5-1972

A Follow-Up Study of Master's Degree Graduates of The University of North Dakota Department of Industrial Technology for The Rodeo 1951-1971

Gary L. Gorman

A FOLLOW-UP STUDY OF MASTER'S DEGREE GRADUATES OF THE UNIVERSITY OF NORTH DAKOTA DEPARTMENT OF INDUSTRIAL TECHNOLOGY FOR THE PERIOD 1951-1971

by

Gary L. Gorman, B.S.

University of North Dakota, 1971

An Independent Study

Submitted to the Faculty

of the

University of North Dakota

In Partial Fulfillment of the Requirements

for the Degree of

Master of Education

Grand Forks, North Dakota

May 1972

This independent study submitted by Gary L. Gorman in partial fulfillment of the requirements for the Degree of Master of Education from the University of North Dakota is hereby approved by the faculty advisor under whom the work has been done.

Dr. Wayne Zook, Advisor

PERMISSION

Title: A Follow-up Study of Master's Degree Graduates of the University of North Dakota Department of Industrial Technology for the Period 1951-1971

Department: Industrial Technology

Degree: Master of Education

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Date July 28, 1972

ACKNOWLEDGMENTS

The writer wishes to express his appreciation to Dr. Wayne H. Zook, chairman, Department of Industrial Technology, University of North Dakota for his encouragement and criticism during the preparation of this independent study.

The writer also wishes to express his appreciation to Tom Aird for his help and guidance.

The writer would also like to thank Mrs. Ilene Grovum for her clerical assistance.

G. L. G.

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ABSTRACT

The purpose of this study was to ascertain information from the master's degree graduates of the Department of Industrial Technology at the University of North Dakota. This information would enable the Department of Industrial Technology to evaluate the graduate level program and to obtain data concerning curriculum improvements, present employment status and geographic distribution.

Methods

The descriptive method of research was used in this study, utilizing the survey as the method of research and a questionnaire as the survey instrument. Questionnaires were sent to sixty-eight master's degree graduates from the period 1951-1971, fifty-six of the sixty-eight questionnaires were returned. Related literature of similar follow-up studies was reviewed to observe methods and results. The data collected was presented in tabular and descriptive form.

Conclusions

Conclusions drawn from the findings were: (1) There is a need for in-service education in all areas of industrial technology and in particular electricity/electronics; (2) Job opportunities and higher salaries were factors contributing

to employment of master's degree graduates outside the state of North Dakota; (3) A majority of master's degree graduates have taken further graduate work towards another degree; (4) There were no significant problems in securing certification to teach in other states or provinces.

Recommendations

It was recommended that: (1) Courses should be offered for vocational credit; (2) Additional courses should be added to all areas to increase the depth of instruction; (3) A cooperative work study program with industry should be incorporated; (4) In-service education be offered in all areas of industrial technology.

CHAPTER I

THE PROBLEM

A follow-up study of University of North Dakota, Department of Industrial Technology, master's degree graduates was initiated in order to obtain information necessary for an evaluation of the industrial technology graduate program. No follow-up study of master's degree graduates has been conducted by the department since the inception of the master's degree program. Also of concern to the department was: the employment status of the graduates; geographic distribution; progress achieved toward the next degree; certification difficulties; and, in-service education desired by master's degree graduates of the Department of Industrial Technology from the period 1951-1971.

The research was designed to answer the following questions:

1. Have the graduates undertaken further postgraduate work towards the next degree?
2. What are the graduates reasons for seeking employment outside the state of North Dakota?
3. What positions do the master's degree graduates now hold?

4. Is there a need for in-service education; if so, what are the areas of prime interest?
5. What areas are the graduates teaching at the present time?

Statement of the Problem

The purpose of this study was to ascertain, by means of a questionnaire, the following:

1. Obtain an evaluation of the Department of Industrial Technology's graduate level curriculum.
2. Obtain data concerning the geographic distribution of the former master's degree graduates.
3. Determine the employment status of the former graduates.
4. Ascertain the need for in-service education.

