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INDUSTRIAL EDUCATION AT MIAMI UNIVERSITY:
ITS ORIGIN, DEVELOPMENT, LEADERS, 
AND DISSOLUTION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for 
the Degree Doctor of Philosophy in the Graduate 
School of The Ohio State University

by

David Charles Isaacs, B.S., M.Ed.

* * * * *

The Ohio State University

1986

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Adviser
The College of 
Education
DEDICATION

To those who have loved me enough to endure . . .
we begin again.

ii
ACKNOWLEDGEMENTS

I express sincere appreciation to Dr. William Umstattd for his guidance and insight throughout the research. Thanks go to the other members of my advisory committee, Drs. F.W. Cyphert, M. Scott, and R. Shearer, for their suggestions and comments. Gratitude is expressed to Dr. and Mrs. Robert Shrader for their untiring efforts to see the research to its completion. The technical assistance of Theresa Hornsby and Joanie Jones is gratefully acknowledged. To all of the families and friends of the Industrial Education faculty who provided of their time, memories, and personal artifacts, my sincere thanks are offered. To my family, Angela, Jasmyne, Laurel and Holly, I thank you for understanding my frequent absences.
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CHAPTER I
INTRODUCTION

Throughout the course of history, mankind has labored to document civilization and its accomplishments. While this often has been nothing short of mere ego gratification, it also has served a great purpose. The accurate recording of the activities and accomplishments of any given segment of a society provides a valid basis for an evaluation and synthesis of that society.

The field of Industrial Arts Education has but few historical investigations to its credit, when compared to other disciplines. This may be a result of several factors, not the least of which is the relative youth of the field. Another factor may lie in the perspective of a practitioner-oriented discipline where knowledge and theories are advanced through practice.

The studies of Bennett (1926, 1937), Barlow (1967), Sredl (1964, 1966, 1967), Kinzy (1937), Latimer (1974), and Ezell (1982) provide the foundation of historical research that exists within the field. One factor that appears notably lacking in these studies, though, is the study of why a particular program (or programs) ceased to thrive. It is that void which this study has attempted to address. The program of reference is Industrial Arts at
Miami University, Oxford, Ohio, phased out beginning in 1982.

With the advent of Woodward's Manual Training School in St. Louis, Missouri, in the 1870s, and the resulting programs in such places as Pittsburg, Kansas; Oswego, New York; and Columbus, Ohio; the new field of study was established. It was not long before many other institutions were to promote the field.

Miami University, authorized by Congress in 1792 and founded in Ohio in 1809, began the training of teachers in 1902 with the establishment of the Normal School, also referred to as The Teachers College. A two-year degree program in Industrial Education (note...not Manual Training) was officially established by the University in 1907. A four year baccalaureate degree program came into existence in 1912 (Miami, 1927). This program for many years met the demand for well trained and certificated Industrial Arts teachers in the geographical area.

In 1906, Dr. Fred C. Whitcomb was employed by Miami University as the Director of Manual Arts, and later became Director of the Division of Special Subjects (Senate, 1944). In part, it was part his leadership, both locally and at a national level, that this study seeks to document and evaluate. The parallels and interactions, if any existed other than those of time and proximity, between his leadership and that of the noted William
E. Warner at The Ohio State University also are the subject of rumors and speculation as to early developments of the profession.

Of particular interest to this study is the leadership of Dr. Charles Bunten, the last formal Chairperson of the department. It was through his period of leadership that faculty members such as Dr. Robert Shearer (Assistant Director of Career Services at Miami), Dr. James Ziegler (Associate Dean of the College of Education at Miami), Dr. Eugene Martin (Chairperson at Southwest Texas), and Dr. Ming H. Land (Chairperson at Appalachian State), were employed. These scholars continue to make significant contributions to the field nationally. Also during his term of leadership, the program failed to maintain viability on campus, and thus was subject to dissolution.

Therefore, it can be seen that the Industrial Education Department at Miami University was both long lived and fundamental in its faculty philosophy. Even with prominent scholars as faculty members, the program area was subject to dissolution. This investigation has sought to discover and analyze the origin, program development, leaders, and implications of this dissolution.
STATEMENT OF THE PROBLEM

The central and predominant problem for this research was the fact that no accurate, detailed record or interpretation of the history of Miami University existed.

The lack of a comprehensive record in itself does not constitute a legitimate problem. The problem arises because there has been no interpretation made concerning the faculty and their contributions or as concerns the program and its influences. Of course, there have been stories and rumors concerning the impact of this faculty on the profession, but the problem is to write a history as a "distillation of rumor (Ezel, E., 1982)."

PURPOSE AND SIGNIFICANCE OF THE STUDY

The primary purpose of this study was to document and interpret a comprehensive and accurate history of the Industrial Education Department at Miami University. The study emphasized the origin, development, leaders, influence on the field, and dissolution of the program. No similar study has been conducted, and further delay would decrease the probability of utilizing the remaining primary sources in regards to personnel. The compilation of primary and secondary documents and artifacts also should be completed at this time to insure their preservation.

The recent dissolution of the Industrial Education Program at Miami University, as well as the demise of
similar programs across the nation in the recent past, lends a particular significance to this study. A compilation of the factors which contributed either directly or indirectly to the discontinuation of the Miami program has been made during this investigation. The careful examination and interpretation of these data will possibly be the single most impacting contribution of this study.

The perspective of history can serve the educator involved in educational policy making, and it can serve any member of the profession dealing with educational problems (Cook, 1971).

Gay states that the purpose of historical research is to arrive at conclusions concerning causes, effects, or trends of past occurrences that may help to explain present and to anticipate future events (Gay, 1981). It is reasonable to assume that the study of the Industrial Educational Department at Miami University, and the factors which contributed to its dissolution will be of value to similar programs nationwide. Galfo (1972) supports this train of thought by stating that the historian usually is concerned with determining whether and how variables of the past have led to a set of conditions during a later period.

It was not the intent nor the purpose of this investigation to merely "find out what is already known about a topic and to retell it" (Gay, 1981), but to compile a detailed document through a critical review of the material available.
QUESTIONS AND HYPOTHESES

The formulation of questions and hypotheses in a historical investigation follow in a reasonable and logical progression of research steps. "Following the collection of source materials and their criticism, the third major process of historical research is the formulation of hypotheses..." (Cook, 1971). These questions and hypotheses generally are used to provide direction to further investigation.

