A SURVEY OF THE INDUSTRIAL ARTS EDUCATION GRADUATES FROM OKLAHOMA STATE UNIVERSITY 1966-1976

By

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CHAPTER I

INTRODUCTION

Industrial Arts at Oklahoma State Unviersity had its beginning in September of 1915 when DeWitt Hunt was hired as an "Assistant Professor in charge of Manual Training" (Franklin, 1952, p. 107). At that time a Department of Shop Practice was organized, within the School of Engineering, that offered nine courses for the manual training teachers. This was the first time that manual training teachers, later to be called industrial arts teachers, were prepared at Oklahoma Agricultural and Mechanical College.

During the 1929-30 school year, the department name was changed to "Industrial Arts Education." In conjunction with this, a Bachelor of Science in Industrial Arts Education was offered. Since 1929, it has been the role of the Industrial Arts Education Department at Oklahoma State University, to prepare teachers for junior and senior high teaching positions in Oklahoma and the surrounding states. The department remained with the College of Engineering until 1957, when it became part of the College of Education.

Edwards (1971) emphasized the need for the periodic evaluation of teacher education programs through graduate follow-ups. He suggested the use of these follow-up studies to improve and upgrade educational programs. Headrick (1979) listed four major purposes that such a graduate follow-up would serve: (1) to improve programs, (2) to provide a

basis for accountability, (3) to aid in planning, and (4) to aid in decision-making. A literature search has indicated that no such follow-up study has been conducted on the Industrial Arts Education graduates from Oklahoma State University since Combrink's study in 1968.

Statement of the Problem

There is inadequate information regarding the graduates' employment choices and their perceptions of the subject area usefulness in the Industrial Arts Education program at Oklahoma State University for preparing industrial arts teachers.

Need for the Study

There were 128 graduates who received a Bachelor of Science Degree in Industrial Arts Education from Oklahoma State University during the period from July 1, 1966, through June 30, 1976. This study provides a comprehensive survey of these graduates' opinions regarding their college preparation. The results of this study will supply the faculty and administrators at Oklahoma State University with information regarding: (1) the graduates' employment choices following graduation, (2) the graduates' concepts of program adequacy, (3) the graduates' recommendations for program improvement, and (4) the salary comparisons between teaching and non-teaching graduates. Results of this study may also allow industrial arts teacher educators to more closely estimate the number of graduates who choose employment in areas other than industrial arts teaching and to identify the factors that are responsible for these choices. This study may be of significant importance to researchers at other institutions who wish to conduct similar studies of their graduates.

Purpose of the Study

The purpose of this study was to collect and analyze data pertaining to the undergraduate program in Industrial Arts Education at Oklahoma State University, based on the opinions of the 128 graduates receiving Bachelor of Science Degrees during the period of July 1, 1966 through June 30, 1976.

Research Questions

This study attempted to answer the following questions pertaining to the graduates and curriculum of the industrial arts program at Oklahoma State University:

1. What were the present occupations of the Industrial Arts Education graduates?
2. What percentage of graduates chose employment other than teaching and what factors influenced these choices?
3. How did the salaries of graduates teaching industrial arts compare to those of graduates with employment in occupations other than teaching?
4. What factors encouraged some graduates to seek industrial arts teaching jobs outside of Oklahoma?
5. How did the graduates rate the industrial arts subject areas in terms of their usefulness?
6. What suggestions did the graduates have for Industrial Arts Education curriculum improvement at Oklahoma State University?

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of related literature resulted from careful investigation of many different sources pertaining to industrial arts teacher education. The information is organized into the following format: (1) components of industrial education, (2) federal funding for industrial arts, (3) program assessment, (4) previous industrial arts education follow-ups, and (5) a summary.

Components of Industrial Education

Industrial arts education in conjunction with trade and industrial education and technical/technology education form the broad curriculum of industrial education. Good (1973) defines industrial education in the following manner:

> Industrial education is a term used to designate various types of education concerned with modern industry, industrial arts, technical education and apprenticeship training and vocational-industrial education in both public and private schools (p. 299).

Industrial education can then be considered teaching that is industry related. The following paragraphs further break down industrial education into its basic elements.

The first of these basic elements is industrial arts teacher education. Good (1973, p. 586) defines industrial arts teacher education as "a college curriculum or program designed for the preparation of

industrial arts teachers, leading to a bachelor's degree and involving both professional and technical course work." Industrial arts teacher education has the responsibility to train industrial arts teachers for both public and private schools.

Francis Tuttle, in the foreword to A Guide for Industrial Arts Education in Oklahoma, emphasized that industrial arts is a significant part of general education for all students. To many students, industrial arts serves as a means for them to develop an understanding of how industry and technology interact to produce goods and materials. Tuttle also emphasized that industrial arts could be pre-vocational to some students through participation in career exploration opportunities.

Industrial arts education teachers provide exploratory experiences for secondary students to assist in their tentative career choices as well as to develop avocational interests and skills. The industrial arts education curriculum at Oklahoma State University was designed to prepare industrial arts teachers for public school employment by offering courses leading to a Bachelor's or Master's Degree in Industrial Arts Education with a state certificate to teach in the secondary schools of Oklahoma (Oklahoma State University Catalog, 1979-80).

While industrial arts may be considered to be pre-vocational for some students, trade and industrial education is specifically vocationally oriented, that is, its main purpose is to train students to enter employment upon completion. Good (1973) submits the following formal definition of trade and industrial education:

> . . . instruction which is planned to develop basic manipulative skills, safety judgment, technical knowledge, and related occupational information for the purpose of fitting persons for initial employment in industrial occupations and upgrading or retraining workers employed in industry (p. 612).

The trade and industrial education curriculum was designed to prepare teachers, supervisors or vocational coordinators for vocational trade and industrial education classes. A unique feature of this program is the requirement for previous trade proficiency prior to state certification. Persons who have completed the trade and industrial degree programs are qualified to teach in vocational departments in both regular high schools and area vocational schools or enter related industrial occupations (Oklahoma State University Catalog, 1979-80).

Industrial and Engineering Technology form the third basic area of industrial education. Technology programs prepare students for industrial positions rather than educational positions. The Oklahoma State University Catalog, 1979-80, has the following to say about the engineering technology program:

> 1. Engineering technology education is concerned with the practical application of engineering achievement with emphasis upon the end product rather than the conceptual process.
> 2. Technology programs train two-year associate degree 'technicians' or four-year baccalaureate degree 'technologists' (p. 186).

An area of industrial education closely related to both trade and industrial education and industrial or engineering technology is technical education. Good (1973) presents the following formal definitions of technical education:

> A type of education that emphasizes the learning of a technique or technical procedure and skills, and aims at preparing persons in the technical areas of distribution and marketing, in the more sophisticated areas of business and office education, etc.; originally did not lead to a degree or carry college credit but more commonly today involves transferrable college credit and leads towards a two-year associate degree (p. 590).

Technical education on the university level prepares instructional

personnel for technical programs at community junior colleges and technical institutes. Some graduates also accept technical employment in business, industry or government. The Oklahoma State University technical education curriculum is designed for entry following the attainment of an associate degree from a technical school (Oklahoma State University Catalog, 1979-80).

Federal Funding for Industrial Arts

The previous paragraphs presented an overview of industrial arts' relationship to the other components of industrial education. Recognizing the inherent capability of industrial arts to complement vocational programs by offering career exploration, provisions were written into the Educational Amendments of 1976, to provide a basis for funding industrial arts programs that met certain criteria. The following sections deal with federal funding for industrial arts:

Section 104.591 Use of Funds

> A state may use funds under its basic grant, when included in the approved five-year state plan, for industrial arts programs which meet the requirements set forth in 104.592.

Section 104.592 Industrial Arts Programs

> Industrial arts education programs which may be funded under section 104.591 are those industrial arts programs which are designed to: (a) pertain to the body of related subject matter, or related courses, organized for the development of understanding about all aspects of industry and technology, including learning experiences involving activities such as experimenting, designing, constructing, evaluating, and using tools, machines, materials, and processes; and (b) assist individuals in making informed and meaningful occupational choices for which prepare them for entry into advanced Trade and Industrial or Technical education programs (A Guide for Industrial Arts in Oklahoma, 1979, p. 14).

Program Assessment

It is the responsiblity of teacher education institutions to train industrial arts teachers who are competent to teach industrial arts in the public schools. The Oklahoma industrial arts curriculum guide (A Guide for Industrial Arts in Oklahoma) identifies five major functions of the college or university industrial arts teacher education programs: (1) to provide broad general industrial education courses for all college students, (2) to offer specialized service courses for other college majors, (3) to prepare industrial arts teachers, (4) to provide in-service training for practicing teachers, and (5) to provide technical training for industry.

One method an industrial arts teacher education program may assess its effectiveness, is to conduct a follow-up study of its graduates. Nelson (1964, p. 111) pointed out the important role graduates play in program evaluation when he stated the following: "at some time in the course of their development, all institutions are measured for effectiveness in terms of their graduates."

Best (1977) emphasized the importance of follow-up studies for program evaluation:

> The follow-up study investigates individuals who have left an institution after having completed a program, a treatment, or a course of study. By examining their status or seeking their opinions, one may get some idea of the adequacy or inadequacy of the institution's program.
>
> Studies of this type enable an institution to evaluate various aspects of its program in light of actual results (p. 132).

Good (1973, p. 565) indicated five basic purposes a follow-up study may be used for: (1) to determine the effectiveness of the guidance process, (2) to gain a realistic picture of what lies ahead for present

students, (3) to help former students reappraise their educational and vocational plans, (4) to appraise the school's program, and (5) to obtain ideas for improving the program.

Previous Research

Several follow-up studies were found dealing with similar industrial arts education programs at other universities. The most recent study of industrial arts graduates of Oklahoma State University was done by Combrink in 1968. Four basic follow-up studies are analyzed in the following pages, Combrink's study will be reviewed last.

Winters (1970) surveyed the graduates of the industrial arts teacher education and technical/technology programs at Murray State University, from 1965 through 1969, in an attempt to evaluate the university's curriculum. Only findings and recommendations that pertain to the industrial arts education program will be reviewed here. Winters had the following findings:

1. Over one-half of the graduates left the state for employment.
2. Ninety-one percent of the teacher education respondents had completed an advanced degree or were planning to.
3. A vast majority of the graduate work was done in industrial education.
4. The majority of the respondents were teaching industrial arts either full-time or part-time at the high school level.
5. Respondents were devoting a high percentage of their time to teaching woods, drafting and general shop.
6. The respondents favored curriculum additions or changes in power

and auto mechanics, industrial management and methods, and more emphasis on plastics.

7. Approximately seventy-five percent of the respondents indicated excellent or adequate preparation in their undergraduate programs.

Winters made the following conclusions concerning the industrial arts teacher education program at Murray State University:

1. As many as ninety percent of the teacher education graduates may be expected to work towards an advanced degree.
2. The industrial arts teacher education graduate will be more likely to teach industrial arts at the high school level.
3. Industrial arts education and technology programs are compatible.
4. Special emphasis should be placed upon counseling students into courses indicated by a high percentage of respondents as "should have taken."

Gifford (1970) surveyed the graduates of the undergraduate industrial arts program at South Dakota State University from 1955 through 1969. Questionnaires were utilized to gather data for program evaluation. Gifford had the following findings:

1. The majority of respondents held teaching jobs at junior or senior high schools or taught both levels.
2. Woodworking and drafting were the most frequently taught industrial arts subjects.
3. Respondents felt industrial arts teacher education programs should be brought up to date with changing technology.
4. Most of the respondents attended South Dakota State because of parental recommendations.

5. Slightly over fifty-three percent of the respondents held teaching jobs.
6. Nearly fifty-six percent of the respondents had continued their education since graduation.
7. Respondents working on advanced degrees chose industrial education as a major more than any other area.
8. Teaching load frequency was in the following order: woodworking, metalworking, drafting, and electricity/electronics.
9. Sixty-four percent rated woodworking, IAE 153, as the most valuable of all course offerings.
10. Drafting courses as a group were rated higher than any other group of courses.

Gifford (1970) made the following conclusions and recommendations following his survey of the industrial arts graduates of South Dakota State University:

1. The undergraduate industrial arts program was in need of a course in teaching of electricity/electronics.
2. The Industrial Arts Department should investigate methods of teaching mass production and automation techniques as an integral part of their curriculum.
3. Courses in metals areas needed to be added to the curriculum to provide students with greater understanding of the importance of metal and how it relates to our technological society.
4. Professional industrial arts courses needed careful evaluation with the possibility of adding courses dealing with organization, administration, and evaluation of industrial arts.