Scope and Limitations

Questionnaires were sent to sixty-eight master's degree graduates of the University of North Dakota, Department of Industrial Technology from the period 1951-1971. Information compiled from the fifty-six questionnaires returned was used in this study. One of the factors limiting this study was the lack of availability of complete records needed to obtain mailing addresses and names of graduates. The fifty-six responses represented 82.2 per cent of the sixty-eight master's degree graduates surveyed in the follow-up study.

4. Is there a need for in-service education; if so, what are the areas of prime interest?
5. What areas are the graduates teaching at the present time?

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Methods and Materials

The survey was chosen as the research method used in this follow-up study, with the questionnaire as the survey instrument. A questionnaire, as shown in Appendix A, page 33, was designed around the desired objectives and a trial run was tested by seniors in the Department of Industrial Technology. Then the questionnaires were sent to the master's degree graduates along with a cover letter, as shown in Appendix B, page 37, and a self-addressed, stamped envelope.

After ten days a follow-up letter, as shown in Appendix C, page 38, was sent to all master's degree graduates who failed to respond to the first mailing, along with an additional questionnaire and a self-addressed envelope. The data obtained from the questionnaires was compiled in tabular and descriptive form.

Research sources utilized for this study were: Chester Fritz Library; Educational Resources Information Center; Department of Industrial Technology files; and, the files in the College of Education and Graduate Offices.

CHAPTER II

REVIEW OF RELATED LITERATURE

An analysis of the literature concerning follow-up studies revealed many follow-up studies conducted in different fields, for various reasons. The same was true for the field of industrial technology where there are many studies in the area of teacher preparation and curriculum evaluation. Many of the documents located pertaining to these follow-up studies were not available in their entirety, since only abstracts of the follow-up studies are kept in the Chester Fritz Library.

Irving Strom conducted a study to compare and analyze industrial technology education in Minnesota and the requirements of industry. Questions included new curriculum planned, coordination of non-teaching programs in the state, and, positions held by the graduates of the vocational program.[1]

Strom found that: (1) Aeronautics, packaging design, and synthetics, are the new curriculum areas planned for the future; (2) A state committee will be developed to improve and coordinate four year non-teaching programs in the state;

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[1]Irving Elner Strom, A Comparative Analysis of Industrial Technology Education in Minnesota and the Requirements of Industry, 1970. ERIC ED 041 115.

(3) There will be continued and substantial increases in the number of graduates projected; (4) Graduates were frequently employed in management, industrial engineering, product development and supervisory positions.[2]

John L. Feirer, in a study sponsored by the Office of Education, investigated curriculum developed for teacher preparation which bridges the gap between the junior colleges and the community colleges. He found two programs designed to achieve this purpose where the students began their studies in a junior college.[3]

Feirer stated that two teacher preparation programs were concurrently being developed with emphasis on the interface between the junior colleges and senior institutions. The two programs being developed are: (1) Partnership program designed for students who already have decided to become industrial education teachers before entering college; and, (2) Pyramid program for those who decide to teach while in junior college or before entering the transfer institution.[4]

Leonard D. Edwards conducted a follow-up study of Black Hills State College industrial technology graduates

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[2] Ibid.

[3] John L. Feirer, Development of Junior/Community College Curriculum for Future Teachers of Industrial Education, Interim Report, Office of Education (DHEW), June, 1970. ERIC ED 039 884.

[4] Ibid.

from the period 1960-1969. An evaluation of the teacher education program at Black Hills State College in South Dakota, was the main objective of the study. Data concerning the importance of basic elements in the courses taught, and, the status and geographic location of the graduates was also included in the study.[5]

Based on his responses, Edwards found that: (1) The majority of graduates resided outside the state of South Dakota; (2) Seventy-five per cent of the graduates were employed in education; (3) Fifty per cent of the graduates had received advanced degrees.

The graduates found the program deficient in facilities, equipment, and program offerings.