The act of asking specific research questions reveals a certain bias on the part of the investigator. If the "wrong questions" are asked, quite probably the wrong data will be gathered. Also, if the "right questions" are NOT asked, the data may be incomplete and a wrong hypothesis drawn.

The form for the hypothesis generally is the interrogative. "Putting the hypothesis in interrogative form is more judicious than putting it in declarative form if for no other reason than it is more noncommittal before all the evidence has been examined." (Gottschalk, 1969).

Using the direction which was articulated in the statement of purpose the following interrogative questions were developed to be used as guides for this study regarding:

1. The origin of the Department of Education at Miami University. Do any relationships exist
between its formation and other programs in the United States? How does the origin of this program relate to the organization of the College of Education at Miami University?

2. Program development. What specific needs did it meet? What were its philosophical developmental stages? What were its growth and developmental patterns? How did it change to meet the emerging technologies and their influence? What were the curricular offerings in each of the stages?

3. Faculty leadership. What contributions were made by the faculty members on a local, state, and national level?

4. Lasting contributions made to the field. What impact, if any, has been made on the field of Industrial Arts Education?

5. Factors that contributed to the demise of the program, and how they might be of significance to the field. What was/is the impact on its constituencies when this program was eliminated by the University? What, if any, were the "warning signals" that this program was in a position of disenfranchisement? What steps, if any, were taken to save the program? What is the real or anticipated impact of the field by the dissolution of the program?
METHODOLOGY

For the purpose of this investigation, the historical method was the primary research tool.

Admittedly, the nature of historical research precludes the exercise of many control procedures characteristic of other methods. If well done, however, historical research also involves systematic, objective data collection and analysis and the confirmation or disconfirmation of hypothesis (Gay, 1981).

Thus, Gay has outlined the three basic research steps used in this study: 1) the systematic and objective collection of data; 2) the systematic and objective analysis of the data; 3) the interpretation of the collected material. Every attempt has been made to ensure academic credibility of the investigation.

COLLECTION OF DATA

The collection of data began in March of 1983 with an initial review of both primary and secondary sources. The process of reviewing and abstracting pertinent data, recording complete bibliographic information, codification of data with respect to research questions, and notation of comments included both source types.

Primary sources that were examined were College of Education records; selected materials in the Miami University Science Library; selected materials in the Miami University Alumni Library; the Miami University Archives; the Archives of the American Industrial
Arts Student Association (AIASA), Millersville, Pennsylvania; interviews with participants; and the examination of other significant materials as applicable. The search for additional primary source materials and artifacts continued throughout the duration of the investigation.

While secondary sources may prove to be accurate, their use was not primary to this investigation. For this study, the four purposes of secondary sources detailed by Ezell were utilized.

1. Derive the setting into which to fit the contemporary evidence.
2. Attain leads to other bibliographic data.
3. Acquire quotations or citations from secondary sources but only if they are not available from primary sources.
4. Derive hypothesis and interpretation regarding the problem, but only with the view of testing, not outright acceptance (Ezel, 1982).

DATA ANALYSIS

A systematic and objective analysis of the data constituted the second step in this historical research. The historical sources were subjected to a careful analysis to determine both their authenticity and accuracy (Gay, 1981). A careful, exhaustive and systematic verification of all data gathered was a necessity to the validity of the investigation.

External criticism of data involved assessing of the following four factors: 1) Knowledge and competence of
the author; 2) Time delay or how much time elapsed between the events occurrence and the recording of the facts; 3) Bias or motives of the author....was the author writing from a neutral position; and 4) Consistency of the data....does each piece "fit" into the scheme established, or is it verifiable (Gay, 1981). The degree to which data were reliable and accurate is judgmental and subject to the biases of the investigator.

INTERPRETATION OF THE DATA

The final step in the historical research process was the interpretation or synthesis of the data. According to Jones:

To complete his task, obviously, the historical researcher must present his hypothesis, his tentative solutions to the problem. This final act of interpretation should be done with full recognition of the beliefs or biases which the researcher has identified in his own make- (Jones, 1973).

While bias or prejudice may be thought of as exaggerated points of view, the point of view experience, beliefs, and attitudes of the historian must affect the interpretation (Shafer, 1980). This investigator attempted to differentiate clearly between evidence and personal inference.
DELIMITATIONS

For the purpose of this study, the researcher imposed the following delimitations:

1. Data were collected beginning in 1902, with the establishment of the Teachers College at Miami University. The time frame tentatively terminated with the dissolution of the Department of Industrial Arts Education in 1982.

2. This study was concerned with other organizations, personnel or programs only as they directly effected the development of the Miami program, or were affected by the Miami program.

LIMITATIONS

For the purposes of this study, the researcher recognized and accepted the following limitations as having a potential impact upon the results of the study:

1. The availability of resources, materials and artifacts. "The historical researcher is basically limited to whatever data are already available. Thus, if insufficient data are available, the problem will be inadequately tested; conclusions concerning the confirmation or disconfirmation or such hypotheses will be at best extremely tentative" (Gay, 1981).

2. Constraints of time and available capital resources. "Travel requires that the researcher have a
healthy bank account...reproduction (for example, acquiring photocopies of documents in a private collection) can also be costly..." (Gay, 1981).

3. Personal familiarity to the subject under investigation. Yet, this bias need not always be detrimental to the results of the investigation.

4. The date of June 15, 1986, as the terminal point for gathering data. This date brought closure to the collection of data which would otherwise continue indefinitely.

5. Acceptance that certain data were considered "politically sensitive" and were not directly attributable to specific persons involved.

6. The destruction of thirty-five boxes and barrels of departmental records in the summer of 1982.

7. The reluctance or refusal of several primary sources to contribute their knowledge and/or expertise (see Appendix R).

BASIC ASSUMPTIONS

Throughout the initial stages of this investigation, certain basic assumptions were made by the researcher. Those basic assumptions were as follows:

1. A historical study of Industrial Education at Miami University will be a significant contribution to the field. "The assumption is that a current problem might
be better understood in a historical perspective (Johnson, 1977).