5. The Industrial Arts Department at South Dakota State had insufficient faculty to adequately prepare its graduates.

Edwards (1971) conducted a similar study of the industrial arts education graduates from 1960 through 1969 at Black Hills State College. As with the previous studies cited, Edwards hoped to evaluate the industrial arts curriculum. Edwards concluded the following:

1. The majority of individuals who graduated with degrees in industrial arts were employed in teaching, however, some were employed in other states.
2. The primary reason for graduates leaving teaching was the higher salaries offered in other occupations.
3. Nearly one-half of the respondents had obtained or were in the process of obtaining advanced degrees.
4. The respondents in teaching positions rated course importance in the following order: professional courses, electricity/electronics, drafting, woodworking, crafts and metals.
5. The respondents indicated that the drafting, woodworking and plastics areas at Black Hills State College were satisfactory and that ceramics, electricity/electronics, graphic arts, metals, power and transportation and textiles were in need of improvement.
6. The respondents felt that the industrial arts program was deficient in terms of facility, equipment, and program offerings, and that more emphasis should be placed on modern industrial processes.

Edwards made the following recommendations for the industrial arts education program at Black Hills State College as a result of his survey:

1. The areas of electricty/electronics, metals, professional education, power and transportation, and graphic arts be improved and strengthened by expanding the program of offerings, by providing adequate facilities and equipment, and emphasizing modern industrial processes.
2. The woodworking area needed expansion to include carpentry, wood finishing, basic joinery, tool and machine conditioning, and production and use of modern products.
3. The drafting area should include descriptive geometry, drafting of threads, fasteners, cams, and gears as basic elements in existing drafting courses.
4. The industrial arts division and alumni office should keep the addresses of the graduates current to facilitate continued future communication.

Combrink conducted a follow-up study in 1968 of the Industrial Arts Education graduates from Oklahoma State University from 1956 through 1966. This was the latest follow-up study the writer found concerning the industrial arts graduates from Oklahoma State.

The data of Combrink's study indicated that a higher percentage of Bachelor of Science degree holders enter industry than Master of Science degree holders. Since industrial salaries were 23.7% higher, the average salaries of B.S. degree holders was slightly higher than the salaries of M.S. holders. Only eight percent of the M.S. degree holders were employed in industry while 45% of the B.S. degree holders elected to work in industry. Teaching salaries of those graduates who left the state of Oklahoma to teach averaged approximately 11% higher than those of in-state teachers. Approximately 42% had taken out-of-state teaching

jobs. Graduates felt that the drafting and design, woodworking, and metalworking were the most applicable courses for career preparation while the areas of electricity and electronics needed to be expanded. As a group, the graduates were reasonably satisfied with the educations they received.

Combrink concluded that the majority of the graduates receiving B.S. degrees entered the teaching profession with a substantial number looking to industry for employment. The primary reason for industry's attractiveness seemed to be the additional income potential it produced and the difficulty of working with the public. Combrink also concluded that most M.S. degree recipients could expect to work in the teaching profession or advance to an administrative position.

Nearly all of the subject areas in industrial arts need to be constantly reviewed and revised to keep up with rapidly changing technology that industry has experienced in the recent past. It was further recommended that additional courses be added to the industrial arts curriculum at Oklahoma State University. The curriculum at the time of this study was deemed to be much too narrow in scope in both content and course selections.

Combrink's final recommendation was that education must become competitive in salaries with industry in order to attract more graduates into the classroom and/or laboratory positions.

Summary

The review of literature examined industrial arts' role in industrial education along with the other basic elements: trade and industrial education, and technology and technical education. Industrial

arts was funded by Congress in 1976 because of its complementary role to the previously funded vocational education programs.

It is the responsibility of the college or university industrial arts teacher education program to train teachers who are competent to teach secondary industrial arts. An effective method a university may utilize to determine how proficiently it performs its job of preparing teachers is to conduct graduate follow-ups.

Research indicated that several follow-ups of industrial arts graduates were conducted at other universities. There were several basic similarites in all of the studies. Even though a majority of industrial arts graduates enter teaching, a significant number did choose non-teaching employment primarily in industry. The salary gap between education and industry seemed to be the primary factor contributing to this condition.

No follow-up of the graduates of the industrial arts teacher education program at Oklahoma State University was found later than 1968 (Combrink). This inadequacy of current information regarding the Industrial Arts Education graduates from Oklahoma State University points out the need for a research study to be carried out to determine the effectiveness of the industrial arts program towards preparing industrial arts teachers for secondary schools.

CHAPTER III

METHODOLOGY

Definition of Terms

The following definitions were included to clarify the meanings of specific terms as they relate to this study:

Industrial arts -- (1) An area of education dealing with socio-economic problems and occupational opportunitites, involving experience with a wide range of materials, tools, processes, products, and occupations typical of an industrial and technological society. (2) A phase of the educational program concerned with orienting individuals through study and experience to the technical-industrial side of society for the purpose of enabling them to deal more intelligently with consumer goods, to be more efficient producers, to use leisure time more effectively, and to act more intelligently in regard to matters of health and safety, especially as affected by industry (Good, 1973, p. 298).

Graduate -- A person receiving a Bachelor of Science Degree in Industrial Arts Education from Oklahoma State University in the period of July 1, 1966 through June 30, 1976.

Educational employment -- Employment as a teacher or administrator in public or private schools.

Industrial employment -- Employment in some aspect of the industrial work force.

Curriculum -- A systematic group of courses or sequences of subjects required for graduation or certification in a major field of study (Good, 1973, p. 157).

General education -- Those phases of education which should be the common experience of all men and women (Good, 1973, p. 258).

Industrial arts education -- The program of instruction for the preparation of teachers in the field of industrial arts.

Undergraduate -- A student in an institution of higher education who has not yet taken the bachelor's, or first professional, degree in the field in which he is studying (Good, 1973, p. 630).

Assumptions

The following assumptions apply to this study:

1. It was assumed that information obtained from graduates of the Industrial Arts Education program at Oklahoma State University was accurate.
2. It was assumed that the non-respondents were randomly distributed among the teachers and non-teachers.
3. It was assumed that graduates of a teacher education program are competent to make an evaluation of the training they received because of their employment experiences following graduation.

Selection of Subjects

The population in this study consisted of 128 graduates of the Industrial Arts Education Department at Oklahoma State University, that received Bachelor of Science Degrees during the period from July 1, 1966 through June 30, 1976. A listing of the names of these graduates was obtained from official commencement programs kept in the School of Occupational and Adult Education at Oklahoma State University. The addresses were obtained at the University Alumni Association, and from the information folders kept in the Industrial Arts Education Department.

Approximately two-thirds of the graduates (or their families) were contacted by telephone to ascertain their correct addresses and their

willingness to participate in the survey. In addition, some of the graduates contacted were consulted to determine the locations of other graduates in the study. One hundred and twelve of the graduates (87.5%) were located and mailed questionnaires.

Development of the Instrument

The questionnaire was chosen by the researcher as a survey instrument due to the predicted geographic dispersion of Oklahoma State University industrial arts graduates. A careful review of the literature, including the inspection of questionnaires used in similar studies, resulted in the adaptation of a questionnaire Combrink used in 1968 to survey the Industrial Arts Education graduates from 1956 through 1966.

Two major areas of information were addressed by the questionnaire: (1) Employment Records, and (2) Educational Preparation. The questionnaire was designed to require minimal written response and to protect the respondents' anonymity. A preliminary questionnaire was pre-tested by administering it to a selected group of graduate students and professors. Suggestions for revision were utilized and the revised questionnaire was approved for mailing to the graduates. Appendix A illustrates the approved questionnaire.

Collection of the Data

The questionnaires were mailed on January 16, 1981, to 112 of the Industrial Arts Education graduates from Oklahoma State University, who received their degrees from July 1, 1966, through June 30, 1976, with a

cover-letter explaining the study, reproduced on department stationary (see Appendix B). A stamped, pre-addressed envelope was included in this mailing to simplify questionnaire return. By January 30, 1981, 57 questionnaires were returned and a second mailing to the non-respondents was initiated (see Appendix C). By February 13, 1981, 30 questionnaires had been returned and the remaining non-respondents were mailed post-cards (see Appendix D) as a final attempt to solicit their participation in the study. The conclusion of data gathering on February 27, 1981, for all three mailings, yielded a total return of 83 completed questionnaires and the return of ten questionnaires because of incorrect addresses.

Analysis of Data

The item responses on the questionnaire returns were entered on a master list upon receipt and the identification numbers were removed from the questionnaires to protect the anonymity of the respondents. The cummulative data was then analyzed and recorded in both narrative and tabular form in a manner designed to meet the purposes and answer the research questions formulated for this study. Written curriculum suggestions were considered significant only when they occurred with some frequency and these significant suggestions were reported in the text of this thesis (a complete listing of all curriculum suggestions was included in Appendixes E and F). Some of the results of the questionnaire were reported in graphical form to clarify the relationships and simplify interpretation.

Limitations

1. This survey of opinions was limited to those graduates who received a Bachelor of Science in Industrial Arts Education from Oklahoma State University between July 1, 1966, and June 30, 1976.
2. Results were limited to those students who returned questionnaires. Other factors may have caused non-response from some graduates and biased the findings of this study.
3. No attempt was made to correlate respondents' attitudes and academic success.
4. Parts of the questionnaire might have been misinterpreted by some of the graduates.
5. The researcher might have been biased in interpretation of the written responses to some questions.

CHAPTER IV

RESULTS

The primary purpose of this study was to collect and analyze data pertaining to the undergraduate program in Industrial Arts Education at Oklahoma State University, based on the opinions of the 128 graduates who received Bachelor of Science degrees during the period of July 1, 1966, through June 30, 1976. This study examined the occupational choices made by the graduates and determined some of the factors that influenced these choices. In addition, the graduates were surveyed to obtain their suggestions for improvement of the Industrial Arts Education curriculum.

Following the collection of data through the mailed questionnaire, the findings were tabulated and analyzed by the appropriate techniques to meet the purpose and objectives of the study. Since the follow-up study was of a descriptive nature, only descriptive statistics were utilized to evaluate the resulting data.

Return Rates

Originally, it was possible to obtain the addresses of 112 of the 128 graduates of the Industrial Arts Education Department at Oklahoma State University. The questionnaire developed for this research study and an accompanying cover-letter were initially mailed to these 112 industrial arts graduates on January 16, 1981, and the two-week period

that followed, produced 57 returned questionnaires. The second mailing, on January 30, 1981, produced an additional 23 returns. On February 13, 1981 (two weeks later), a final mailing to the non-respondents produced three returns which brought the total number of returns to 83, a response rate of 81.4%. Ten of the non-respondent questionnaires were returned with incorrect addresses and the correct addresses were unobtainable. The data summary and findings of this study were based on the 83 returned questionnaires.

Data Summary

The data derived from the survey instrument addressed two broad areas: the graduates' employment records and their educational preparation.

Employment Record

Present Employment. The graduates' present employment position was addressed by item one on the questionnaire. Four major employment categories were included in the questionnaire: administration, classroom teaching, business and industry, and other occupations. Six, or 7.2%, of the graduates were presently employed in Administration while 29, or 34.9%, were employed as Classroom Teachers. Thirty-eight, or 45.8%, of the graduates were presently employed in Business and Industry while 10, or 12.1%, were employed in Other Occupations. The bar graph on Figure 1 illustrates the relative proportions of present employment among the graduates for each of the four major categories.