The graduates recommended that more emphasis be placed on modern industrial technology processes in all areas. The graduates rated drafting, woods, and plastics as satisfactory, while six other courses were cited for lack of adequate preparation.[6]

In a follow-up study by Donald A. Weiner at Peru State College a complete evaluation of the total industrial arts

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[5]Leonard D. Edwards, "An Evaluation of the Industrial Arts Teacher Education Program at Black Hills State College by the Graduates," (unpublished Ed. D. dissertation, Missouri University, August, 1971). ERIC ED 055 173.

[6]Ibid.

teacher education program was conducted. Industrial arts education, professional education, and general education were the main program areas evaluated. Information was gathered from 103 graduates of the curriculum and supervisors of graduates employed in the public schools.[7]

Findings of Weiner's study revealed that the majority of graduates gave above average ratings to industrial arts objectives. The graduates recommended a longer student teaching period and anticipated a need for general education courses in speech, math, English Composition I, health, and English Composition II. A follow-up study was recommended for the states of Nebraska, Iowa, and Kansas, as a large percentage of the graduates teach in those states.[8]

A follow-up study was conducted in Wisconsin to evaluate the employment success of its vocational graduates and to measure success attributable to the vocational program. Questionnaires were sent to 1,885 vocational graduates, of which eighty-two per cent responded. The findings indicated that: (1) Employment and income of the graduates was generally good; (2) Training and work were related; and, (3) Educational

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[7]Donald A. Weiner, "Evaluation of the Industrial Arts Teacher Education Curriculum at Peru State College" (unpublished Ed.D. dissertation, Northern Colorado University, 1971). ERIC ED 055 192.

[8]Ibid.

experience was useful in getting, holding or changing jobs.[9]

Milo Sulentic conducted an interview of all industrial arts teachers in the state of North Dakota. He developed an interview schedule in order to assure asking the same questions of each teacher. He then visited each of the seventy-four industrial arts teachers across the state of North Dakota. The purpose of the study was to ascertain the status of industrial arts in the state of North Dakota including facilities, equipment, and teacher preparation. Information was to be used to update teacher preparation curriculum at the time of the study.[10]

Sulentic ascertained the formal training of the industrial arts teachers by finding what majors and minors they held. After the interviews had been conducted it was found that sixty industrial arts teachers held a major in industrial arts, eight had minors and six did not have a degree in industrial arts. Facilities varied across the state; some offered facilities for only one area of industrial arts; while, others offered facilities for all six areas. Industrial arts appeared to be expanding as a number of teachers were adding

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[9]Kenneth J. Little, "Follow-up of 1965 Graduates of Wisconsin Schools of Vocational, Technical, and Adult Education" (unpublished Ed.D. dissertation, Wisconsin University, Madison, June, 1970). ERIC ED 037 784.

[10]Milo Norman Sulentic, "A Survey of Industrial Arts in the Public Schools of North Dakota" (unpublished Master's thesis, University of North Dakota, 1959).

additional areas to their programs.[11]

In 1951, Emmet P. Dienstman initiated a study of industrial arts in the public high schools of North Dakota. This was a study to determine the status of industrial arts programs in North Dakota's high schools. A mailed questionnaire was the survey instrument used to obtain the desired information from the North Dakota high schools. Questionnaires were sent to forty-one high schools having industrial arts, a seventy per cent return was achieved.[12]

Dienstman included several factors in his study: (1) History and development of industrial arts for the period 1930-1951; (2) The Depression, World War II, and the supply of teachers; and, (3) School district reorganization and federally reimbursed programs of education. The results of this study were similar to the study conducted by Norman Sulentic.[13]

Charles Montague conducted a survey of industrial arts in the accredited high schools of North Dakota. The purpose of this study was to ascertain information in relation to the status of industrial arts and teacher preparation. Data was included on salaries earned, trends, and, history of

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[11] Ibid.

[12] Emmet P. Dienstman, "Industrial Arts Education in North Dakota" (unpublished Masters thesis, University of North Dakota, 1951).