2. Adequate resources exist to develop such a history.

3. Sufficient primary source material exists to make the study valid.

REVIEW OF RELATED LITERATURE

Most research studies incorporate exhaustive literature review throughout, but, primarily in the initial stages. Often this is done to determine what already has been done (Gay, 1981). In historical research, however, the review of the literature actually provides the research data (Borg, 1971). Also it is noted that by studying the research of others, one may synthesize and formulate an interpretation of one's own study.

In any historical investigation, the term literature takes on a very broad meaning. Literature refers to any form of written communication, legal documents, records, and minutes of meetings, letters, and other similar documents. For the purpose of this study, a review of existing literature was conducted to determine the significance of the problem, to determine the extent of materials available, to determine the feasibility of such a study, and to determine if a complete and exhaustive investigation had been conducted previously.
While the amount of historical research in Industrial Arts is slowly increasing, it is minimal at best. A few excellent studies have been conducted (Ezell, 1982, Kinzy, 1973, Householder, 1979, Bennett, 1926, and Sredl, 1966) that merit note, yet they comprise a very slim portion of the total body of researchable history in the field. Householder and Suess (1969) implied that the relatively young age of the profession had much to do with the lack of historical investigations, while Streichler (1966) postulated that writing about the future was more enticing and exciting.

The history of industrial arts education at Miami University has not been documented exhaustively, nor has it been reviewed critically in a single text or publication. A preponderence of University literature covers various aspects of the program and its leaders, yet all cover only specific aspects of the whole. Several papers have been written for various courses at Miami University which provide a chronological overview of the personnel and developments within the program (Floyd, Fusco), yet, none are critical and exhaustive.

The availability of primary source material and artifacts, as well as the availability of primary persons, was a great aid to the investigator. The increasing age of the primary sources, as well as their increasing decentralization, makes a study at this time
imperative if the data are to be saved.

Ezell sums up the review of literature for a historical researcher thus:

For a historical researcher, the review of the literature evolved into his data collection. The volume of this data sometimes seems oppressive. "Sometimes a thousand pages must be looked over before one finds the material for a single paragraph" (Bennett, 1933, p. 29). But, therein lies the challenge and the reward of historical research (Ezel, 1982).

TERMINOLOGY

An initial review of primary sources and artifacts revealed the following terminological dilemma: often times students would graduate from the Industrial Education Department having taken many industrial technology courses, only to be employed to teach Industrial Arts in facilities referred to a Manual Arts Labs, and were referred to as "shop teachers". For the purposes of this study the researcher recognized and accepted this variance in terminology.

University records, while not always consistent, provided the following approximate chronology of departmental names:

1904 Manual Training
1906 Manual Arts
1915 Industrial Arts/Industrial Education
1940 Industrial Arts Education
1968 Industrial Education
ADJUNCT COMMITTEE MEMBER

The addition of Dr. Robert Shearer as adjunct committee member, was made in the initial stages of this investigation. Dr. Shearer has distinguished himself as a noted scholar in the field, and was a former faculty member of the program under investigation. Dr. Shearer currently is the Assistant Director of Educational Career Planning and Placement at Miami University.

SUMMARY

History is a record of the past, both significant and "not so significant" events. It is a careful examination and interpretation of data collected concerning the personalities, contributions, and achievements of the people who comprise societal units.

The process of historical research involves 1) the systematic and objective collection of data, 2) the systematic and objective collection of the data, and 3) the interpretation of the collected data. A documentation of bibliographic materials and resources serves to support the collected data.

Based upon these guidelines, the investigator attempted to analyze and synthesize the history of industrial education at Miami University with special emphasis on its origin, development, leaders and dissolution.
CHAPTER II
INDUSTRIAL EDUCATION AT MIAMI UNIVERSITY

THE BACKGROUND

To trace "practical" education of mankind would be tantamount to tracing the history of mankind. There were many early efforts even before the Christian era, that related to training and education regarding tool making and use and the beginning of agriculture and an economic system. Hard work in schools for the common good (general education) has been traced to the work of Comenius, Basedow, and Pestalozzi as early as the 16th, 17th, and 18th centuries. Fundamental to their efforts was the axiom that sense impressions are the bases of thought and, hence, knowledge. Out of this point of view, grew the idea of learning by doing. The object method of teaching and the recognition of the value of making something with the hands led to placing children in workshops where they engaged in handicrafts of several types. (Ray, 1977)

The awakening of a consciousness to practical education in the classroom, as Ray has pointed out, was a long and drawn out process. Not until the Manual Training Movement of the 1870's did any real progress take place towards a formalized curriculum in practical arts. By 1870, the concept of a University Public Elementary Education had taken firm root in the United States and provided an arena for practical arts education.

With the goal of education for all people, more and more children were brought under the influence of public education. A significant percentage of the children were
offsprings of the working class: laborers, farmers, service industry folks (Barlow, 1967). It was a natural progression that public education should reflect the values, ideals, and needs of this working class.

There was agreement concerning the reasonableness of the demand for industrial training, for it was recognized that the delay of the apprenticeship system make industrial education a national necessity. (Barlow, 1967)

This recognition of the reasonableness of and need for industrial education provided a basis for the development of teacher training programs in "practical" or Industrial Education. The need for competent instructors skilled in the various aspects of industry became a challenge which was met by what we have come to know as industrial education.

THE MANUAL TRAINING MOVEMENT

The major impetus for the Manual Training Movement generally is attributed to Calvin M. Woodward of Washington University in St. Louis, Missouri (Ezell, 1982). As Dean of the Department of Engineering at Washington University (formerly the O'Fallon Polytechnic Institute of which Woodward was principal), he taught courses in Applied Mechanics. Bennett describes the process from applied mechanics and mathematics to a manual training course as such:

Because his students found difficulty in visualizing some of the forms under consideration, he asked them to work out these forms in wood. He arranged with
the college carpenter, Noah Dean, a fine mechanic, to supervise them in this work. To Professor Woodward's surprise, he learned that the students didn't know how to do the simplest things with the woodworker's tools. He was surprised because he himself had used such tools from boyhood and so took for granted that his students could do the same. The fact that they could not, presented to his alert mind a new problem, instead of giving up his plan for helping the young men to visualize the tools. Thus it was that Professor Woodward was first led to the teaching of shopwork without any direct or immediate trade or industrial motive, though that appeared soon after (Bennett, 1935).