Within the category of Administration, none of the respondents indicated their position as Superintendent, while one, or 16.6%, held

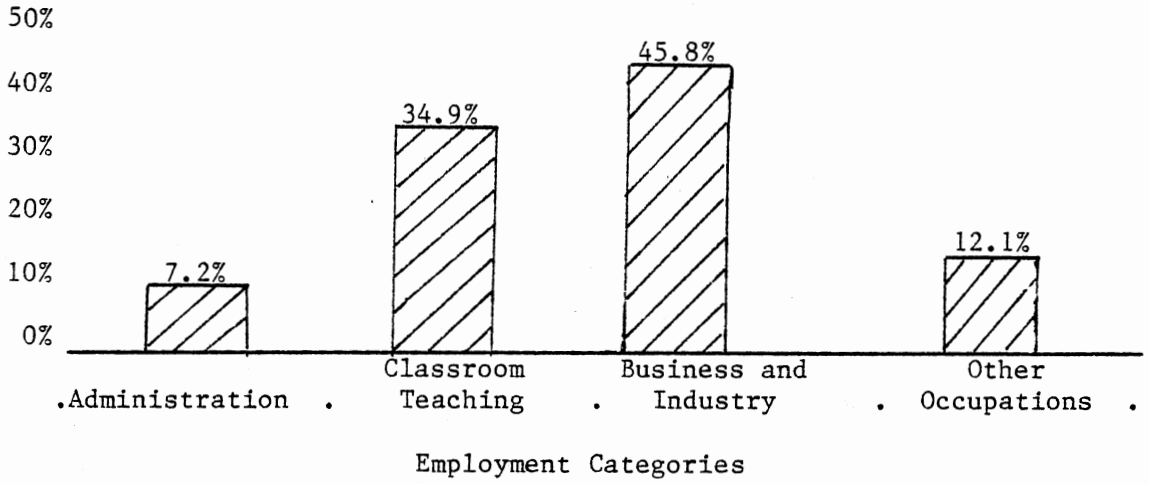

Figure 1. The Distribution of Graduates in the Four Broad Employment Categories.

the position of Principal. In addition, five, or 83.3%, chose Other areas of administrative employment. The Other areas of administrative employment specified were: Vocational Rehabilitation Counselors and Evaluators, 33.2%; Curriculum Specialist, 16.7%; District Supervisor, 16.7%; and, Career Vocational Administrators, 16.7%. A summary of the responses in the Administration category is illustrated in Table I.

The category of Classroom Teaching included the following response divisions: industrial arts, trade and industrial, and other. Within the category of Classroom Teaching, 16 or 55.2%, indicated teaching positions in Industrial Arts while nine, or 31.0%, indicated teaching Trade and Industrial education. Four, or 13.8%, of the respondents indicated the following Other areas of Classroom Teaching: higher education, math, or special education. A summary of the responses included in the Classroom Teaching category is illustrated in Table II.

TABLE I

GRADUATES EMPLOYED IN SCHOOL ADMINISTRATION

Areas	Per Cent
Superintendent	0.0
Principal	16.6
Vocational Rehabilitation	33.2
Curriculum Specialist	16.7
District Supervisor	16.7
Career and Vocational Administration	16.7

Question 1a. Administration:
Superintendent _____
Principal _____
Other (please specify)
_____

TABLE II

GRADUATES EMPLOYED AS CLASSROOM TEACHERS

Areas	Per Cent
Industrial Arts	55.2
Trade and Industrial	31.0
Other	13.8

Question 1b. Classroom Teaching:
Industrial Arts _____
Trade and Industrial _____
Other (please specify)
_____

The category of Business and Industry, which accounted for 45.8% of the total responses on item one, was broken down further into the into the following divisions: management, non-management, self-employed, and other. Within the category, 20, or 52.6%, of the graduates employed in Business and Industry, indicated Management positions while six, or 15.8%, indicated employment in Non-management areas. Twelve, or 31.6%, of the graduates employed in Business and Industry indicated self-employment. None of the graduates returning questionnaires reported Other areas of employment in the Business and Industry category. A summary of the employment selections for the graduates employed in Business and Industry is illustrated in Table III.

The final category of employment included on the questionnaire was Other Occupations. Ten, or 12.1%, of the graduates responding indicated employment in this category. The most frequently occurring Other Occupation indicated by the respondents on the returned questionnaires was farming/ranching, which accounted for 40% of the responses. Other responses indicated are as follows: military service, lawyer, sales, airline pilot, ministry, and unemployed. A summary of the employment positions for the graduates who indicated Other Occupations on the questionnaire was illustrated with Table IV.

Employment Histories. Item two on the questionnaire required the respondents to list in order the positions they had held since the completion of their B.S. degrees in Industrial Arts Education from Oklahoma State University. Forty-five, or 54.2%, indicated teaching experience at some time since graduation in industrial arts while 38, or 45.8%, indicated no experience in industrial arts teaching. Twenty, or

TABLE III

GRADUATES EMPLOYED IN BUSINESS AND INDUSTRY

Areas	Per Cent
Management	52.6
Non-Management	15.8
Self-Employed	31.6
Other	0.0

Question 1c. Business and Industry:
Management _____
Non-Management _____
Self-Employed _____
Other (please specify)
_____

TABLE IV

GRADUATES INDICATING OTHER OCCUPATIONS

Areas	Per Cent
Farming/Ranching	40.0
Other Responses (military service, lawyer, sales, airline pilot, ministry, and unemployed)	60.0

Question 1d. Other Occupations: (please specify) _____
_____

44.4%, of those indicating industrial arts teaching experience sought employment outside of Oklahoma.

Industrial Arts Teaching Outside of Oklahoma. Question three evaluated factors that were responsible for graduates seeking industrial arts teaching positions outside of Oklahoma. Better Salary was indicated 40.0% of the time as a reason, while More Favorable Climate was selected 8.0% of the time. Family and Geographic Location were indicated 8.0% and 24.0%, respectively, and Other reasons accounted for 20.0% of the responses to question three. Other reasons listed and their corresponding percentages were: job availability, 8.0%; school reputation, 8.0%; and, substituting for a friend, 4.0%. A summary of the reasons for choosing industrial arts teaching employment outside of Oklahoma was illustrated with Table V.

Salaries. Item four of the questionnaire was concerned with the present annual salaries of the graduates. The mean salary for all graduates was $18,168. The graduates indicating present employment in Administration, reported a mean salary of $19,167, while graduates in Classroom Teaching positions reported $16,552 as their mean salary. The Classroom Teaching category was further broken down into its specific components. Those graduates employed as Industrial Arts teachers reported a mean salary of $15,500, while those teaching Trade and Industrial education reported a mean salary of $17,444. Other classroom teachers reported a salary mean of $18,750. Those graduates employed in Business and Industry reported a mean salary of $19,316, while those responding to the Other Occupations category indicated a mean salary of $17,889. A summary of the salary findings was illustrated with Table VI.

TABLE V

REASONS FOR CHOOSING INDUSTRIAL ARTS TEACHING OUTSIDE OF OKLAHOMA

Reasons Indicated	Per Cent
Better Salary	40.0
More Favorable Climate	8.0
Family	8.0
Geographic Location	24.0
Other	20.0

Question 3. If you have taught industrial arts outside of Oklahoma, please indicate your reason(s) below.

Better Salary _____ Geographic Location _____
More Favorable Climate _____ Other (please specify)
Family _____ _____

Non-Teaching Employment. Question five addressed the problem of determining factors that encouraged 65.1%, or 54, of the graduates of the Industrial Arts Education Department at Oklahoma State University to choose occupations other than teaching. Overall, Better Salary was responsible for 43.9% of the responses while Better Working Conditions accounted for 28.6%. Eleven and two-tenths percent of the responses to question five indicated Dislike Teaching and 16.3% indicated Other reasons and their corresponding percentages of the response were: chance for advancement, 5/1%; preferred agriculture, 3.1%; favored military 2.0%; and, other reasons, 6.1%. Table VII summarized the overall findings of question five.

TABLE VI

PRESENT ANNUAL SALARIES OF THE GRADUATES

Category	Mean Salary
Administration	$19,167
Classroom Teaching:	
Industrial Arts	15,500
Trade and Industrial	17,444
Other	18,750
Business and Industry	19,316
Other Occupations	17,889
All Industrial Arts Education Graduates	18,168

Question 4. Please place a check ( ) beside the figure below nearest your present salary.

7,000 or below _____	$12,000 _____	$17,000 _____
8,000 _____	13,000 _____	18,000 _____
9,000 _____	14,000 _____	19,000 _____
10,000 _____	15,000 _____	20,000 _____
11,000 _____	16,000 _____	21,000 or above _____

TABLE VII

REASONS FOR GRADUATES' SELECTION OF OCCUPATIONS OTHER THAN TEACHING

Reasons	Per Cent of Responses
Better Salary	43.9
Better Working Conditions	28.6
Dislike Teaching	11.2
Other	16.3

Question 5. If you have chosen some occupation other than teaching, please indicate the reason(s) for your choice.

Better Salary _____ Dislike Teaching _____
Better Working Conditions _____ Other (please specify)
_____

Those graduates who were presently employed in Administration (7.2%) indicated Better Salary and Better Working Conditions most frequently (40% of the responses each) as their reason for seeking employment in Administration. A better chance for advancement accounted for 20% of the responses. A summary of the responses of the graduates in Administration was illustrated with Table VIII.

The graduates of the Industrial Arts Education program at Oklahoma State University who indicated present employment in Business and Industry (45.8%), submitted Better Salary most frequently as their reason for choosing their occupations over teaching, accounting for 44.4% of their total responses. Additional factors that affected the graduates' decisions to enter Business and Industry and their respective response percentages

were: better working conditions, 27.8%; dislike teaching, 13.9%; and, other responses, 6.9%. A summary of the responses of the graduates in Business and Industry was illustrated with Table IX.

The graduates of the Industrial Arts Education Department at Oklahoma State University who chose the Other Occupations category (12.1%), indicated Better Salary as their most frequent response, accounting for 38.5% of their total responses. Additional factors and their respective response percentages were: better working conditions, 30.8%; preferred agriculture, 15.3%; favored military, 7.7%; and, other reasons, 7.7%. A summary of the responses of the graduates choosing Other Occupations was illustrated with Table X.

TABLE VIII

REASONS FOR GRADUATES' SELECTION OF ADMINISTRATIVE OCCUPATIONS

Reasons	Per Cent of Responses
Better Salary	40.0
Better Working Conditions	40.0
Dislike Teaching	0.0
Other (A better chance for advancement)	20.0

TABLE IX

REASONS FOR GRADUATES' SELECTION OF
BUSINESS AND INDUSTRY OCCUPATIONS

Reasons	Per Cent of Responses
Better Salary	44.4
Better Working Conditions	27.8
Dislike Teaching	13.9
Other	6.9

TABLE X

REASONS FOR GRADUATES' SELECTION
OF OTHER OCCUPATIONS

Reasons	Per Cent of Responses
Better Salary	38.5
Better Working Conditions	30.8
Dislike Teaching	0.0
Other	30.7

Educational Preparation

Program Ratings. The second broad area surveyed by the questionnaire investigated the Industrial Arts Education graduates' concepts of their educational preparation based on ten general subject areas within Industrial Arts Education: drafting, photography, graphics, technical writing, wood technology, metal technology, plastic technology, electricity, electronics, and internal combustion. The graduates were asked to rate each area according to its usefulness, using a five-point scale ranging from Most Helpful in position one to Least Helpful in position five. Graduates could also indicate industrial arts areas that did not apply to their degree program by circling an NA on the questionnaire beside the rating scale. The graduates' ratings of each program area were reported as mean response levels, that is, the response ratings were totaled for each program area and the resulting sums were divided by the number of responses within that area. Responses indicating program areas that did not apply to individual respondent degree programs were not included in the findings.

Overall, the graduates rated the usefulness of the Drafting subject area as 1.91, while rating Photography 3.05. The graduates gave Graphics a mean response rating of 3.04 and Technical Writing a mean response of 2.69. The usefulness of Wood Technology was rated by the graduates at 2.25 and Metal Technology was rated 2.60. The mean response rating for Plastic Technology was 3.41, while the graduates rated the usefulness of the Electricity area at 2.38. The graduates rated the usefulness of the Electronics program area with a mean response of 2.98, and finally, the graduates rated Internal Combustion at 2.51. A summary

of the overall evaluations of the undergraduate program areas was illustrated in Figure 2.

The industrial arts subject area evaluations were also summarized across each of the following employment categories: administration, classroom teaching, business and industry, and other occupations.

Those graduates employed in the field of Administration rated Drafting at 1.67 and gave Photography a mean response rating of 2.50. They further rated the Graphics subject area with a mean response rating of 3.83. Technical writing received a rating of 1.33 and Wood Technology was rated by the graduates employed in Administration as 2.17. Metal Technology and Plastic Technology were rated 2.33 and 4.25, respectively, and Electricity received a rating of 1.80. The graduates gave Electronics a mean response rating of 2.50. Finally, the graduates presently employed in Administration rated the Internal Combustion subject area at 2.20. A summary of the undergraduate program area ratings as submitted by the industrial arts graduates employed in Administration was illustrated with Figure 3.

The Industrial Arts Education graduates who were currently employed in Classroom Teaching, indicated a mean response rating of 1.96 for Drafting and 2.63 for Photography. Graphics and Technical Writing received ratings of 3.00 and 2.84, respectively, and Wood Technology was rated at 2.07. The graduates employed in Classroom Teaching rated Metal Technology at 2.71 and Plastic Technology at 3.26. Electricity and Electronics received mean response ratings of 2.29 and 2.63, respectively. Finally, the graduates of the Industrial Arts Education Department currently employed in Classroom Teaching rated Internal Combustion at 2.48. A summary of the subject area evaluations by the graduates employed in Classroom Teaching was illustrated with Figure 4.