[13] Ibid.

industrial arts up to the time of the study.[14]

Montague found that: (1) Industrial arts declined in accredited high schools of North Dakota due to legislation which removed industrial arts courses from the subjects recommended for high schools; (2) Economic and financial conditions required schools to reduce their budgets which had a great effect on the decline of industrial arts; (3) Slight growth was made when it was realized that industrial arts was needed for a complete general education; (4) Mechanical drawing, general shop and woodworking were subjects most frequently taught in high school; (5) General shops were found to have the largest enrollment; (6) Printing made progress only in the large high schools. Pupil-teacher ratios were within recommended limits in all except the small schools where the ratio was lower. Science and math were the subjects most often taught with industrial arts by part-time instructors.[15]

Armand Pagliarini conducted a study of state curriculum guides on industrial arts in twenty-two states. The purpose of the study was to establish the curriculum trends of industrial arts. Many aspects of industrial arts were covered by

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[14]Charles Adams Montague, A Survey of Industrial Arts in the Accredited High Schools of North Dakota (unpublished Master's thesis, University of North Dakota, 1939).

[15]Ibid.

this study but of prime interest was the curriculum recommended by the states.[16]

Results of the study were: (1) A trend toward general shops in schools where it is not possible to offer unit type shops; (2) Wisconsin provided for new innovative "resource units" modern educational philosophy and a variety of activities; (3) A majority mentioned industrial arts at the elementary level; (4) No two state courses were the same with respect to grade placement and sequence; (5) There was a trend toward programs where girls could participate.[17]

Johnson conducted a study of graduate programs in 1969. The purpose of the survey was to rate the graduate programs in the United States according to the quality, as indicated by faculty members. Respondents were asked not to rate more than five departments as distinguished. Results obtained were compared to a survey conducted in 1964 on the same subject. The two surveys were then compared for changes of evaluation of departments at the University of Chicago, changes in ranking, and a comparison of the top ten and fifteen programs.[18]

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[16]Armand E. Pagliarini, "Curriculum Trends in Industrial Arts" (unpublished Masters thesis, University of North Dakota, 1952).

[17]Ibid.

[18]D. Gale Johnson, A Rating of Graduate Programs, Report to the American Council on Education, Washington, D.C. ERIC ED 037 173.

CHAPTER III

RESULTS OF THE STUDY

This study was an attempt to ascertain information from the master's degree graduates of the Department of Industrial Technology at the University of North Dakota. This information would enable the Department of Industrial Technology to evaluate the graduate level program and to obtain data concerning curriculum improvements, present employment status, and geographic distribution.

Academic Data Concerning the Graduates

Years when master's degrees conferred

Fifty-six master's degree graduates responded to the questionnaire, of that number, twenty-six, or 46.6 per cent, indicated that they had earned the Master of Science degree, while thirty, or 53.4 per cent, indicated that they had earned the Master of Education. The distribution of the master's degrees earned in each year of the twenty year period, 1951-1971, is shown in Table 1, page 13.

Six, or 10.6 per cent, of the respondents indicated that they received their Master of Education degree in 1970, with five, or 8.8 per cent receiving theirs in 1962 and 1969, respectively. Fourteen, or 24.8 per cent, of those responding

received their Master of Education during the 1969-1971 school years.

Five, or 8.8 per cent, received their Master of Science degree in 1969, with four, or 7.2 per cent, received in 1970.