This direct, hands on approach to instruction has remained a cornerstone to the evolving manual-industrial-technical-education programs. Woodward's initial general methods of instruction in shopwork lacked an articulated systematization and pedagogy, but by 1875, he was able to issue the following program description:

A sketch of the piece or task to be constructed is given to the class with all needed dimensions. Each student then makes a careful drawing of it to some convenient scale, with details and exact measurements.

The class then goes to the shop, is furnished with the requisite materials and tools, and each member is shown by an expert how to execute the work. Every piece must be reasonably perfect or it is rejected and a new one is required. Although the students work in the shop no more than four hours a week, the experience is valuable. It is not supposed, of course, that skilled work can be produced by this method, but it is certain that such training will make better judges of workmanship (Woodward, 1887).

The Centenial Exposition at Philadelphia in 1876 introduced American scholars such as Woodward and Dr. John D. Runkle of the Massachusetts Institute of
Technology to the Russian system of tool instruction. This program, as demonstrated by Victor Della Voss of the Imperial Technical School of Moscow (Nelson, 1981) provided a system and direction to American scholars.

Speaking on Manual Education in 1878, Woodward said:

To Russia belongs the honor of having solved the problem of tool instruction. Others had admitted that practice in using tools and in testing materials should go hand in hand with theory; but Russia first conceived and tested the idea of analyzing tool practices into its elements, and teaching the elements abstractly to a class. In their hands manual tool instruction has become a science (Woodward, 1887).

Bennett quotes a letter from Runkle with the following commentary:

At Philadelphia in 1876, almost the first thing I saw was a small case containing three series of models—one of chipping and filling, one of forging, and one of machine tool work. I saw at once that they were not parts or machines, but simply graded models for teaching the manipulations in those arts. In an instant, the problem I had been seeking to solve was clear to my mind: a plain distinction between a mechanic art and its application in some special trade became apparent (Bennett, 1939).

While Della Voss's impact on the American Manual Arts Movement was particularly important, he has never been considered a renowned educator beyond his immediate sphere of influence at the Imperial Technical Institute. Yet, it was his abiding concern that his engineering graduates might have the ability to apply the theoretical and scientific knowledge they had acquired in practical situations that most influenced American education.
Addressing a meeting of the St. Louis Social Science Association on May 16, 1878, Professor C. M. Woodward stated:

Here is the point where the best manual-training schools differ radically from the ordinary system of apprenticeship. In the latter the learner acquires the "arts" involved in a piece of work incidentally, and generally without a conscious analysis; in the former, the "arts" are made the direct object of his study and attention. Their subsequent combination (which may or may not follow in his school experience) is a very simple matter. (Woodward, 1878)

The success of Woodward's Manual Training School led to the establishment of additional Manual Training Schools. By the turn of the century there were 114 such schools. In addition, there were 146 cities with schools where manual training was being taught in addition to the regular curriculum (Report of Commissioner of Education, 1849). Thus, Woodward's personal creed to "put the whole boy to school" gained widespread acceptance (Ezel, 1982).

Manual Training as a pedagogical conception did not remain static, even though the term in general acceptance until after the turn of the 19th century was "Manual Training," what was actually being taught in the schools gradually underwent a transformation. Thus, when we speak of Manual Training we may be referring to any one of four stages during this period (Ezel, 1982).

Before Woodward developed his system, the Manual Training movement consisted of four stages. The first, popularized by Victor Della Voss, was of great early influence. The Russian system stressed the
process of learning as being of prime importance as opposed to the bit of knowledge learned as being primary. This stage, due largely to the nature of its production of exercise instead of projects, was short lived in actual practice.

The second stage, referred to as Swedish Sloyd, added to the production of practical items the psychological foundations found in the Russian system. This philosophy prescribed a series of hand and tool exercise just as did the Russian system, as a means to achieve the major objective of manipulative skills development. The variation, however, was that the products should be practical. This practicality of products was somewhat offset by the ugliness of such products (Ezel, 1982).

The Cygnaeus tradition of Sloyd was of great importance to the development of the early American Manual Training evolution.

Cygnaeus believed that handwork in the folk schools should lead toward future practical efficiency, yet such a school should not become a technical or trade school. The fundamental purpose of the handwork was to be an integral part of a well-rounded Elementary Education....

It must be undertaken neither mechanically nor artistically, but must retain its pedagogical aim continually i.e. The development of the eye, of the sense of form, and the provision of a general manual dexterity, and not of some particularized and insisted skill (Bennett, 1937).

It can be seen that the purpose for Swedish Sloyd was for general education and was considered to be of value to every child. It was to serve both formative and utilitarian aims.
The third stage of the Manual Training Movement was popularized as the Arts and Crafts stage.

The arts and crafts movement, inaugurated by William Morris in England, was probably more adaptable to the English than to the American conditions of the time. In the United States it was probably described best as an attempt to go forward by going backwards. The idea of resurrecting the handicrafts of earlier times seemed to impose a procedure that was hopelessly incompatible with the American social-economic organization and standards of living that prevailed at the turn of the century. However, the movement did contribute ideals of beauty for design and simplicity in construction (Ezel, 1982).

The arts and crafts movement, was practiced formally in the United States in Philadelphia in the 1880s under the guidance of Charles Leland and J. Liberty Tadd. The spirit of craftsmanship and art, of aesthetics in design and construction, were to influence the Manual Training Teachers greatly.

The combination of shop work and art instruction was a major emphasis of the arts and crafts movement and influenced Manual Training Teachers to be conscious of design and proper construction, an awareness that marked the beginning of the movement later known as Manual Arts (Martin Luetkemeyer, 1979).

The fourth and final stage of the Manual Training Movement was the Industrial Arts stage. This stands as a synthesis of the three earlier stages of Manual Training. It is summarized by Bennett in his 1937 text as follows:

While the term "Industrial Arts" was first used to designate work that developed as a reaction against the formalized courses inherited from
Froebel, the term has become so popular in the United States of America that it is coming to include all instruction in handicrafts for general education purposes, whether formalized or not. Its meaning is essentially the same as the term "Manual Arts", though its connotations are different. In the term Industrial Arts, the "Industrial" is emphasized; while in Manual Arts, the "Arts" is historically the distinctive word, and in the term Manual Training, "Manual" is the important word.