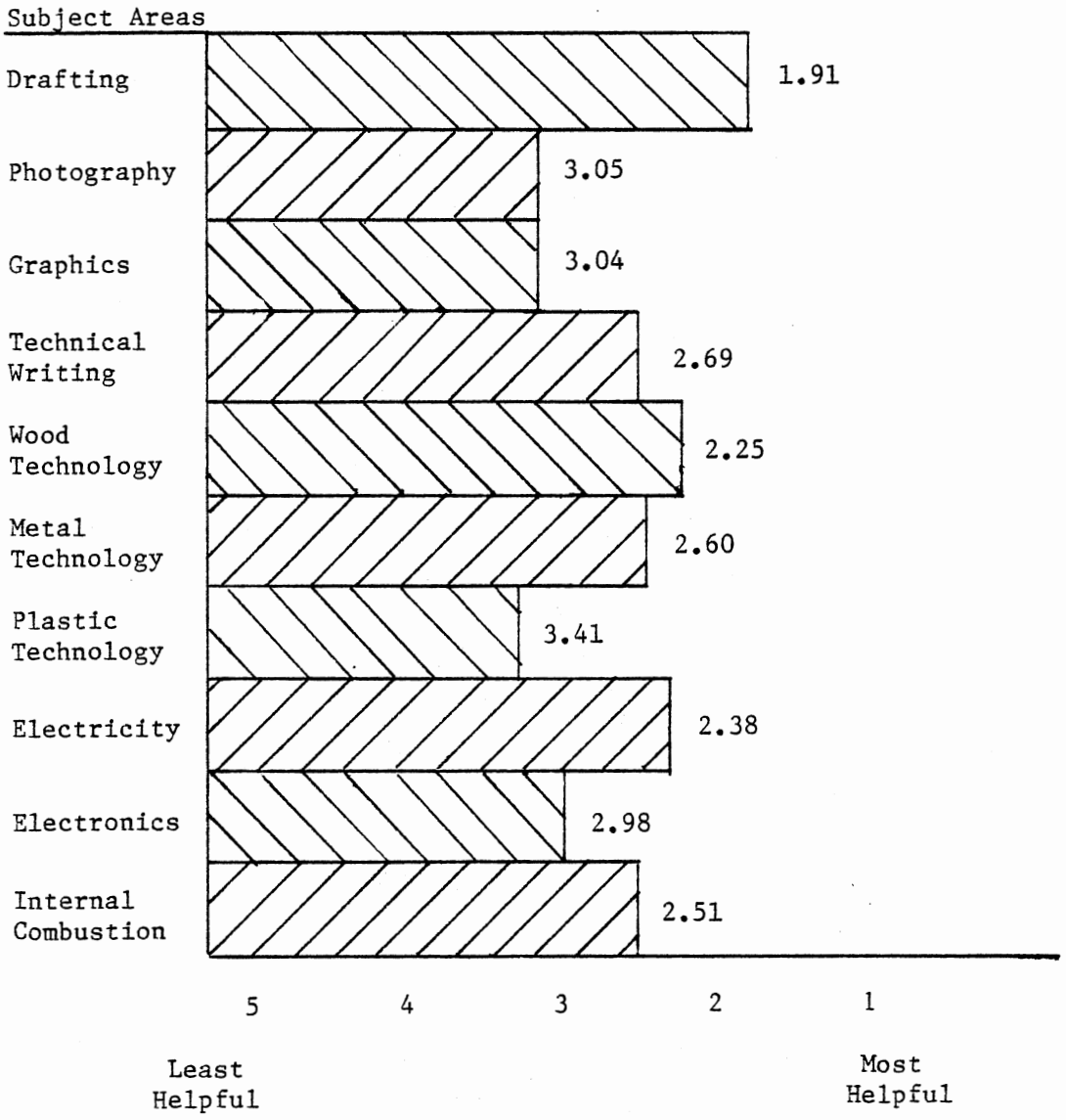

Figure 2. The Overall Evaluation of the Usefulness of the Industrial Arts Subject Areas by the Graduates

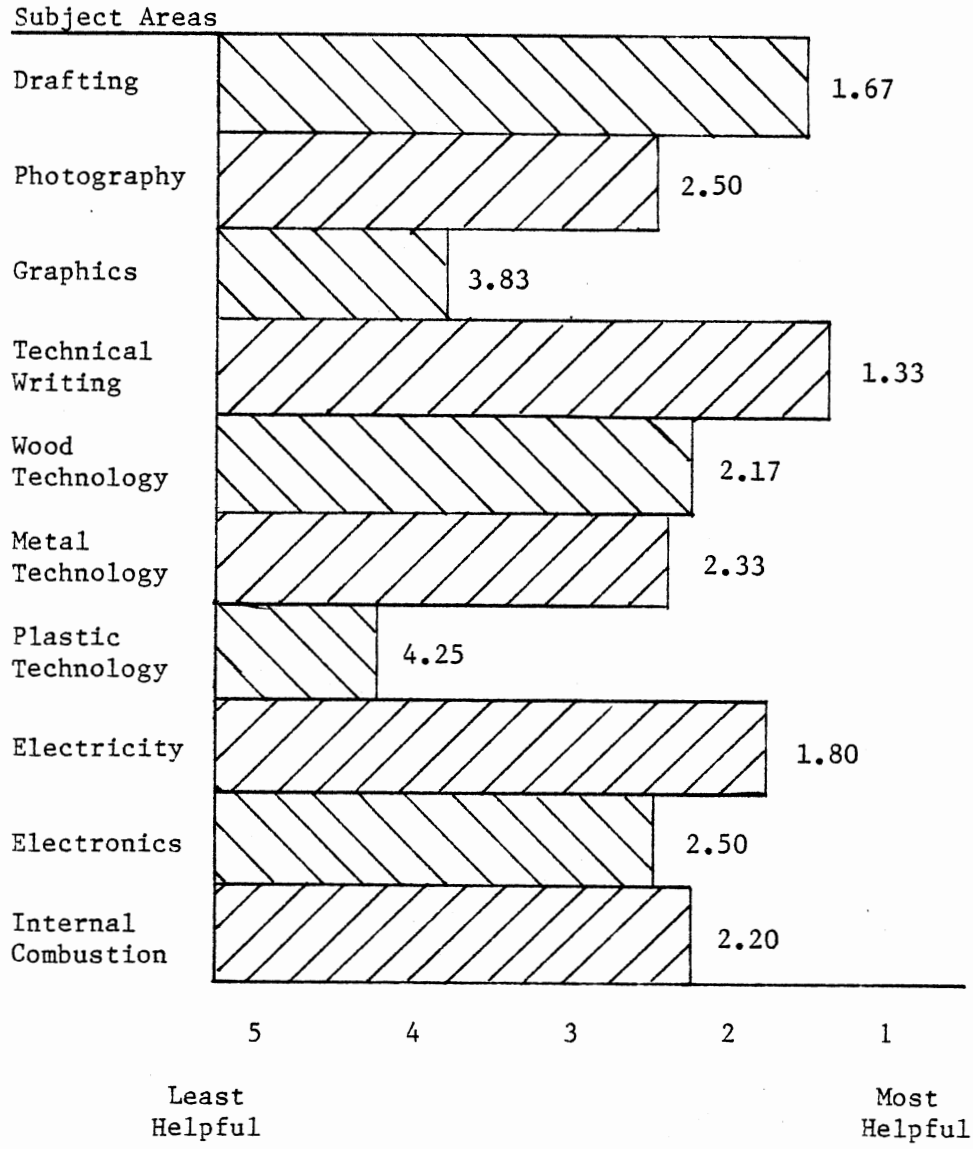

Figure 3. Subject Area Evaluations Made by the Graduates Employed in Administration

The graduates of the Industrial Arts Education Department at Oklahoma State University who indicated current Business and Industry employment gave Drafting a mean response rating of 1.83. They rated Photography at 3.57 and Graphics at 2.95. Technical Writing received a mean response rating of 2.73 and Wood Technology a rating of 2.32. The graduates rated Metal Technology and Plastic Technology at 2.56 and 3.44, respectively. Electricity received a mean response rating of 2.52 while Electronics was rated at 3.25. Finally, the industrial arts graduates currently employed in Business and Industry rated the usefulness of the Internal Combustion subject area at 2.59. A summary of the subject area mean response ratings submitted by the respondents employed in Business and Industry was illustrated with Figure 5.

The Industrial Arts Education graduates currently indicating employment in the Other Occupations category on the questionnaire, rated the Drafting subject area at 2.22 and the Photography area at 3.67. Graphics received a mean response rating of 2.33 and Technical Writing a rating of 2.75. The graduates indicating Other Occuptions rated Wood Technology and Metal Technology both at 2.63 and Plastic Technology at 3.00. Electricity received a mean response rating of 2.43 and Electronics received a rating of 3.00. Finally, the Industrial Arts Education graduates currently employed in Other Occupations rated the usefulness of the Internal Combustion subject area at 2.50. A summary of the subject area mean response ratings for the graduates employed in Other Occupations was illustrated with Figure 6.

The industrial arts subject area evaluations were also further broken down into the response means from graduates with industrial arts teaching experience and from graduates with no industrial arts teaching

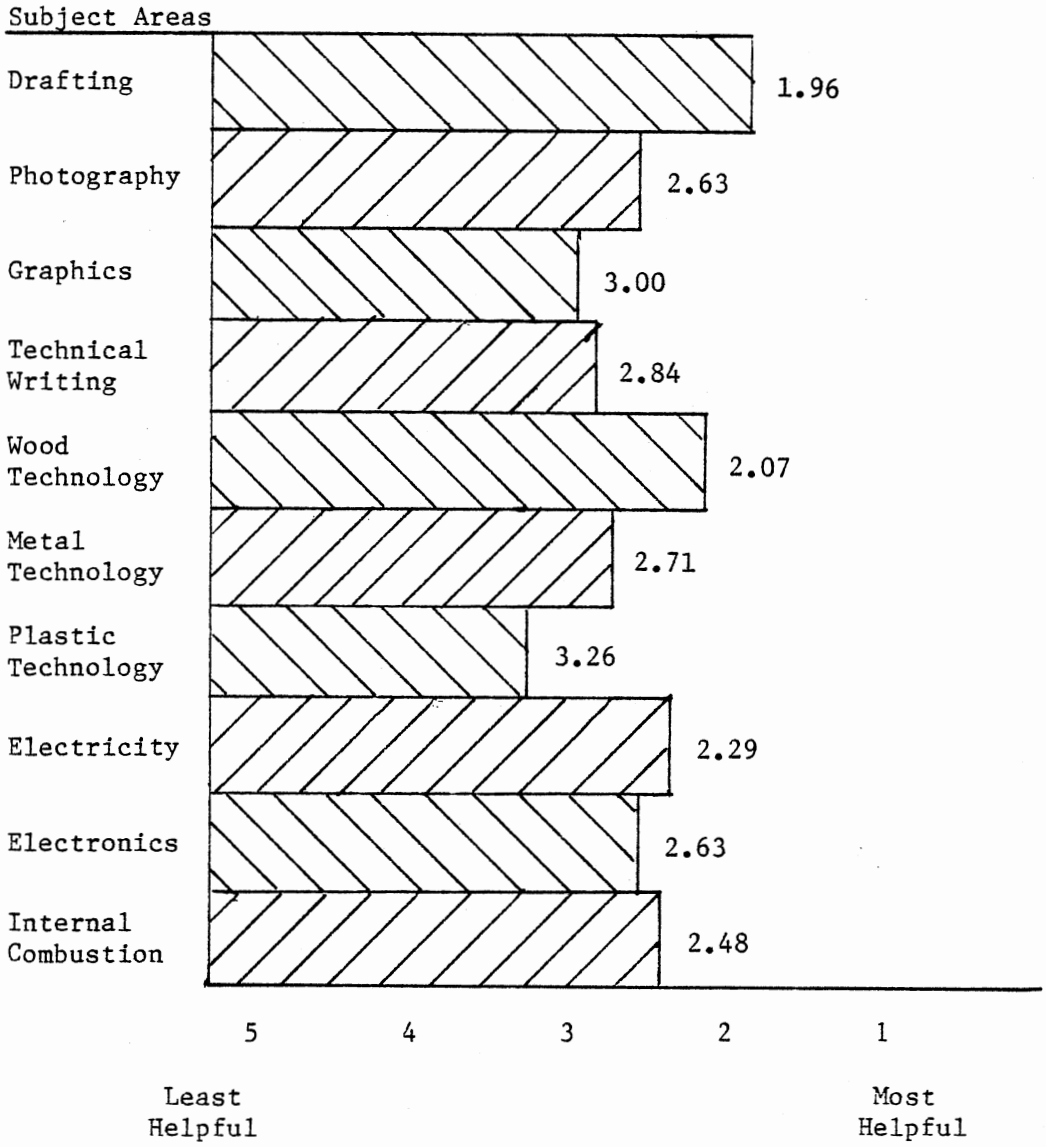

Figure 4. Subject Area Evaluations Made by the Graduates Employed in Classroom Teaching