TABLE 1

YEAR DEGREE EARNED BY RESPONDENTS

Year	M.S.	Percentage	M.Ed.	Percentage
1951	0	0.0	0	0.0
1952	0	0.0	0	0.0
1953	1	1.8	0	0.0
1954	1	1.8	0	0.0
1955	0	0.0	0	0.0
1956	1	1.8	0	0.0
1957	1	1.8	0	0.0
1958	0	0.0	0	0.0
1959	0	0.0	0	0.0
1960	2	3.6	0	0.0
1961	1	1.8	2	3.6
1962	1	1.8	5	8.8
1963	0	0.0	2	3.6
1964	1	1.8	4	7.2
1965	0	0.0	0	0.0
1966	2	3.6	2	3.6
1967	3	5.4	1	1.8
1968	1	1.8	0	0.0
1969	5	8.8	5	8.8
1970	4	7.2	6	10.6
1971	2	3.6	3	5.4
Totals	26	46.6	30	53.4

Postgraduate work undertaken

Table 2, page 14, shows the number of quarter and semester hours completed beyond the master's degree by the

graduates. Thirty of the respondents indicated that they had undertaken further study, twenty-six indicated no further college work. An average or mean was calculated for the number of semester and quarter hours taken, the mean for semester hours was 18.1 hours, and, the mean for quarter hours was 29.2 hours. The total number of semester hours taken was 308 hours and the total quarter hours was 380 hours.

TABLE 2

CREDITS EARNED BEYOND MASTERS DEGREE*

Semester Hours	Number Responding	Quarter Hours	Number Responding
1	1	1	1
3	3	6	2
4	1	7	1
7	1	23	1
8	2	24	1
10	1	30	3
12	1	31	1
14	1	35	1
15	1	42	1
20	1	115	1
32	1		
39	1		
60	1		
69	1		
Totals 308	17	380	13

*Only thirty of the fifty-six respondents have completed hours beyond the master's degree. The total number of hours completed takes into account all multiple responses.

Institutions attended

Table 3 is a list of the schools attended and the number of graduates who attended each school as indicated by responses on the questionnaire.

TABLE 3

INSTITUTIONS ATTENDED*

Institution	Number of Graduates
Arizona State University	2
Bemidji State College	1
California Poly Technical	1
California State, Hayward	1
Colorado State	1
Kansas State University	1
Mankato State College	3
Moorhead State University	2
North Dakota State University	1
Oswego State University	1
River Falls State	1
Saint Cloud State College	1
San Diego State	1
San Francisco State	1
South Dakota State (Brookings)	1
State School of Science (Wahpeton)	1
University of California	1
University of Maryland	1
University of Minnesota	4
University of North Dakota	15
University of Northern Colorado	1
University of Southern California	1
University of Utah	1
University of Wisconsin	2
Total	48

*Of the thirty respondents who indicated enrollment in graduate schools, several attended more than one institution.

Fifteen of those responding indicated that they had done postgraduate work at the University of North Dakota. Also, four have attended the University of Minnesota, and three have attended Mankato State College in Minnesota.

Of the thirty graduates responding to this question, several indicated that they had attended more than one institution during their postgraduate work.

Residency of graduates

Table 4, page 17, indicates the number of graduates who were residents and those who were not residents of North Dakota at the beginning of their graduate studies. Those graduates who indicated that they were residents of North Dakota totaled twenty-nine, or 58.1 per cent, of the fifty-six respondents, twenty-seven, or 41.9 per cent, were non-residents.

As illustrated in Table 5, page 17, a list was compiled of the states and provinces providing residency for the non-residents of North Dakota, and the number of responses from each. It was found that twelve, or 44.4 per cent of the nonresidents were from Minnesota. Four, or 14.8 per cent, were residents of California, and two, or 7.4 per cent, were from Wyoming, Montana, and Manitoba respectively.

TABLE 4

RESIDENTS OF NORTH DAKOTA AT BEGINNING OF MASTER'S STUDIES

Year	Yes	No
1953		1
1954		1
1956	1	
1957		1
1960		2
1961	1	2
1962	4	2
1963		2
1964	4	1
1966		4
1967	4	
1968	1	
1969	4	6
1970	8	2
1971	2	2
Totals	29	27

TABLE 5

STATES AND PROVINCES OF NONRESIDENTS*

States and Provinces	Number of Graduates
California	4
Illinois	1
Minnesota	12
Montana	2
Washington	1
Wisconsin	1
Wyoming	2
Manitoba	2
Ontario	1
Saskatchewan	1
Total	27

*Only the twenty-seven nonresident students as shown in Table 4, responded to this question.