The social climate of the late 1800s gave impetus to the rise of Industrial or Manual Arts and similar programs. It would appear that Manual Arts as an educational topic owed its existence mostly to the widespread conviction that the education in the schools had been dealing too much with the abstract and not enough with the concrete (Ezell, 1982). In 1887, Anna C. Garlin supported this point in an article in the New England Journal of Education. She wrote:

Let the child be taken to the school whole, instead of part; let him be considered to have a body as well as a mind; let him be trained physically towards use by a wise shaping of the eager animal activity; let him be protected from the cupidity of manufacturer and the pressure of home poverty by utilizing the active energy which in more primitive times was of so much account in the family economy; let him be gradually introduced into that hard world of work for which he is destined by a training which shall be of the hands as well as of the brain (Woodward, 1887).

John Dewey, Progressive Education philosopher and instructor in the Elementary School of the University of Chicago, added his voice and expertise to the "learning by doing" movement. Dewey marked a new era
in the history of the manual-training-arts-education with
the publication of The School And Society in 1899. His
work emphasized the social meaning of education in an
industrial society. Methods of living and learning along
with the processes by which society maintains itself
became primary components of Dewey's curriculum.

In a discussion of movements that led to contemporary
industrial arts education, G. Eugene Martin and Joseph F.
Luetkemeyer made the following statement concerning the
significance of the work of Dewey:

One of the first individuals in the Manual Training
Department of Teachers College, Columbia University,
Dewey's influence was evident in the speeches and
writings, Richards advocated the Deweyan concept of
industrial occupations as opposed to the manual
training position. In the famous editorial in
Manual Training Magazine, Richards recommended that
the industrial education profession use the term
"Industrial Arts" (Also referred to as industrial
art in the same editorial) in place of "Manual
Training" and even before Richard's recommendation,
the term Industrial Arts (in the connotation of the
Dewey interpretation can be found as early as 1901
in a speech before The National Education Association
by Clara Mitchel (1901), a teacher in Dewey's school
(1979).

The work of Dewey, Richards, and James E. Russel
(Dean of Teachers College, Columbia University) in the
early 1900's gave rise to a study of industry in addition
to the pluralism of humanistic and scientific curricula.
As interest in teacher education grew, their work had a
great impact upon many scholars and so gave rise to
programs such as that of Miami University.
Hail to the skillful, cunning hand!
Hail to the cultured mind!
Contending for the world's command,
Here let them be combined.
(Woodward 1887)

VOCATIONAL EDUCATION

The central fact of American life during the late
nineteenth century is that in slightly less than a
generation, the country was transformed from a
chiefly agrarian society to an industrial power. In
1849, for example, the total value of American manu­
factured products was about $1 billion, but by 1899
the figure was about $13 billion. Furthermore, in
1860, approximately 1,300,000 wage earners worked in
manufacturing, while in 1890 the number mushroomed to
about 4,250,000. In 1860 the United States ranked
fourth among the nations of the world in industrial
production, but in 1900 it ranked first (Shannon, 1963).

Given the economic climate described by Shannon,
Barlow's observations on industrialism take on a
significance. The change from a relatively simple
rural economy to a complex industrial economy was
amazingly swift. Seldom, if ever, in American History
had society experienced so many profound economic,
political, social, and educational changes in such a
short period of time. Because of this, many histor­
ians including Hays have indicated that, "The history
of modern America's, above all, a story of the impact
of industrialism on every phase of human life",
Gilpin has noted, too, that no other nation in their
world has achieved such technological prominence as
the United States (Barlow, 1981).

Within the context of the transformation of the American
Society, the Governor of Massachusetts appointed a
commission in 1905 to "investigate the needs for education
in the different trades of skill and responsibility in the
various industries." From this effort came recommendations
of the Douglas Commission which served as a basis for the
establishment of an industrial school system and a system
of independent industrial schools. It also served as the foundation for later similar efforts.

In 1914, Congress authorized a commission to study national aid to vocational education which resulted in the 1917 Smith-Hughes Act.

The signing of the Smith-Hughes Act, thereby creating a federal directing and reimbursing law with reference to certain types of vocational education, was the beginning of a new era in manual and industrial education in the United States (Bennett, 1937).

In cities such as Columbus, Ohio; Gary, Indiana; and Cleveland, Ohio; manual training teachers began to adjust their programs to prepare their students for industrial occupations. Emphasis on skill development through factory methods of process sequencing, repetition of operations and production, characterized these programs (Barella, 1981).

Influenced by Professor and other vocational teachers, many Manual Training Teachers organized programs on a commercial factory basis in which students did production work for schools and community organizations. The emphasis in this factory method of instruction was on duplicating industrial operations and processes and developing skills that would lead students into industrial trades (Barella, 1981).

This emphasis on preparation for industrial trades has remained the hallmark of the American Vocational System. Many manual training programs have become pre-vocational "try-out" programs, with a definite curricular pattern aimed towards the trades.
With the passage of the Smith-Hughes Act and the appropriation of federal monies for Vocational Education, a rift developed between the advocates of vocational education and the industrial arts faction. The latter group, in its attempts to keep Industrial Arts a part of general education, also removed industrial arts from the funding as provided by Smith-Hughes. Much of the development of both programs through the twentieth century was tied directly to that funding or lack of same.

MIAMI UNIVERSITY: THE BEGINNING

Several truths lie in the midst of romantic tales surrounding the establishment of the college township, later to be named Oxford in Ohio. First, on April 25, 1803, the Ohio General Assembly passed an act to provide for locating a college township and appointed three commissioners to choose the land. Second, on February 17, 1809, "An act to establish the Miami University" was passed by the Ohio General Assembly (Havighurst, 1969). Third, in the spring of 1816, James Maxwell Dorsey was hired to oversee construction of the first university building.

While a fascinating recounting of the history of Miami University can be found in the text The Miami Years 1809–1969, by Walter Havighurst, the University Catalogue provides a more succinct account:

Established by legislative act on February 17, 1809, Miami opened its doors to students for instruction
in 1824. Like most universities of the time, the course of study was rigidly classical. Through the years, the university grew and flourished, graduating many talented young men (only men were admitted then) who assumed positions of leadership, among them U.S. President Benjamin Harrison and Journalist Whitelaw Reid, editor and publisher of The New York Tribune.

A few years after the Civil War, with changed conditions and advancing prices, the income of the university became insufficient to support its work. Miami closed in 1873, opening twelve years later when resources had accumulated and the State of Ohio entered upon a policy of appropriating public funds for its support. Women were first admitted to Miami in 1888 (Miami Bulletin, 1984).