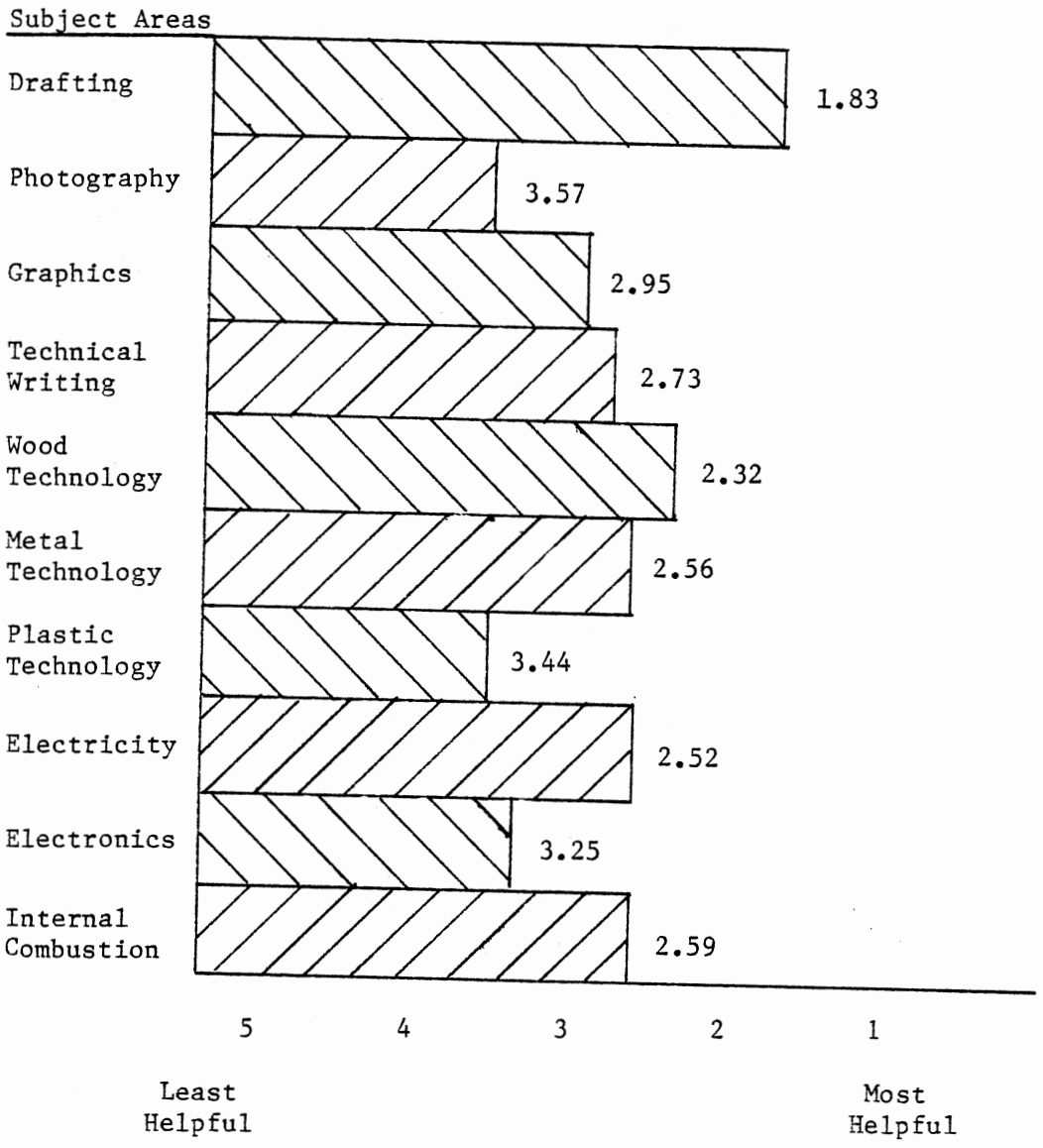

Figure 5. Subject Area Evaluations Made by the Graduates Employed in Business and Industry

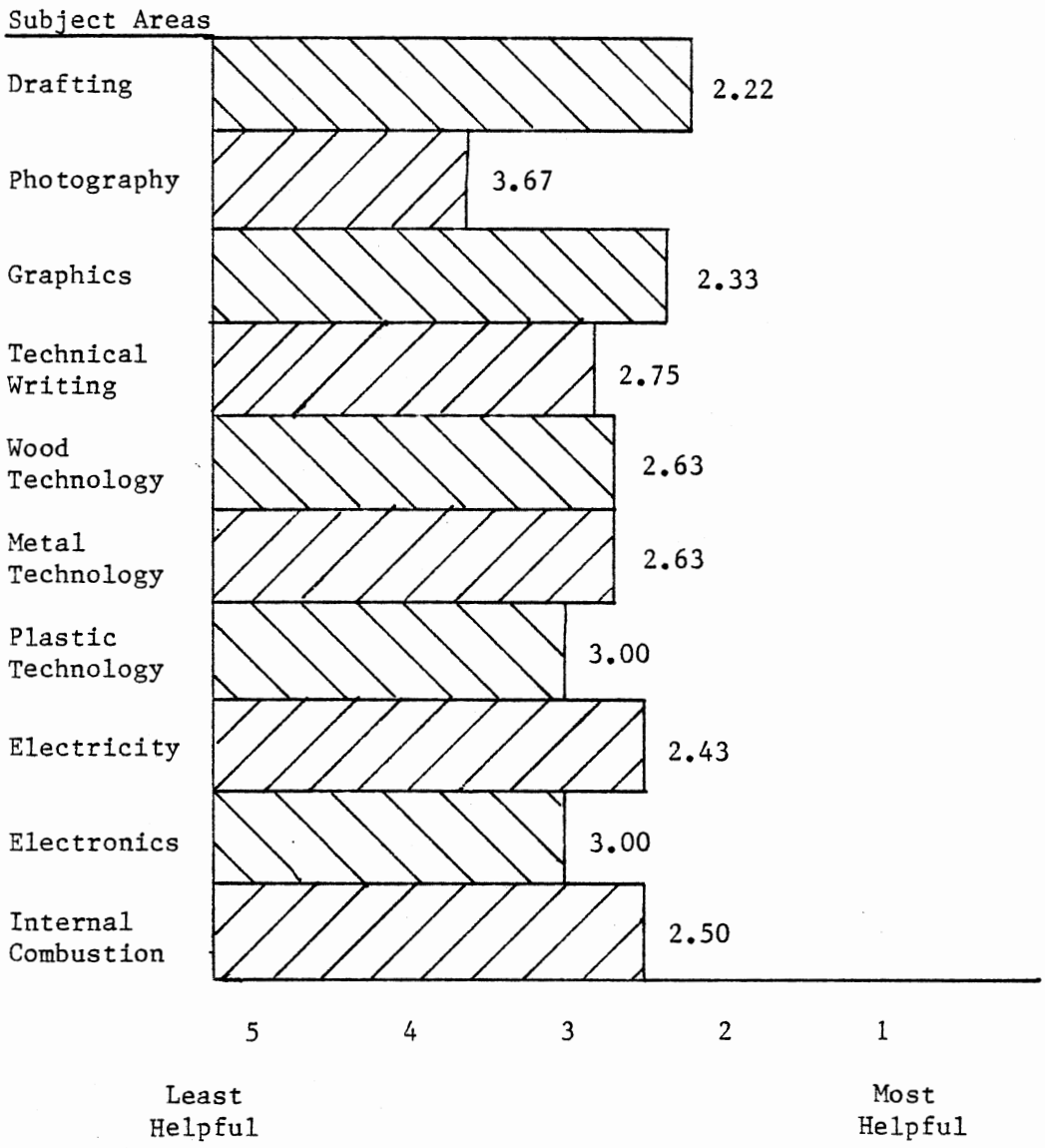

Figure 6. Subject Area Evaluations Made by the Graduates Employed in Other Occupations

experience. A description of the findings from the analysis of the responses for both categories was included in the following paragraphs of the study.

Those graduates with no industrial arts teaching experience, either past or present, gave Drafting a mean response rating of 1.85 and Photography a rating of 3.08. They further rated the Graphics subject area with a mean response of 2.48. Technical Writing was given a mean response rating of 2.49 and Wood Technology received a rating of 2.49. The graduates with no teaching experience in industrial arts, rated Metal Technology at 2.77 and Plastic Technology at 3.67. They further rated Electricity with a mean response of 2.35 and Electronics with a mean response of 2.90. Finally, the graduates with no industrial arts teaching experience gave Internal Combustion a mean response rating of 2.47. A summary of the industrial arts subject area evaluations submitted by the Industrial Arts Education graduates with no industrial arts teaching experience was illustrated with Figure 7.

Those graduates with industrial arts teaching experience, gave Drafting a mean response rating of 1.96 and Photography a rating of 3.04. They rated Graphics at 3.41 and Technical Writing at 2.90. Wood Technology received a mean response rating of 2.46 and Metal Technology received a rating of 2.46. The graduates with industrial arts teaching experience submitted a mean response rating for Plastic Technology of 3.23 and gave Electricity a rating of 2.39. They further rated Electronics at 3.03 and, finally Internal Combustion, 2.55. A summary of the industrial arts subject area evaluations submitted by the Industrial Arts Education graduates with industrial arts teaching experience was illustrated with Figure 8.

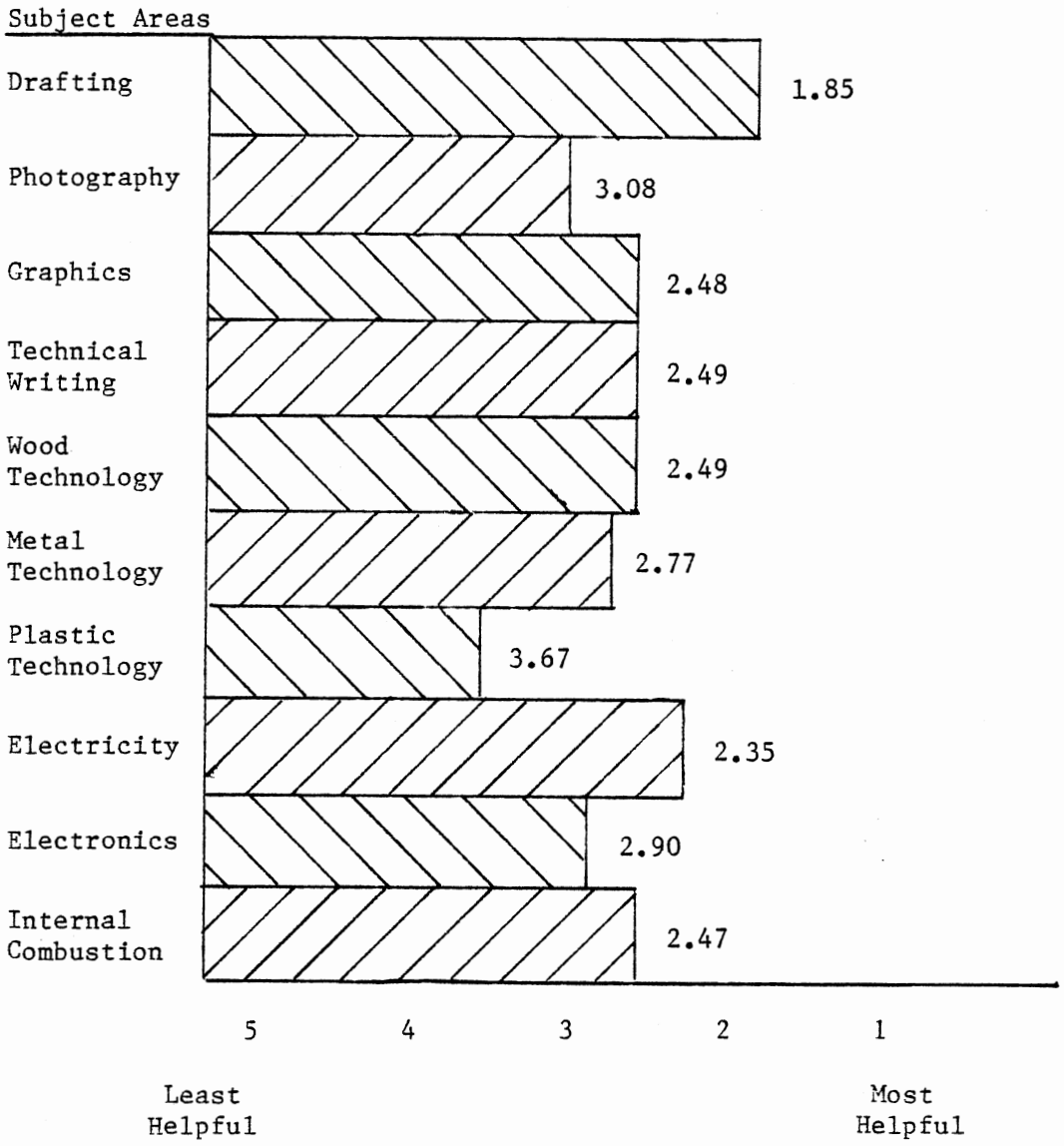

Figure 7. Subject Area Evaluations Made by Graduates Who Indicated No Industrial Arts Teaching Experience