Employment Data Concerning the Graduates

Present positions

A major component of the study was to find out what positions the Masters degree graduates held and a description of their duties. Table 6 shows the positions held and the number of graduates employed in each position.

TABLE 6

PRESENT POSITIONS*

Position	Number of Graduates N=52
Assistant Director of School Facilities	1
Assistant Principal	1
Assistant Professor	4
Associate Professor	2
Contractor	1
Department Chairman, College	2
Department Chairman, High School	4
Director of Vocational Education	1
Industrial Arts Teacher	30
Machine Development Engineer	1
Math Instructor	1
Military Instructor	1
Principal	2
Product Support Marketing	1
Total	52

*Four graduates did not respond to this question.

The majority of graduates, thirty, or 57.7 per cent, are employed as industrial arts teachers. Six, or 11.5 per cent, are professors and four, or 7.7 per cent, are presently

high school department chairmen.

Employment outside North Dakota

During the past years the loss of trained personnel from the state of North Dakota has been of grave concern. The department wanted to know the reasons for the graduates seeking employment outside the state of North Dakota and the number of graduates employed outside the state. This information was obtained by the questionnaire and the results were incorporated into Table 7 and Table 8, page 20.

TABLE 7

EMPLOYMENT RESIDENCY

Employment	Number of Graduates	Percentage
Outside North Dakota	40	71.4
Within North Dakota	16	28.6
Totals	56	100.0

As indicated by Table 7, forty, or 71.4 per cent, of the graduates are employed outside the state of North Dakota, while only sixteen, or 28.6 per cent are employed within the state.

Table 8, page 20, lists the reasons for seeking employment outside the state of North Dakota as indicated by the

forty respondents who stated they are employed outside the state on Table 7, page 19. More than one response was made by several of the graduates.

The most prominent reasons for leaving North Dakota to seek employment were salary, seventeen, or 42.5 per cent, and job opportunities, sixteen, or 40.0 per cent.

Mentioned eight times, or 20.0 per cent, as reasons were climate and original residency in another state or province.

TABLE 8

REASONS FOR EMPLOYMENT OUTSIDE THE STATE

Reason	Number of Graduates	Percentage* N=40
Job Opportunities	16	40.0
Climate	8	20.0
Resident of Another State or Province	8	20.0
Salary	17	42.5
Other	2	5.0
Totals	51	127.5

*More than one response was made by several of the forty graduates employed outside the state of North Dakota.

Time spent at present positions

Table 9, page 21, shows the length of time the

graduates have spent at their present positions.

The majority of graduates, thirty-two, or 57.3 per cent, have been employed at their present positions for four years or longer. Twenty, or 35.7 per cent, have been in their positions from two to four years. Four, or 7.0 per cent, have been in their positions for one year or less.

TABLE 9

LENGTH OF TIME AT PRESENT POSITION

Length of Time	Number of Graduates	Percentage
Less Than One Year	2	3.5
One Year	2	3.5
Two to Four Years	20	35.7
Over Four Years	32	57.3
Totals	56	100.0

Educational level and subjects taught

The educational levels and subjects taught by the graduates were also of interest to the department. This information was obtained through the questionnaire and placed into two tables. Table 10, page 22, indicates the subject areas and the number of graduates who teach in each area. Table 11, page 23, shows the educational level at which those graduates

involved in teaching now work.

As illustrated in Table 10, many of the graduates indicated that they are employed in more than one instructional level within education.

Twenty-three are involved with work on the high school level. Eighteen work with junior high and college level, respectively; one is involved at the elementary level; and, three work with adult education.

TABLE 10

EDUCATIONAL LEVEL OF INSTRUCTION

Educational Level	Number of Graduates*
Elementary	1
Junior High	18
High School	23
Junior College	0
College	18
Adult Education	3
Total	63

*Many of the respondents are involved at several instructional levels.