On June 6, 1959, at an annual alumni day celebration, Representative Paul F. Schenck of the Third Ohio District presented a resolution to the 86th Congress congratulating Miami University on its sesquicentennial. The resolution, approved on May 25th, had been read into the Congressional Record on that date with an accompanying sketch of Miami's history. That sketch is as follows:

Miami University was the second State University in the Old Northwest Territory, provided for under the provisions of the Northwest Ordinance of 1787...by act of May 5th, 1792, the President of the United States was authorized to grant letters patent to John Cleves Symmes and his associates...provided that the land grant should include one complete township...for the purpose of establishing an academy and other public schools and seminaries of learning.

After Ohio became a state in 1803, the state legislature assumed responsibility for making sure that John Cleves Symmes would set aside a township of land for the support of an academy. Such a law was passed by the State Legislature
April 15, 1803...Finally, on February 17, 1809, the State Legislature created Miami University and provided that one complete township in the state of Ohio in the district of Cincinnati was to be vested in Miami University for its use, benefit, and support. A commission of three men was set up to locate the university. In 1810 the legislature provided that Miami University should be located in Butler County within a township of land to be known as Oxford Township, and empowering trustees to lay out a town of Oxford.

Miami University, Mr. Speaker, is located in beautiful Oxford, Ohio, and is a very important center of education and culture. Its achievements are legion because its graduates are known throughout the world for their accomplishments in many professional fields.

The physical location of Miami in Southwestern Ohio has in no small part contributed to its development. Resources, both human and physical, have been crucial to the fortunes of the university. As the Ohio Valley developed from a powerful and prosperous business-agricultural center into a business-industrial center, the institution followed similar patterns of growth and emphasis, somewhat of an economic roller-coaster.

The mission of the University has changed little since its inception. Possibly the most obvious statement of that mission is found in the Miami Seal: Prodesse Quam Conspicci "to accomplish rather than to be conspicuous" (Havighurst, 1969). The University Catalogue series describes the University Mission thus:

The mission of Miami University is to preserve, and to, evaluate, and transmit the accumulated knowledge of the centuries; to develop critical
thinking, extend the frontiers of knowledge, and serve society; and to provide an environment conducive to effective and inspired teaching and learning, promote professional development of faculty; encourage scholarly research and creativity of faculty and students...

Selected undergraduate and graduate programs of quality should be offered with the expectation of students achieving a high level of competence and understanding and developing a personal value system...Miami is committed to serve the community state and nation...it provides both disciplinary and interdisciplinary approaches to the pursuit of knowledge and the solving of problems...Catalogue, 1984).

The University mission statement is of particular importance to this study. The concept of service to society and its individual members has been the cornerstone of the professional educational program. Indeed, "effective and inspired teaching" and "scholarly research and creativity" have long been fundamental forces in the practical arts movement (see earlier comments on the Manual Training Movement). The development of competency, understanding, and personal value systems have long been hallmarks of Practical Arts programs. The works of Bennett aptly illustrate this philosophy as a national occurrence.

THE COLLEGE OF EDUCATION

The training of teachers began at Miami University in 1902, with the establishment of the Teachers College (Miami Bulletin, No. 5, 1927). In the spring of 1902
the State Legislature passed the Sesse Bill, establishing normal colleges at Miami and Ohio Universities. With the establishment of the normal school, or teachers college, the state was set for the rapid addition of new curricular offerings.

Under the direction of Dr. Benton, President of Miami, the faculty was enlarged significantly and an aggressive expansion policy was undertaken. It was this expansion that enabled the industrial education program to be formed under Dr. F.C. Whitcomb. Havighurst discusses this topic in his 1969 text as follows:

When Harvey C. Minnich, superintendent of schools at Middletown, Ohio, became Dean of the Normal School in 1903, President Benton had an able and congenial administrative colleague. Together they gathered a strong normal college faculty, including Anna E. Logan, Francis Gibson Robinson. Dr. B.M. Davis, a pioneer teacher of agriculture, started a forestry nursery on the site of Withrow Court. Miss Robinson, gifted, charming and twenty-two, made art so exciting that no room was large enough for her classes. Together Benton and Minnich sought an integration of the normal school and the college, with only the "method" courses being offered separately.

With the employment of Professor Whitcomb and others, the program area which was to become Industrial Education was conceived.

In the fall of 1906, Fred C. Whitcomb, a graduate of Teachers College, Columbia University, became a member of Miami University. He taught courses in handwork to students in the School of Education who were in training to become teachers in elementary schools. In addition to this, he gave instruction in drafting and shopwork as elective courses for any student in the university. The same year, he planned a two-year course to prepare students to teach Industrial Arts in public schools.
In the fall of 1907, several students registered for this course and one student was graduated from it (Bennett, 1937).

Bennett, in his nationally accepted *History of Manual and Industrial Education*, notes the founding of Industrial Education at Miami. He points out that the program was initially to pre-service elementary education majors. In addition, it was conceived as a service course area for the university as largely a philosophy that persisted as a major force throughout the history of the program.

A point of controversy, though slight, existed as to the precise beginning of the "Manual Training" program at Miami. A brass plaque in the northwest corridor of Gaskill Hall, on the main campus, dates the program in 1906, consistent with the hiring of Professor Whitcomb. Yet, a university bulletin dated March 1905 gives the following charge:

In addition to handwork, mat weaving, cardboard construction, thin wood work, basketry in raffia and ratten, the Board of Trustees have ordered that by the opening of the school year of 1905-1906 there shall be added full courses in bench woodwork (Bulletin, 1905).

It can be surmised that Professor Davis preceded Professor Whitcomb by two years and that the course offerings were of a manual training (non teaching) nature and not of a manual arts (teaching) track. The 1905-1906 university bulletin further details the program under then Director Davis, thus:

The laboratory for Manual Training is equipped with the most modern and improved benches, tools, and apparatus for woodwork (Bulletin, 1906).
As previously described, 1906 was an important year for the educational program at Miami. It was in 1906 that Fred Campbell Whitcomb was employed by Miami University as Director of Manual Arts and Professor of Manual Training (Bulletin, 1907). It was under the tutelage and dynamic leadership of Professor Whitcomb, that much of the College of Education was built.

