answer below.

1. Your age

____a. 21-30
____b. 31-40
____c. 41-50
____d. over 50

2. Education-highest level attained

____a. Bachelors
____b. Masters
____c. 30 hrs. above Masters
____d. Doctorate

3. Years of teaching industrial arts

____a. 1-3
____b. 4-8
____c. 9-15
____d. over 15

4. I consider that I am teaching

____a. the cluster/exploration approach.
____b. the traditional approach.
____c. a combination of a and b.

5. Grade level presently teaching

____a. Elementary School
____b. Jr. High or Middle School
____c. High or Mid-High School
____d. Combination of b and c

6. Industrial Experience

____a. less than 1 year
____b. 1-2 years
____c. 3-5 years
____d. over 5 years

7. In my opinion, the administration at my school believes industrial arts should be

____a. innovative (cluster/exploration).
____b. traditional (metals, woods, drafting).
____c. a combination of both a and b.
____d. Support is not directed to any particular area.

Directions: Below is a list of statements concerning industrial arts in public schools in Oklahoma. Circle one of the symbols preceding each of the following statements:

SA--Strongly Agree
A--Agree
?--Uncertain
D--Disagree
SD--Strongly Disagree

B. General Beliefs about Industrial Arts

SA A ? D SD 8. Industrial arts should enable students to make broad-based career decisions.

SA A ? D SD 9. Industrial arts teachers should have industrial experience.

SA A ? D SD 10. Industrial arts programs at the university level should provide the study of how to organize and manage student clubs.

SA A ? D SD 11. Beginning industrial arts teachers should be provided with some sort of curriculum guide in order to know what subjects should be taught at different levels.

SA A ? D SD 12. Every industrial arts program should have an advisory council.

SA A ? D SD 13. It is good that the United States Office of Education has recognized the American Industrial Arts Student Association-AIASA as one of the seven vocational student organizations along with FFA, FHA, FBLA, VICA, DECA, and HOSA.

SA A ? D SD 14. Student organizations (AIASA) should be an integral part of the industrial arts curriculum.

SA A ? D SD 15. Industrial arts programs at the junior high or middle school level should be centered around the job clusters of construction, manufacturing, communications, and transportation.

SA A ? D SD 16. The teacher education departments in Oklahoma are adequately preparing industrial arts teachers to know what they should teach as they begin their first few years of teaching.

SA A ? D SD 17. Parlimentary procedure, when used in context of how to conduct a business meeting, should be a part of the industrial arts curriculum.

C. Experiences with Industrial Arts Teaching

I feel industrial arts teachers should:

SA A ? D SD 18. be provided with more information about the cluster/exploration concepts.

SA A ? D SD 19. have the opportunity to attend workshops and seminars which would aid the teacher in learning about the cluster/exploration concepts.

SA A ? D SD 20. use the state plan for industrial arts as a model for teaching industrial arts in Oklahoma.

SA A ? D SD 21. sponsor an industrial arts club.

D. Elementary School Level Curriculum

Industrial arts in the elementary level should:

SA A ? D SD 22. support general education objectives.

SA A ? D SD 23. place emphasis upon realistic experiences including exploration of tools, materials, and processes.

SA A ? D SD 24. allow children to express themselves creatively in the construction of two and three dimensional objects.

SA A ? D SD 25. be considered the responsibility of the classroom teacher.

SA A ? D SD 26. expose students, at an early age, to career opportunities in a variety of fields.

E. Middle and Junior High School Level Curriculum

Industrial arts at the middle or junior high level should:

SA A ? D SD 27. provide all students with the opportunity to explore industry and the world of work.

SA A ? D SD 28. provide opportunities for attaining knowledge of industrial, vocational and related pursuits.

SA A ? D SD 29. improve the ability of the students with regard to choosing, buying, and using the goods and services of industry.

SA A ? D SD 30. provide students with the opportunity to participate in the American Industrial Arts Student Association (AIASA).

F. Senior High School Level Curriculum

Industrial arts at the senior high level should:

SA A ? D SD 31. provide basic instruction to students desiring to explore further the vocational, cultural understandings and consumer concepts of American industry.

SA A ? D SD 32. provide basic instruction to students planning to pursue advanced study and career in such areas as applied and technical science.

SA A ? D SD 33. provide basic instruction to students entering the labor force before graduation or immediately thereafter.

SA A ? D SD 34. provide basic instruction to students seeking instructional opportunities for developing leisure time activities.

SA A ? D SD 35. provide practical situations pertaining to the industrial world of work and its competitive nature.

SA A ? D SD 36. provide basic skills which are useful in a variety of occupations and for occupational adjustments.