Table 11, page 23, points out that most graduates instruct in several industrial arts areas. The most common areas of instruction were drafting, woods, and metals with

more than twenty graduates working in each area. Electricity, plastics, power, and electronics were also common areas, with more than ten involved in each of them.

TABLE 11

TEACHING AREAS

Area	Number of Graduates*
Administration	4
Arts and Crafts	2
Auto Body and Paint	1
Auto Mechanics	2
Aviation	1
Construction Trade Technology	2
Descriptive Geometry	1
Drafting	22
Educational Media	1
Electricity	15
Electronics	10
Electronic Drafting	1
Graphic Arts	7
Humanities	1
I.A.C.P. (Construction)	1
Industrial Arts -- Girls 11th & 12th	1
Industrial Technology Culture	1
Leather Craft	1
Materials Testing	1
Metals	21
Photography	2
Plastics	13
Power	10
Professional Courses	5
Slide Rule	1
Technology for Children	1
Welding	2
Woods	21
Total	153

*Most of the respondents are employed in more than one teaching area.

Graphic arts, professional courses, and administration were also frequent duties with from four to seven graduates participating.

Many other areas were taught by one or two of the respondents.

Recommendations for Improving Graduate Level Curriculum

Recommendations were made by former master's degree graduates in three areas: (1) Improvement of courses taken at the graduate level; (2) Courses that should have more emphasis in both professional and technical areas; and, (3) Type of in-service education needed.

The recommendations made by former graduates could possibly form the nucleus of future course revisions and the basis for future summer programs and workshops.

Improving graduate level courses

The first of the three areas surveyed was: How courses taken by former graduates could be improved. Due to the span between the receipt of the masters degrees by the respondents and the time when the original courses were taken, some of the graduates failed to respond to this portion of the questionnaire. The suggestions received from the graduates are summarized below.

1. In-depth study was suggested as a possible revision in the technical areas.

2. A competancy based program for laboratory instruction and development of intellectual and cognitive skill emphasis was also suggested as a possible revision.
3. Some respondents recommended course changes so that the credit would also apply towards vocational certification.
4. Skill development as a major emphasis in the existing program in order to improve teaching skills necessary to the area, was a recommendation by one of the former graduates.
5. A number of former graduates felt that there should be more emphasis on teaching methods. Many found that when they started teaching they were inadequately prepared in this area.
6. Also suggested, was a more general approach, adding more courses or instruction of a general, rather than a technical nature.
7. Industry based on production was suggested as a possible change in course structure.
8. Less over-lapping of material and assignments that could be used in the classroom was suggested.

Areas to emphasize

In the second area the former graduates were asked to

indicate what specific areas of professional industrial technology courses should have more emphasis.

A further breakdown was made into professional and technical areas. The findings in these areas are summarized below.

Professional areas

1. Emphasis on Contemporary Industrial Technology programs was suggested.
2. Since the Industrial Technology department does not offer a course in research, it was suggested that one be incorporated into the program.
3. Since many of the former graduates have administrative duties, a course in administration was recommended. Also, courses in accounting, ordering equipment, and economics were mentioned.
4. Emphasize philosophy and career education.
5. Two of the graduates were involved with slow learners and recommended that methods of instruction for slow learners be emphasized.
6. Since the acquisition of funds often becomes a part of the instructors job it was recommended that Acquisition of Federal Funds be emphasized.

Technical areas

1. Advanced technical courses were deemed necessary.

2. Emphasis should be placed on data processing.
3. There was a need felt to emphasize auto mechanics and diesel mechanics in the program.
4. Several felt that audio-visual equipment should be emphasized in one of the courses.
5. One graduated suggested emphasis on computer graphics, others favored metallurgy and hydraulics.

The list of suggestions could go on but the writer felt it was not necessary to list all suggestions as many overlapped or recommended similar changes. The number and percentage of graduates suggesting each change was omitted as the list of recommendations was exceedingly lengthy. There were duplications of only two or three suggestions in any one area.