Professor Whitcomb detailed much of his initial impact in an address presented at his retirement testimonial dinner on May 13, 1941. The following is an excerpt from this speech:

When I visited the Miami Campus on May 3, 1906, having been called from Washington, D.C., where I held a similar position for two years at Howard University, to be interviewed regarding a position here, I found the campus quite different from what it is now. The land held was but a fraction of the present 300 acres. The buildings were six in number, Hepburn Hall, first residence for women, having just been dedicated, as compared to almost 60 now. Instead of four colleges there were two and an academy—the normal school only granted a diploma for elementary education. The faculties had thirty-nine names listed including assistants while our present catalogue lists more than 250 names. Today there are ten times as many college students enrolled, in fact, ten-fold just about tells the story in all phases of development.

As a result of my first visit to Miami, I was asked by President Benton to take charge of a new development on the campus, what he called "Arts and Crafts". In September, with a part-time student assistant, in the basement of "Old Main", I taught several sections of two-year Normal girls manual training and a class in "Mechanical Drawing" composed of liberal arts students. A few liberal arts students elected a course in furniture making. Also I spent several afternoons at the Oxford Public Schools, (our training schools) with groups of high school boys... Encouraged by Dean Minnish, I organized two-year
curricula for teachers of Industrial Education and Public School Art, the first in Ohio. These began in 1907; the next year Music and Home Economics followed. In 1912-1913, the first four year curriculum, Industrial Education, was offered. The first Bachelor of Science student to be graduated from Miami University, Harry Franz (who had completed a Liberal Arts Curriculum the previous year,) was in Industrial Education. In 1915-1916, a four-year curriculum in Home Economics was organized. This was followed in 1917-1918 by Commercial Education. In 1922-1923 four-year Music was begun. Four year Physical Education for men followed in 1925-1926 and the next year Art Education. Physical Education for women was the last curriculum to be organized in Practical Arts, this in 1929-1930...

During these thirty five years I have seen all phases of Practical Arts firmly established as an essential area of General Education, and Vocational Practical Arts made a government undertaking. With over 7,000,000 adolescents now enrolled in secondary education and a universal consciousness of the value of the Arts in Education, the future seems assured (Whitcomb, May, 1941).

With the adoption of Whitcomb to the staff as leader, mentor, philosopher and teacher, the Normal School soon grew into one of the most dynamic programs on campus. His ability to draw a most competent staff about himself at a time of awakening national interest in education and the Practical Arts was viewed as a bench mark by which others were measured.

**SUMMARY**

The department of Industrial Education can be seen to have originated with the Manual Training Movement that began in the 1870s in the United States. While this
movement frequently is attributed to Woodward and Runkle by historians such as Bennett and Cochran, it was a relatively fast paced evolution of thought and practice. As summarized by Ezel in 1982, The Manual Training Movement was divided roughly into four stages.

The Russian or abstract stage rested on the existing faculty psychology which held that the primary goal for education is not the thing learned, but the process of learning. The Swedish Sloyd Stage relied upon the same psychology, but added the idea of practical production into its philosophy. The Arts and Crafts stage attempted to resurrect the handi­craft of an earlier age."

Among the fundamental ideas upon which education is built are: 1) that sensory impressions are a basis of thought and consequently of knowledge and 2) the related idea of learning by doing. Out of the second came the recognition of the value of working through a process, and of making something with the hands or tools, of completing a tactile task skillfully as a basis for rational thought. This idea led to placing Practical Arts in the schools and student in laboratory facilities.

Practical Arts had, as its first progenitor in the United States, the Russian system with its tool processes and skill emphasis. While its systematic organization of processes from drawings impressed Woodward, Sloyd seems to have provided the useful project. The United States Arts and Crafts movement added the concept of beauty and art. To Dewey goes credit for the philosophy that "School
is Life", a stance that embodied beauty, function and craftsmanship. The blending of these movements is credited with much of the philosophical basis for the Industrial Education movement.

Miami, established in 1809, began actual collegiate instruction in 1824. The training of teachers at Miami began in 1902 with the establishment of the Normal School or College of Education. The manual training program began in 1904 as a service course.

In 1906, Fred Campbell Whitcomb was brought to Miami by President Benton and Dean Minnich. It was under the direction of Professor Whitcomb that four-year curricula in Industrial Education, Public School Art, Music, Home Economics, Commercial Education, Physical Education (for men), and Physical Education (for women) were established at Miami. It was also under Professor Whitcomb that the Master of Arts degree was added to the Practical Arts offering.

In January of 1927, Dr. H.D. Minnich, Dean of the Teachers College at Miami University, issued the following official statement of the status of Industrial Education:

Every intelligent person will be called upon to deal with "things" as well as words. Much of the beauty and art must be expressed through work of man's hand upon material objects.

No education is complete without experience in creating, fashioning and construction in wood and metal. Such experience, too, is necessary
that one may appreciate the skill of workmen and artists. He must have such training as will give him the feeling of mastery in the appointment in the modern home, the vehicles of travel and the cultivation of yard and garden.

Such experience and training will yield in his social life an appreciation of labor and its products, the spirit of cooperation with his fellow man in all occupations.

Training in the Industrial Arts will serve as an introduction also to the tremendously industrial age in which he must live and earn a living. Dextrous hands quicken intellectual life and greatly widen the interests.

Industrial Education is an integral part of the curriculum of every American boy and will have an increasing portion of his school schedule (Miami Bulletin January, 1927).

It was within the atmosphere of philosophical support characterized by Dr. Minnich's statement, that the Industrial Education program at Miami grew.
Leadership often determines the success or failure of group human efforts. In education, the dynamics of leadership are demonstrated when an individual or group is able to execute those behaviors which influence others to join in accomplishing a mutually agreed upon task or goal (Wening/Mathews, 1983). Leadership constitutes an influence relationship between two or more persons who depend on one another for the attainment of certain mutual goals within a group situation (Hollander, 1969).

Numerous literature references on leadership suggest that it is a much studied phenomenon in society. This indicates that the qualities of leadership which inspire success are of great value. It must be remembered, though, that the price of success for one facet of society may lead to the demise of another facet.