SA A ? D SD 37. complement the vocational programs in the comprehensive high school and area vocational-technical schools.

SA A ? D SD 38. provide students with the opportunity to participate in the American Industrial Arts Student Association (AIASA).

C. Curriculum Content

Directions: The following questions involve the four job clusters of industrial arts at the middle or junior high school exploration level. Rank the three topics which you feel are the most important in each area.

Construction Cluster

_____39. First Choice

_____40. Second Choice

_____41. Third Choice

Topics

1. Design
2. Preparing to Build
3. Clearing a Site
4. Excavation
5. Composition of Concrete
6. Concrete-Forming and Finishing
7. Wood Frame Construction
8. Electrical Wiring
9. Plumbing
10. Masonry
11. Obtaining a Job

Transportation Cluster

_____42. First Choice

_____43. Second Choice

_____44. Third Choice

1. History of Transportation
2. Land Transportation
3. Local and Suburban Transit
4. Highway Transportation
5. Rail Transportation
6. Unions and Collective Bargaining
7. Aerospace Transportation
8. Water Transportation
9. Future Transportation
10. Occupations in the Transportation cluster

Communication and Media Cluster

_____45. First Choice

_____46. Second Choice

_____47. Third Choice

1. Television Broadcasting
2. Radio Broadcasting
3. Publishing
4. Graphic Arts
5. Journalism
6. Commercial Art
7. Camera Technique and Film Processing
8. Fundamentals of Photographic Printing
9. Development of the Telephone
10. Telephone Communication
11. Data Transmission

Manufacturing Cluster

_____48. First Choice

_____49. Second Choice

_____50. Third Choice

1. Research and Design
2. Getting a Job
3. Materials and Processes
4. Casting and Molding
5. Forming
6. Separating
7. Combining
8. Assembling
9. Finishing
10. Industrial Product Management
11. Personnel Management

THE RESULTS OF THIS STUDY WILL BE AVAILABLE FOR THOSE WHO REQUEST THEM.

APPENDIX B

COVER LETTER

Votech OKLAHOMA STATE DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION
FRANCIS TUTTLE, DIRECTOR • 1515 WEST SIXTH AVE., • STILLWATER, OKLAHOMA 74074 • A.C. (405) 377-2000

February 26, 1980

Dear Fellow Industrial Arts Teacher:

Industrial arts appears to be at a "crossroads" concerning the traditional and pre-vocational curriculum. We are making a state-wide study of all full-time industrial arts teachers in Oklahoma in order to ascertain thinking on this issue.

Recently, a copy of the state plan, A Guide for Industrial Arts Education in Oklahoma, was sent to you. We have developed an opinionnaire based upon the contents of this plan and we are asking that you respond to each statement presented. Regardless of whether or not you have had a chance to familiarize yourself with the contents of the plan, your response is of vital importance.

Please help us by returning the completed opinionnaire by March 7, 1980 using the enclosed pre-addressed, postage-paid envelope.

Sincerely,

Roger Stacy
Roger Stacy
Research Coordinator

Harold Winburn
Harold Winburn
State Supervisor of
Industrial Arts

APPENDIX C

FOLLOW-UP POSTCARD

State Department of Vocational
and Technical Education
1515 West 6th Avenue
Stillwater, OK 74074

Non-Profit Org.
U.S. Postage
PAID
Stillwater, OK
Permit No. 244

March 11, 1980

Fellow Industrial Arts Teacher:

Two weeks ago, an opinionnaire concerning your beliefs about Industrial Arts was mailed to you. Your response to this opinionnaire is of vital importance as we are seeking to attain responses from all Industrial Arts teachers in Oklahoma.

Please, if you would, complete the opinionnaire and mail it to us by March 21, 1980.

Sincerely,

Roger Stacy
Harold Winburn

APPENDIX D

TOPICS RANKED WITHIN CLUSTERS

TABLE XIX

TOPICS RANKED ACCORDING TO PERCEIVED IMPORTANCE WITHIN CLUSTERS CONTAINED IN THE STATE PLAN AS REPORTED BY ALL RESPONDENTS ACCORDING TO THE SEVEN CATEGORIES OF PERSONAL AND PROFESSIONAL CHARACTERISTICS