Type of in-service education needed

In-service education is the area the Department of Industrial Technology can be of greatest service to its graduates. Through in-service education the graduates and the department can keep abreast of what is happening in education. The courses the former graduates felt that they needed were extremely varied. Most needed refresher courses in the areas of industrial technology already offered. Others needed courses which are not offered at this time in the department. Following is a list of courses that the graduates felt they

need.

1. Communications
2. Innovative programs
3. Industrial Technology without Federal Funds
4. Writing of Objectives
5. Radio and Television troubleshooting
6. Careers
7. Transmission of Power
8. Teaching the Slow Learners
9. Photography (Color)
10. Safety
11. Administration

One graduate suggested an exchange of teachers within the system to allow updating of teachers in the field.

General Comments

It was encouraging to discover that the former graduates and the Department of Industrial Technology at the University of North Dakota have similar opinions regarding changes in the existing program.

Many changes are now in the planning stages and others have already been incorporated into the program. If this cooperative attitude between former graduates and the department is perpetuated, inumerable successes can be achieved.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The following conclusions were drawn on the basis of the data obtained in this study:

1. No single area of instruction was found to be deficient in content.
2. There was a nearly unanimous agreement that the courses should be more technical in nature.
3. Salaries and job opportunities were the main reasons that influenced the former graduates to leave the state of North Dakota.
4. Many of those participating in the graduate program were out-of-state residents.
5. A majority of graduates have held their present jobs for four or more years.
6. The majority of the former graduates teach at the junior high and high school levels.
7. A large percentage of former graduates have undertaken postgraduate work.
8. In-service education was desired by those who were in close enough proximity to the university to

benefit from the courses.

Recommendations

It is recommended that in the future, follow-up studies of former graduates be undertaken at regular intervals by the Department of Industrial Technology at the University of North Dakota.

The studies should be conducted at intervals of no more than five years in order to keep abreast of former graduates' needs and to keep the industrial technology courses offered at the University of North Dakota relevent to the needs which future graduates will discover in the field.

BIBLIOGRAPHY

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A. BOOKS

Nisbet, J. D., and Antiwistle, N. J. Educational Research Methods. New York: American Elsevier Publishing Company, Inc., 1970.

B. REPORTS

Feirer, John L. Development of Junior/Community College Curriculum for Future Teachers of Industrial Education. Interim Report, Office of Education (DHEW), June, 1970. ERIC ED 039 884.

Johnson, Gale D. A Rating of Graduate Programs. Report to the American Council on Education, Washington, D. C. ERIC ED 037 173.

Strom, Irving Elner. A Comparative Analysis of Industrial Technology Education in Minnesota and the Requirements of Industry, 1970. ERIC ED 041 115.

C. UNPUBLISHED MATERIALS

Dienstman, Emmet P. "Industrial Arts Education in North Dakota." Unpublished Masters thesis, University of North Dakota, 1951.

Edwards, Leonard D. "An Evaluation of the Industrial Arts Teacher Education Program at Black Hills State College by the Graduates." Unpublished Ed.D. dissertation, Missouri University, August, 1971. ERIC ED 055 173.

Little, Kenneth J. "Follow-up of 1965 Graduates of Wisconsin Schools of Vocational, Technical, and Adult Education." Unpublished Ed.D. dissertation, Wisconsin University, Madison, June, 1970. ERIC ED 037 784.

Montague, Charles Adams. "A Survey of Industrial Arts in the Accredited High Schools of North Dakota." Unpublished Masters thesis, University of North Dakota, 1939.

Pagliarini, Armand E. "Curriculum Trends in Industrial Arts." Unpublished Masters thesis, University of North Dakota, 1952.

Sulentic, Milo Norman. "A Survey of Industrial Arts in the Public Schools of North Dakota." Unpublished Masters thesis, University of North Dakota, 1959.

Weiner, Donald A. "Evaluation of the Industrial Arts Teacher Education Curriculum at Peru State College." Unpublished Ed.D. dissertation, Northern Colorado University, 1971. ERIC ED 055 192.