The subject area evaluations submitted by the respondents who indicated current employment as industrial arts teachers was considered an important measure of program adequacy. These graduates rated the usefulness of the Drafting subject area at 1.75 and Photography at 3.13. Graphics and Technical Writing received mean response ratings of 3.33 and 3.08, respectively, and Wood Technology was rated at 1.56. The graduates currently employed as industrial arts teachers submitted a mean response rating for Metal Technology of 2.64. Plastic Technology received a mean response rating of 3.27 and the Electricity subject area was rated at 2.57. Finally, the graduates of the Industrial Arts Education Department at Oklahoma State University, currently employed as industrial arts teachers, submitted mean response ratings for Electronics and Internal Combustion of 2.90 and 2.53, respectively. A summary of the subject area ratings submitted by the graduates who reported current employment as industrial arts teachers, was illustrated with Figure 9.

Curriculum Change Suggestions. The final item on the questionnaire provided the graduates with an opportunity to suggest specific course contents which should have been included as a part of the Industrial Arts Education curriculum at the time of their graduation. The responses were divided between graduates with industrial arts teaching experience and graduates without industrial arts teaching experience.

The curriculum suggestions submitted by the Industrial Arts Education graduates with industrial arts teaching experience were summarized into four broad categories: professional preparation, course improvements, curriculum requirement changes, and shop organization and

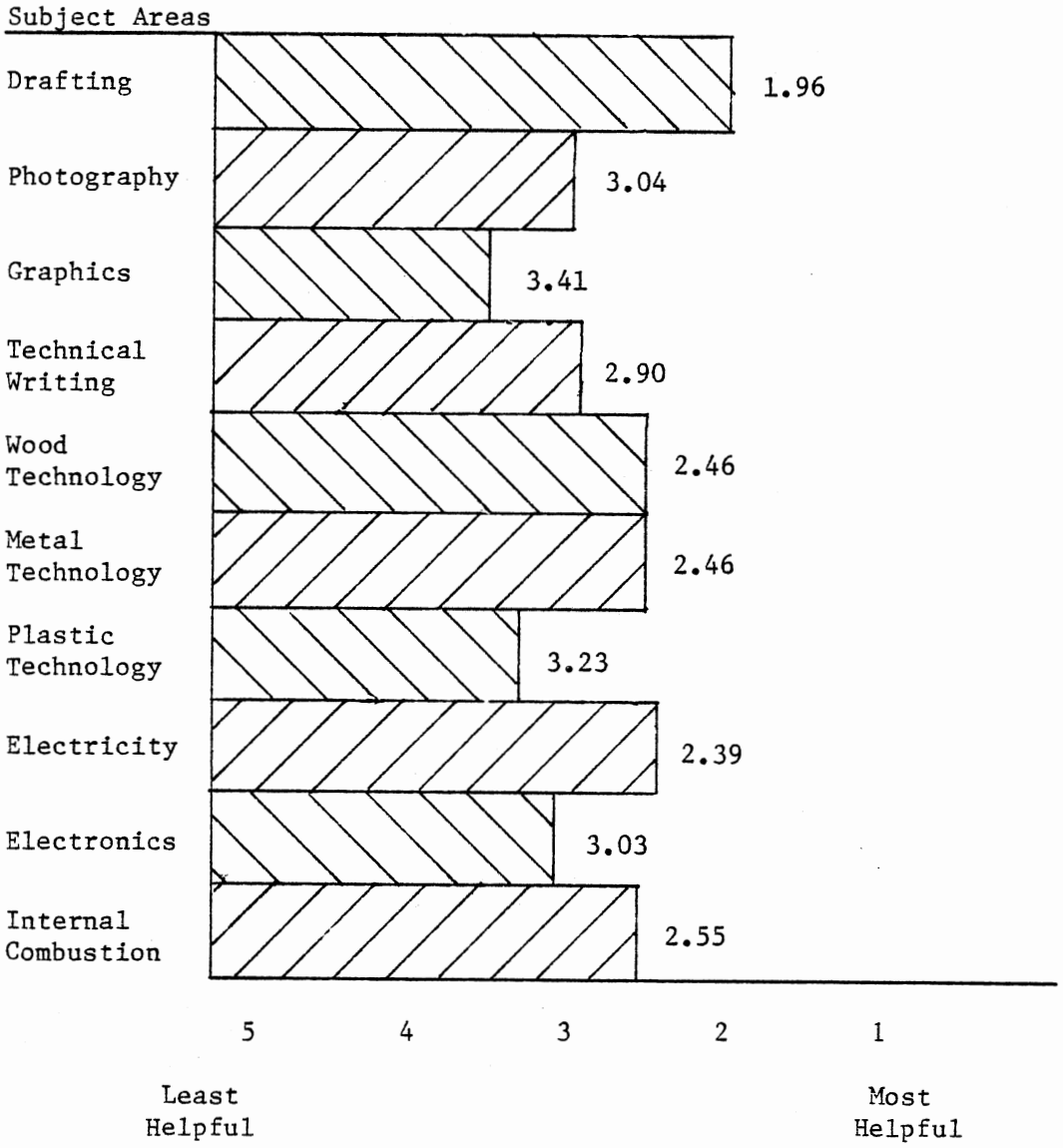

Figure 8. Subject Area Evaluations Made by Graduates Who Indicated Industrial Arts Teaching Experience

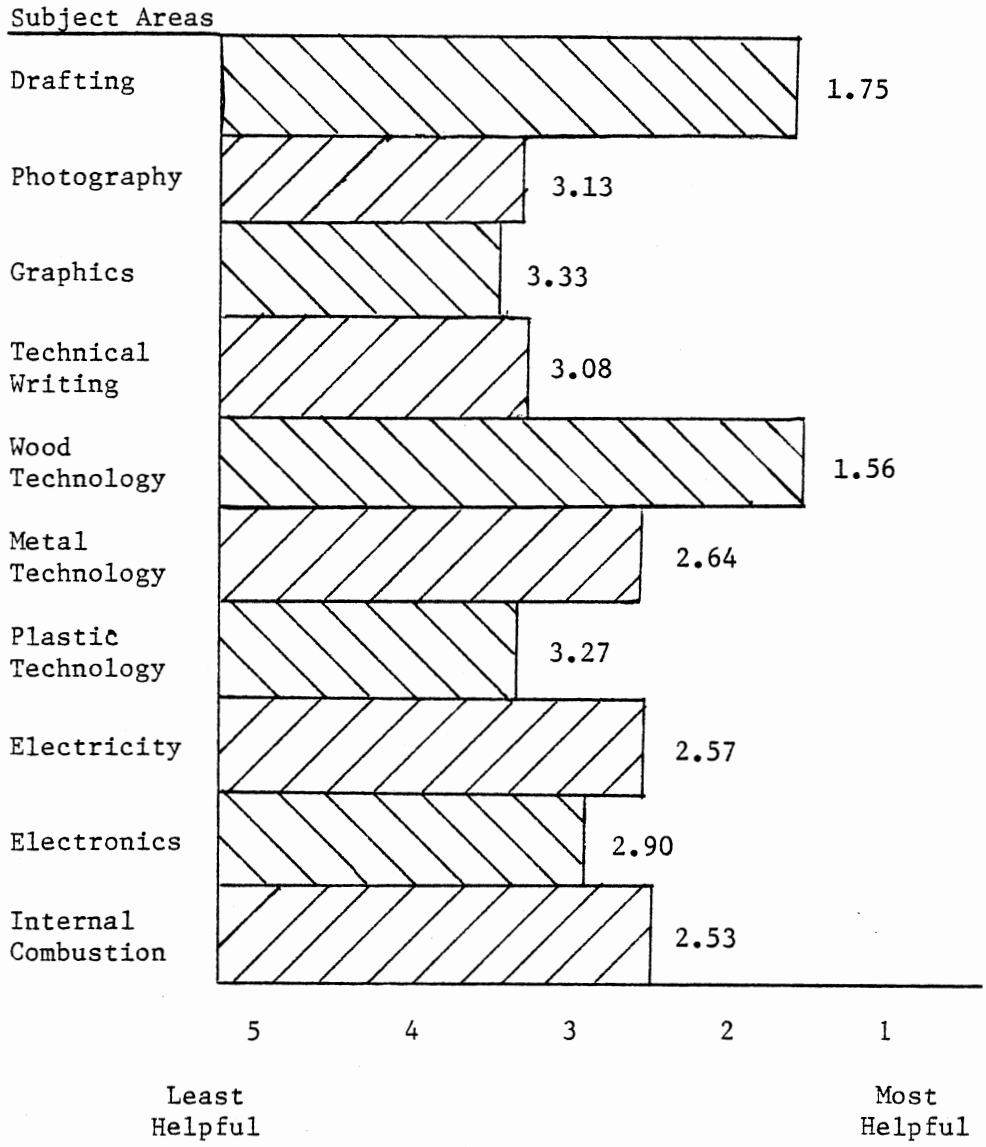

Figure 9. Subject Area Evaluation Made by Graduates Currently Employed as Industrial Arts Teachers

management. There was a total of 41 suggestion submitted by this group (A listing of each suggestion is included in Appendix E).

In the area of professional preparation for teaching, the graduates with industrial arts teaching experience submitted 22 suggestions for improvement. These suggestions were grouped into three basic areas: public school operation, student teaching, and teaching methods.

The graduates suggested that students receive course instruction in the area of public relations. Public school law and the legal rights and responsibilities of teachers were sighted as areas that needed more adequate coverage in the Industrial Arts Education curriculum. It was also suggested that the undergraduates receive orientation to professional organizations and be encouraged to organize youth groups.

Eight suggestions were made concerning the student teaching experience. The graduates suggested an earlier and longer student teaching period and recommended student teaching assignments to schools in larger cities.

Five suggestions received were involved with the courses dealing with teaching methods. The suggestions included an improvement in "how-to-teach" courses and instruction in methods of student motivation. The respondents with industrial arts teaching experience also suggested the undergraduates be given a more in-depth experience with innovative programs in industrial arts.

Eleven, or 26.8%, of the suggestions were concerned with needed course improvements. The respondents with industrial arts teaching experience suggested improvements be made in internal combustion, electricity, and electronics. Other areas suggested for improvement were welding, drafting, auto technology, and graphics.

Four of the curriculum suggestions dealt with problems in shop organization and management. Three graduates suggested special consideration be given to management of materials and supplies and that teachers in the field be consulted to explain the shop management procedures utilized in their industrial arts programs. One graduate also suggested more instruction on budget preparation was needed in the Industrial Arts Education curriculum.

The graduates of the Industrial Arts Education Department at Oklahoma State University with no industrial arts teaching experience submitted, through item seven on the questionnaire, 37 suggestions for course content changes or improvements.

Eighteen of the suggestions closely paralleled the suggestions submitted by those graduates with industrial arts teaching experience. The respondents suggested course improvements in the subject areas of electronics, drafting, photography, graphics, electricity, internal combustion, and technical writing. The graduates also made five suggestions concerning professional preparation and shop management. Two of the graduates recommended an improvement in methods of teaching using a "how-to" instructional format, and two suggestions concerned changing the student teaching procedure by offering it earlier and supplementing it with "in-the-field" experience. One graduate recommended an increase in the time allotted in the curriculum to teach shop management.