Topic No.	Topics	Years of Age	Level of Educ.	Years Taught I.A.	Type of Prog.	Level of Tchg.	Years of Ind. Exper.	Teachers vs. Teacher Educ.
	Construction Cluster							
1.	Design	1	1	1	1	1	1	1
2.	Preparing to Build	3	3	3	3	3	3	3
3.	Clearing a Site	8	8	8	8	8	8	8
4.	Excavation	10	9	9	9	9	9	9
5.	Comp. of Concrete	10	10.5	10.5	10.5	10.5	10.5	10.5
6.	Concrete--Form./Finish.	6	6	6	6	6	6	6
7.	Wood Frame Construction	2	2	2	2	2	2	2
8.	Electrical Wiring	5	5	5	5	5	5	5
9.	Plumbing	7	7	7	7	7	7	7
10.	Masonry	10	10.5	10.5	10.5	10.5	10.5	10.5
11.	Obtaining a Job	4	4	4	4	4	4	4
	Transportation Cluster							
1.	History of Transportation	2	2	2	2	2	2	2
2.	Land Transportation	4	3	4	4	4	4	4
3.	Local/Suburban Transit	6	6	6	6	6	6	6
4.	Highway Transportation	5	5	5	5	5	5	5
5.	Rail Transportation	9.5	9	9	9	9	9	9
6.	Unions--Collective Barganing	8	8	8	8	8	8	8
7.	Aerospace Transportation	7	7	7	7	7	7	7
8.	Water Transportation	9.5	10	10	10	10	10	10
9.	Future Transportation	3	4	3	3	3	3	3
10.	Occupations in Trans. Cluster	1	1	1	1	1	1	1
	Communication Cluster							
1.	Television Broadcasting	2	2	2	2	2	2	2
2.	Radio Broadcasting	5	5	5	5	5	5	5
3.	Publishing	7	7	7	7	7	7	7
4.	Graphic Arts	1	1	1	1	1	1	1
5.	Journalism	6	6	6	6	6	6	6
6.	Commercial Art	8	8	8	8	8	8	8
7.	Camera Tech./Film Proc.	4	4	4	4	4	4	4
8.	Fund. of Photo. Print.	10	10	10	10	10	10	10
9.	Dev. of the Telephone	11	11	11	11	11	11	11
10.	Telephone Communication	9	9	9	9	9	9	9
11.	Data Transmission	3	3	3	3	3	3	3
	Manufacturing Cluster							
1.	Research and Design	1	1	1	1	1	1	1
2.	Getting a Job	3	3	3	3	3	3	3
3.	Materials and Processes	2	2	2	2	2	2	2
4.	Casting and Molding	7	7	7	7	7	7	7
5.	Forming	9	9	9	9	9	9	9
6.	Separating	10	10	10	10	10	10	10
7.	Combining	11	11	11	11	11	11	11
8.	Assembling	5	5	5	5	5	5	5
9.	Finishing	8	8	8	8	8	8	8
10.	Ind. Prod. Man.	4	4	4	4	4	4	4
11.	Personnel Management	6	6	6	6	6	6	6

NOTE: The lower the number, the greater the importance

VITA[2]

John Roger Stacy

Candidate for the Degree of

Doctor of Education

Thesis: CONTEMPORARY CONCEPTS OF INDUSTRIAL ARTS AS PERCEIVED BY TEACHERS AND TEACHER EDUCATORS IN OKLAHOMA

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Frederick, Oklahoma, March 15, 1953, the son of John L. and Jeanne Stacy; married to Brenda, May 16, 1976.

Education: Graduated from Frederick High School, Frederick, Oklahoma, in May, 1971; attended Oklahoma State University, Stillwater, Oklahoma, 1971; attended Cameron University, Lawton, Oklahoma, 1972; received Bachelor of Science in Education degree with a major in Industrial Arts Education and minors in Art and Physical Education from Southwestern Oklahoma State University, Weatherford, Oklahoma, May, 1976; received Master of Education degree with emphasis in Industrial Arts Education from Southwestern Oklahoma State University, July, 1977; completed requirements for Doctor of Education degree at Oklahoma State University in July, 1980.

Professional Experience: High school and junior high school teacher, Weatherford Public Schools, Weatherford, Oklahoma, 1976-78; employed as Instructor in the Department of Industrial Education, Southwestern Oklahoma State University, Weatherford, Oklahoma, 1978-present; State Advisor of the Oklahoma Association of the American Industrial Arts Student Association, 1978-present; recipient of internship sponsored by the State Department of Vocational-Technical Education, Stillwater, Oklahoma, Summer, 1979 and Spring-Summer, 1980.

Professional Organizations: American Industrial Arts Association, Oklahoma Industrial Arts Association, American Vocational Association, Oklahoma Vocational Association, National Education Association, Oklahoma Education Association, American Council of Industrial Arts Teacher Educators, Oklahoma Council of

Industrial Arts Teacher Educators, Higher Education Alumni Council of Oklahoma, American Industrial Arts Student Association, Phi Delta Kappa.