The remaining 19 suggestions submitted by the Industrial Arts Education graduates with no industrial arts teaching experience appeared to be specific needs encountered in the career tracks they have pursued and

not necessarily related to Industrial Arts Education. The complete list of suggestions made by this group of graduates was included in Appendix F.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The primary purpose of this chapter is to review in an abbreviated form, the problem statement, the research questions, the general methodology, and the findings of the study. In addition, conclusions were presented, based on the analysis and summarization of the data obtained through the conduction of the study and recommendations based on these conclusions were expressed.

Summary of the Study

Purpose of the Study

The purpose of this study was to collect and analyze data pertaining to the undergraduate program in Industrial Arts Education at Oklahoma State University, based on the opinions of the 128 graduates receiving Bachelor of Science degrees during the period of July 1, 1966, through June 30, 1976.

Research Questions Explored by the Study

This study attempted to answer the following questions pertaining to the graduates and curriculum of the Industrial Arts Education Department at Oklahoma State University:

1. What were the present occupations of the Industrial Arts Education graduates?
2. What percentage of graduates chose employment other than teaching and what factors influenced these choices?
3. How did the salaries of graduates teaching industrial arts compare to those of graduates with employment in occupations other than teaching?
4. What factors encouraged some graduates to seek industrial arts teaching jobs outside of Oklahoma?
5. How did the graduates rate the industrial arts subject areas in terms of their usefulness?
6. What suggestions did the graduates have for Industrial Arts Education curriculum improvement at Oklahoma State University?

Design and Conduct of the Study

Following an extensive review of research and literature relating to industrial arts follow-up studies, the following steps were carried out in order to supply the researcher with the needed information: (1) the population was identified, (2) a research instrument entitled "A Survey of the Industrial Arts Education Graduates from Oklahoma State University, 1966-1976" was developed, (3) a procedure was designed for distributing the questionnaire, and (4) a method for analyzing the resulting data was chosen.

Addresses were obtained for 112 of the 128 graduates receiving Bachelor of Science degrees during the period from July 1, 1966 through June 30, 1976 and telephone contact was established with approximately two-thirds of these graduates. The questionnaires were initially mailed in mid-January and, following a two week period, a second mailing was

conducted. The final mailing was done using a printed postcard. The six week period produced 83 usable returned questionnaires and ten questionnaires returned with incorrect addresses for a return rate of 81.4%.

Findings of the Study

This study was concerned with obtaining information on the Industrial Arts Education graduates from Oklahoma State University who received B.S. degrees during a ten year period from 1966 through 1976. A series of six research questions were developed to guide the research effort. The following findings of the study are organized and analyzed around each of the six research questions.

Present Occupations of the Industrial Arts Education Graduates.

The majority of the graduates of the Industrial Arts Education Department at Oklahoma State University selected employment in fields other than industrial arts teaching. Only 16 of the graduates, less than 20%, indicated present employment as industrial arts teachers. An additional 15.6% of the graduates indicated employment in other areas of classroom teaching, predominantly trade and industrial education with two of the graduates employed in higher education. The remaining two-thirds of the graduates surveyed were employed in either administration, business and industry, or other occupations. Nearly one-half, 45.8% of the graduates, were currently employed in business and industry with the majority of these in management positions. The remaining 19.3% of the graduates were employed in either administration or other occupations. Only one of the graduates was employed in the position of principal while five graduates had chosen farming/ranching as their source of employment.

Factors Encouraging Employment Selection in Fields Other Than Teaching. Slightly over one-half (54.8%) of the graduates returning questionnaires, indicated industrial arts teaching experience at one time or another. This study attempted to identify some of the factors that were responsible, ultimately, for 80.7% of the Industrial Arts Education graduates to seek employment in occupations other than industrial arts teaching.

Overall, better salary was indicated nearly 44% of the time as the reason for choosing employment other than teaching. Better working conditions placed second, accounting for approximately 29% of the responses. Nearly 12% of the responses indicated a dislike of teaching as the reason for not seeking industrial arts teaching jobs.

Those graduates employed in administration also chose better salary and working conditions as their most important reasons. The graduates in business and industry overwhelmingly selected better salary as their most important reason for not teaching industrial arts with better working conditions accounting for an additional 27.8% of their responses. The graduates indicating employment in other occupations selected better salary and better working conditions each approximately one-third of the time and other responses approximately one-third.

Salary Comparisons. The graduates who reported employment in occupations other than teaching, submitted better salary as their most important reason for not teaching. A comparison of the relative salaries of the different areas of employment indicated industrial arts teaching salaries as the lowest average reported.

Overall, the mean salary for all of the graduates of the Industrial Arts Education Department survey was $18,168. Those graduates indicating present employment in business and industry reported the highest mean salary, $19,316; approximately $1,200 above the average. The second highest mean salary reported, $19,167, was submitted by those graduates employed in administration. Graduates employed in other occupations placed third with a mean salary of $17,889. Classroom teaching ranked the lowest with an average salary of $16,552; industrial arts teachers, one component of this group, reported $15,500 (the lowest mean salary reported by any group in the study).

It is also important to note that the maximum salary figure on the questionnaire was $21,000 or above. A high percentage of the graduates employed in both administration and business and industry checked this income level on the questionnaire. No provision was made to determine how much above $21,000 the graduates' salaries extended, therefore, the mean salaries for both administration and business and industry may have been underestimated and the gap between industrial arts teaching salaries and the salaries of these other occupations may be much greater than suggested by the figures above.

Graduates' Selection of Industrial Arts Teaching Employment Outside of Oklahoma. The researcher was interested in determining some of the factors that encouraged 20 of the 45 respondents, indicating industrial arts teaching experience, to seek teaching employment outside of Oklahoma. Better salary was indicated 40% of the time while geographic location accounted for 24.0% of the responses. The graduates also chose employment as industrial arts teachers outside of Oklahoma because of family, climate, job availability, school reputation, and as a favor for a friend.

Graduates' Ratings of the Industrial Arts Subject Areas in Terms of Usefulness. The Industrial Arts Education curriculum was broken down into ten basic industrial arts subject areas and the graduates were provided with an opportunity to evaluate the usefulness of each of these subject areas.

As a group, the graduates found drafting to be the most helpful subject area followed by wood technology and electricity. The graduates rated the usefulness of the industrial arts subjects in descending order: internal combustion, metal technology, technical writing, electronics, graphics, photography, and plastic technology as the least helpful subject areas in the Industrial Arts Education undergraduate program at Oklahoma State University.

The industrial arts subject area ratings were also averaged across those graduates indicating no industrial arts teaching experience. These graduates rated drafting as the most helpful industrial arts subject area. In second place, they rated technical writing and electricity approximately equal. They also rated graphics, wood technology, and internal combustion approximately equal. Finally, the graduates with no industrial arts teaching experiences, rated in descending order, metal technology, electronics, photography, and plastic technology as the least helpful of the industrial arts subject areas. The individual respondent ratings of the subject areas appeared to be related to the current employment status indicated by each graduate; those graduates employed in occupations utilizing one of the subject areas more closely tended to rate that area high in usefulness.

Since the primary goal of the Industrial Arts Education Department

at Oklahoma State University has been to train industrial arts teachers, the responses submitted by those graduates with industrial arts teaching experience was deemed important in determining the priorities that should be given to subject area emphasis. The graduates with industrial arts teaching experience rated, as did those with no teaching experience, drafting as the most helpful industrial arts subject area. In second place and third place, the graduates rated wood technology and electricity, respectively, followed by metal technology, internal combustion, and technical writing. The graduates rated photography and electronics approximately equal followed by plastic technology. The industrial arts subject area of graphics was rated by the graduates with industrial arts teaching experience as the least helpful of the areas.

The opinions of the graduates who indicated current employment as industrial arts teachers were valued by the researcher because they reflected the needs of the profession today. The graduates rated wood technology as the most helpful industrial arts subject area, closely followed by drafting. Electricity and internal combustion were rated approximately equal in usefulness and metal technology followed closely behind. The graduates currently teaching industrial arts further rated, in descending order, electronics, photography, technical writing, and plastic technology. Graphics was rated by the graduates as the least helpful of the industrial arts subject areas.

Suggestions for Curriculum Improvement. The graduates of the Industrial Arts Education Department at Oklahoma State University were provided with an opportunity to suggest course content changes in the industrial arts curriculum. These suggestions were classified into two groups, those respondents with industrial arts teaching experience and those respondents with no industrial arts teaching experience.

The graduates with industrial arts teaching experience suggested that more attention be given to the preparation of the graduates for teaching; the suggestions concerned public school operation, student teaching, and teaching methods. The respondents suggested that certain course improvements be made; primarily in internal combustion, electricity, and electronics. Suggestions were also made that more time be spent in orienting students to shop budgeting and management and that experienced industrial arts teachers be brought in from the field to share their experience with the prospective teachers prior to the student teaching period.

The graduates with no industrial arts teaching experience made several suggestions for course content improvement. Approximately one-half of the suggestions closely paralleled those suggestions submitted by the graduates with teaching experience. The suggestions involved improvements in seven of the ten industrial arts subject areas: electronics, drafting, photography, graphics, electricity, internal combustion, and technical writing. The graduates with no industrial arts teaching experience also suggested that the teaching methods class be taught from a "how-to-teach" instructional format and that shop management be covered more thoroughly. The remaining suggestions submitted by the respondents with no industrial arts teaching experience, appeared to be specific needs encountered by the graduates in the course of their career developments and were not necessarily related to the needs of the student in Industrial Arts Education.

Conclusions

The inspection of the findings of this study have prompted the

researcher to make several conclusions concerning the Industrial Arts Education Department at Oklahoma State University:

1. Slightly over 45% of the graduates reported employment in business and industry with a majority of these being in management positions.
2. Slightly over one-half of the graduates indicated industrial arts teaching experience at one time or another, however, less than one-fifth of the graduates reported current industrial arts teaching employment.
3. Better salary and better working conditions were indicated as the reasons graduates most often chose employment in fields other than industrial arts teaching.
4. The salaries reported by graduates in both business and industry, and administration, were considerably higher than the salaries reported by the graduates teaching industrial arts.
5. Graduates teaching trade and industrial education reported salaries approximately 12.5% higher than those employed as industrial arts teachers.
6. Nearly one-fourth of the graduates had taught industrial arts outside of Oklahoma indicating better salary and geographic location as their primary reasons for doing so.
7. The graduates, overall, rated drafting, wood technology, and electricity (in order) as the most helpful industrial arts subject areas and graphics as the least helpful subject area.
8. The graduates reporting no industrial arts teaching experience rated drafting and electricity as the most helpful subject areas, and plastic technology as the least helpful.

9. The graduates currently employed as industrial arts teachers rated wood technology and drafting as the most helpful of the subject areas supporting the traditional stronghold of both these areas in the public school industrial arts programs.
10. The graduates suggested that changes be made in the student teaching experience to make it more encompassing.
11. The graduates recommended that the teaching methods courses be taught from the "how-to-teach" instructional format and that they involve successful, "in-the-field," industrial arts teachers.
12. The graduates suggested that additional attention be given to public school operation and to the organization and management of school shops.
13. The suggestions submitted by the graduates in occupations other than teaching, appeared to be related to their occupations rather than to the needs of the industrial arts teachers.

Recommendations

The following recommendations were made by the researcher following the conduction of this study. It should be noted that many of these recommendations were based on a limited number of individual suggestions.

General

1. The salaries of industrial arts teachers in Oklahoma must be increased in order to: (a) attract graduates into the industrial arts teaching area, (b) retain those industrial arts teachers

already employed, and (c) encourage graduates to seek teaching jobs within the state of Oklahoma.

2. The current student teaching requirement should be closely examined to insure that the course is meeting the needs of the students.
3. The courses in the Industrial Arts Education curriculum that address the organization and management of school shops should be reviewed to ensure adequate coverage.
4. Special consideration should be given to ensuring the inclusion of information on public school operations and school law.
5. The Industrial Arts Education Department at Oklahoma State University should keep an up-to-date file on the locations of the Industrial Arts Education graduates to aid future researchers.
6. The establishment of telephone contact with the subjects of future research of this type would be a desirable aid in locating these people.

Further Research

1. Studies similar to this should be conducted on a more frequent basis to supply the Industrial Arts Education Department with feedback that reflects the present curriculum more closely.
2. A research study should be conducted that determines the relationship between Industrial Arts Education training and business and industrial employment.
3. Industrial art education departments at other universities should be surveyed to explore the feasibility of implementing "non-teaching" industrial arts degree programs.

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APPENDIXES

APPENDIX A

THE QUESTIONNAIRE

A Survey of the Industrial Arts Education Graduates
from Oklahoma State University
1966-1976

EMPLOYMENT RECORD:

1. Please check (✓) the position you now hold:

   a. Administration:
      Superintendent ____
      Principal ____
      Other (please specify)
      _____

   b. Classroom Teaching:
      Industrial Arts ____
      Trade and Industrial ____
      Other (please specify)
      _____

   c. Business and Industry:
      Management ____
      Non-Management ____
      Self-Employed ____
      Other (please specify)
      _____

   d. Other Occupations: (please specify) _____
      _____

2. Please list in order those positions that you have held since the completion of your B.S. degree in Industrial Arts Education from Oklahoma State University:

Position	From	To
_____	_____	*Present*
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

3. If you have taught industrial arts outside of Oklahoma, please indicate your reason(s) below.

   Better Salary ____
   More Favorable Climate ____
   Family ____
   Geographic Location ____
   Other (please specify) _____
   _____

4. Please place a check (✓) beside the figure below nearest your present annual salary.

$7,000 or below ____	$12,000 ____	$17,000 ____
8,000 ____	13,000 ____	18,000 ____
9,000 ____	14,000 ____	19,000 ____
10,000 ____	15,000 ____	20,000 ____
11,000 ____	16,000 ____	21,000 or above ____

(OVER)

5. If you have chosen some occupation other than teaching, please indicate the reason(s) for your choice.

   Better Salary ____
   Better Working Conditions ____
   Dislike Teaching ____
   Other (please specify) _____
   _____

EDUCATIONAL PREPARATION:

6. Please rate the following areas in your undergraduate program according to their usefulness. (Circle NA if an area did not apply to your degree program)

	Most Helpful				Least Helpful	
Drafting	1	2	3	4	5	NA
Photography	1	2	3	4	5	NA
Graphics	1	2	3	4	5	NA
Technical Writing	1	2	3	4	5	NA
Wood Technology	1	2	3	4	5	NA
Metal Technology	1	2	3	4	5	NA
Plastic Technology	1	2	3	4	5	NA
Electricity	1	2	3	4	5	NA
Electronics	1	2	3	4	5	NA
Internal Combustion	1	2	3	4	5	NA

7. List the specific course contents that were <u>not</u> a part of the industrial arts curriculum at the time of your graduation, which you feel should be a part of it.

   _____
   _____
   _____

Please fill out the address blank at the bottom of the cover letter and return to the address below if you would like a summary of the findings of this survey.

Robert F. Alsup, Jr.
Industrial Arts Education
104 Industrial Building
Oklahoma State University
Stillwater, OK 74078

APPENDIX B

COVER LETTER--FIRST MAILING

Oklahoma State University
SCHOOL OF OCCUPATIONAL AND ADULT EDUCATION

STILLWATER, OKLAHOMA 74078
CLASSROOM BUILDING 406
(405) 624-6275

January 16, 1981

Dear Graduates:

The Industrial Arts Education Department at Oklahoma State University is undergoing curriculum review. Part of this review includes a follow-up study of the industrial arts graduates who received B.S. degrees during the period from 1966 through 1976. Your employment experiences following graduation are an invaluable aid to the department for evaluating the industrial arts curriculum and for determining the future directions of the department.

We need your input in this study. Would you please complete the questionnaire supplied with this letter and return it in the enclosed, pre-addressed envelope. To insure anonymity, the number in the upper right-hand corner will be used to indicate the return of this questionnaire and will be cut off as soon as your name is checked off on our mailing list.

The data collected through this questionnaire will also be used as a basis for a Master's thesis entitled "A Survey of the Industrial Arts Education Graduates from Oklahoma State University, 1966-1976". Your participation in this study is greatly appreciated. If you have any questions, you may contact me by phone at 405-624-7414. In addition, if you would like a copy of the results of this study, please fill out the form on the bottom of this letter and return it with your questionnaire.

Sincerely,

Robert F. Alsup, Jr.
Graduate Student

Lloyd L. Wiggins
Professor, Occupational
and Adult Education

Please mail a copy of the results of this follow-up study of the Industrial Arts Education graduates from Oklahoma State Univeristy to:

APPENDIX C

COVER LETTER--SECOND MAILING

Oklahoma State University

SCHOOL OF OCCUPATIONAL AND ADULT EDUCATION

STILLWATER, OKLAHOMA 74078
CLASSROOM BUILDING 406
(405) 624-6275

January 30, 1981

Dear Graduate:

This letter is a reminder concerning your participation in a follow-up study of the Industrial Arts Education graduates from Oklahoma State University. I have included another copy of the questionnaire, with this reminder, in case you have misplaced the first copy. Your participation is this survey is extremely important to ensure that the results of this study are representative of the industrial arts graduates. I would also deeply appreciate your cooperation in this endeavor so that I may complete my master's thesis.

If you have already completed the previous questionnaire and mailed it, please disregard this letter. If you have any questions concerning this questionnaire or the study it represents, please feel free to call me at (405) 624-7414. A stamped, pre-addressed envelope is included with this mailing for your convenience.

In addition, if you would like a summary of the findings of this study, please fill out the form on the bottom of this letter, and return it with your questionnaire.

Sincerely,

Robert F. Alsup, Jr.
Graduate Student

Lloyd L. Wiggins
Professor

Please mail a copy of the results of this follow-up study of the Industrial Arts Education graduates from Oklahoma State University to: _____

_____

APPENDIX D

POSTCARD--THIRD MAILING

February 13, 1981

It is still not too late to be included in the follow-up study of the Industrial Arts Education graduates from Oklahoma State University. Won't you please return your questionnaire?

Robert F. Alsup, Jr.

If you have already returned your questionnaire, please disregard this note.

APPENDIX E

COURSE CONTENT SUGGESTIONS SUBMITTED BY GRADUATES WITH INDUSTRIAL ARTS TEACHING EXPERIENCE

Note: The following suggestions were reported exactly as they were written on the returned questionnaires. Abbreviations, spelling, grammatical and punctuational errors are those of the respondents.

"Auto Technology"

"I feel they hit on about every aspect of I.A. It was mostly a repeat of subjects learned in the 2 year school I attended before coming to OSU."

"Graphics"

"The curriculum at O.S.U. covered all aspects that I have come in contact with. My experiences at O.S.U. were pleasant and enjoyable. The instructors were professional and conclusive."

"Internal Combustion as it was taught was a joke. I took a course that studied metalurgy"

"More needed in Electronics and Electricity most IA teachers in area are not qualified to teach Power Mech. (Int. Com) or Elect. These are a must in Tex."

"Updated Graphics program (to include Photography) 'The World of Work,' etc. programs"

"Courses in electro-mechanical, and pneaumatic control would be helpful. Also if someone is specializing in electronics, courses in digital and micro's would be helpful"

"Practical application, less books!"

"Electrical & Pneumatic Schematic Drafting
Design and Erection of Concrete Forms (ACI)"

"Electronics"

"2nd yr. of electricity
more pratical practice: "internal combustion"

"I think more hrs. in the area of major (Electronics in my case). Keep up with the current technologies which I am sure they are."

"welding, small engines"

"Technical Writing"

"Specific courses on Industrial Safety and Hygeine"

"Welding"

"First Aid; Technical Report Writing-English; Short corse of school law, finance, and fundamentals"

"Better in-class preparation, more maintenance & repair, & more purchasing of machinery & tools."

"(1) Organization of the school (School Board, Supt. Princ., Dept. Chair and how successfully operate within that structure, (2) Youth Group Organization (3) Career Education (4) Budget Preparation (5) Public Relation Techniques (6) Professionalism and committment to actively participate in National & State Associations"

"To review reports from actual teachers on their particular school & how they handled their situations such as - budgets, shop tools, ages or grades combines, problems with administrators & influential people of the community. New teachers need this there is a great difference between large schools and small schools"

"Shop management of materials and supplies"

"Photography, public school operation, discipline problems & techniques taught by a veteran of public education, public attitudes towards educators"

"Better Teaching Methods class - Mine was very POOR! Statistics No use in real teaching world. Should require more speech."

"Spend more time teaching students how to teach students instead of teaching skills. Do not always use their perfect classroom for student teaching. Use the larger cities more because they use more teachers than other cities. I feel that I learned many skill in Ind. arts while at O.S.U. but not enough on how to teach the students. I consider myself self taught in that area. The wanting to survive."

"(1) teacher rights & responsibilities according to law.
(2) Have an extra practice teaching course at the beginning of end of (2nd) year (3)"

"(1) Classes dealing with discipline (2) longer teaching time student teaching (3) less philosophy courses which you never use."

"should offer more than 1 semester of practice teaching block . . . also should be included earlier in educational system."

"More time in practice teaching. Learning how to deal with students who are just killing time in the classroom. Course on Okla. school laws."

"Practice teaching should be earlier in the program so that a student can decide whether or not he even wants to become a teacher"

APPENDIX F

COURSE CONTENT SUGGESTIONS SUBMITTED BY GRADUATES WITH NO INDUSTRIAL ARTS TEACHING EXPERIENCE

Note: The following suggestions were reported exactly as they were written on the returned questionnaires. Abbreviation, grammatical and punctuational errors are those of the respondents.

"Computer courses"

"Graphics, technical writing"

"none"

"none"

"Business Courses in Accounting, Bookeeping, Budgets"

"Photography, drafting"

"Some type of Business Related Courses, Business practices, tax information, ect"

"Basic Management
Economics of living: ie, buying & selling a house, living expenses, moving expenses, how to survive on your take home pay."

"Photography - was not offered; Graphics - Bad; Electricity - the teacher was more interested in getting master degree than teaching; Internal Combustion - not enough time-2 hours"

"Photographic Screen Process Printing
Better Drafting Courses"

"Electronics"

"Since leaving the U.S. Air Force, I have not been employed as a teacher. Industrial arts teaching positions seem to be rare. I almost feel I would have been better off as a business major or an engineer, as those appear frequently and in great demand."

"Shop Management
Budget and Finance
Human Relations"

"More time spent in the classroom learning how to teach"

"Having taught only one year at the High School level I was surprised to see the poor academic level of the students -- more in the field (class) experience would have been most helpful."

"Methods of teaching from a "how to" instead of "what to" teach.
- cabinet work for commercial use. Plumbing, small appliance repair, large appliance repair"

"Do the student teaching much earlier, not the last two semesters, so a person could change areas of study before spending alot of time & money in something, never to be used"

"Although I am not teaching, many classes taken in industrial arts have been very helpful in my occupation"

"A course on testing, and a more open curriculum to allow for better preparation for teaching in industry instead of the classroom."

"Crafts"

"None due to my disassociation with my particular field (major) BS - I now have a masters in MGMT & Public Admin"

"Reading Blueprints, Vocational course curriculums"

"(1) Building maintenance prodedures & long as well as short range planning for preventive maintenance. (2) specification writing (3) Budget procedures and Control (4) Public speaking as related to addressing the council or mayor on the Platform."

"I would have liked more courses to the auto-motive and diesel field within the Ind. Arts program"

"Engineering"

VITA

Robert Franklin Alsup, Jr.

Candidate for the Degree of

Master of Science

Thesis: A SURVEY OF THE INDUSTRIAL ARTS EDUCATION GRADUATES FROM OKLAHOMA STATE UNIVERISTY 1966-1976

Major Field: Industrial Arts Education

Biographical:

Personal Data: Born in Poplar Bluff, Missouri, April 25, 1951, the son of Robert F. and Fern Alsup; married to Barbara, February 23, 1979.

Education: Graduated from Murray University School, Murray, Kentucky, in May, 1969; received Bachelor of Science degree with a comprehensive area in Industrial Arts Education, December, 1973; completed requirements for Master of Science degree in Industrial Arts Education at Oklahoma State University, Stillwater, Oklahoma, in May, 1981.

Professional Experience: High school industrial arts teacher, Livingston County Schools, Smithland, Kentucky, 1974-75; high school and middle school industrial arts teacher, Crittenden County Schools, Marion, Kentucky, 1975-79; employed as graduate teaching assistant in the Industrial Arts Education Department, Oklahoma State University, Stillwater, Oklahoma, July, 1979 to present.

Professional Organizations: Oklahoma Industrial Arts Association, Epsilon Pi Tau, Ancient and Beneficient Order of the Red Red Rose.