James MacGregor Burns, winner of the Pulitzer Prize and National Book Award for his writings about leadership, defines leadership as follows:

A leader induces followers to act for certain goals that represent wants and needs of both leaders and followers. The genius of leadership lies in the manner in which leaders see and act on their own and there follows values and motivations (Burns, 1979).
In essence, Burns supports the notion that leadership and followership are closely intertwined. Great leaders must be sensitive to the needs, wants, and values of others—allowing followers to be considered as peers. Burns furthers his humanistic thoughts on leadership with the following admonition:

In real life the most practical advice to an espousing leader is not to treat pawns like pawns, nor princes like princes, but all persons like persons (Burns, 1979).

The Industrial Education Department at Miami University developed rapidly as an integral program area, due primarily to its leadership. This strength derived from a vision of what was necessary to meet the rapidly changing needs of society by a select group of educators. Through an era spanning 1906 to 1982, several outstanding leaders were nurtured and thereby influenced others.

For the purpose of this study, leadership was investigated along the following lines:

1) Individuals in leadership roles
2) Hallmarks and contributions of identified leaders
3) Organizational leadership

Specific individuals who had contributed significantly within leadership roles were identified through a careful review of literature and numerous interviews. Though many individuals made contributions at many levels, only Departmental Chairmen were detailed in this section of the study. Others were detailed in Appendix P.
Fred Campbell Whitcomb was recruited by Miami University in the spring of 1906, with a mandate from President Benton to "take charge of a new development on campus, what the President called Arts and Crafts" (Whitcomb, 1941). Professor Whitcomb committed his entire professional self to the cause of quality Practical Arts Education at Miami University. It was in part, this commitment, blended with his boundless energy, that established him as an outstanding leader.

Fred Campbell Whitcomb was born in 1870 in North Vernon, Indiana. He received his Bachelor of Science Degree in 1890 from Franklin University, Indiana. From 1902-1904, he attended the Teachers College of Columbia University in New York City on a two-year scholarship, studying Industrial Education. In 1904, he was employed by Howard University in Washington D.C. (a predominantly Black college) as Director of the Division of Practical Arts. A tenure of two years at Howard provided Professor Whitcomb with the necessary culminating experience to be actively recruited by Miami University.

Under the direction of Professor Whitcomb, a number of significant events took place in a relatively short period of time. While much credit must be given Professor Whitcomb, the nature of the times had a significant impact upon his success. The rapid expansion of quality
public education and an articulated national philosophy of Industrial Education helped greatly. Dean Minnich of the College of Education (or Normal School) gave Professor Whitcomb much support in his efforts within the newly formed college. Professor Whitcomb was also quite astute at assuring that the Miami program closely paralleled or established national trends.

A side note on the value of F.C. Whitcomb as viewed by the administration of Miami seems appropriate at this time. A handwritten note by Whitcomb gives the following account of his arrival at Miami:

In 1906 Miami University helped this positive attitude by making available one months salary before teaching even one day. That first months pay was only $50.00. In those days (before Mr. Roudebush) we got six of our ten checks before Christmas. Oh, the six lean months that followed (Whitcomb, 1943).

University records do not reveal a record of such a "cash advance" program existing either prior to or after Whitcomb. It may only be credited to the foresight and vision of President Benton and Dean Minnich.

The first twentythree years of Whitcomb's tenure were of great impact to the college. In 1906-1907, his first year, he supervised the organization of two-year curricula in Industrial Education and Public School Art. At this time, Miami University consisted of only six buildings, one of which was Harrison Hall—or "Old Main" as it was generally called. Old Main was the first home for
Industrial Education at Miami and continued in that capacity for twenty years (Fusco, 1974).

The first year's opening must have been awaited with great anxiety. When in the basement of Old Main, Whitcomb taught several sections of two years Normal Girls Manual Training and a class in Mechanical Drawing composed of Liberal Arts students (Whitcomb, 1941).

Coinciding with Whitcomb's assumption of the duties and responsibilities for program development in the early years of the department were many other University level commitments. During the 1906-1907 school year he sat on the following University committees: Classification and Scheduling, University Publication and Athletics (Bulletin, 1907, series 5, # 12).

It can only be presumed, as a search of records yielded no insight, that Professor Whitcomb assumed a major role in the recruitment of his staff. In 1906 the staff consisted of Whitcomb, Miss Robinson, and Mrs. Angel teaching Public School Art, Professor Thompson in Mechanical Drawing, and W. Casius Johnson, Anna Bier, Ruby Runyan, and Carl J. Dunzweiler as assistants (Miami Bulletin February 1906, vol. 4 #12.). By the end of Whitcomb's tenure, not only had the art and industrial education programs grown into fully staffed departments, but numerous other departments had come into being.

An example of the leadership of Professor Whitcomb rests in the diversity of program in 1906-1907.
Quoting once again from Professor Whitcomb's original retirement address of May 13, 1941:

In September, with a part-time assistant, in the basement of "Old Main", I taught several sections of two-year Normal Girls Manual Training and a class in "Mechanical Drawing" composed of several Liberal Arts students...

Encouraged by Dean Minnich, I organized two-year curricula for teachers of Industrial Education and Public School Art, the first in Ohio. These began in 1907. The next year Music and Home Economics followed. In 1912-1913 the first four year curriculum, Industrial Education was offered...

In 1915-1916, a four-year curriculum in Home Economics was organized. This was followed in 1917-1918, by Commercial Education. In 1922-1923, four year Music was begun. Four-year Physical Education for men followed in 1925-1926 and the next year Art Education. Physical Education for women was the last curriculum to be organized in Practical Arts, this in 1929-1930...

The first two-year student in Practical Arts was graduated in 1909, the first four-year student received the Bachelor of Science in Education from the Division of Practical Arts in 1914. At present (1941) the yearly enrollment in the division averages over 500 and 75-80 are graduated each year. For a number of years the summer terms have required the instruction of all members of the Industrial Education staff.

Since 1930, the degree Master of Arts has been added to the Practical Arts offering and twenty additional students are working toward the Master's Degree. A total of 65 students have received a diploma in Industrial Education and 265 the Bachelor's Degree. Net total 310 (Whitcomb, May 13, 1941).

This researcher can only conclude, based upon the verification of Whitcomb's dates and figures, that his presence at Miami contributed significantly to the development of the Practical Arts Division. The
University Mission speaks of service to society, the development of faculty, extending the frontiers of knowledge, scholarly research and creativity. Surely Fred Campbell Whitcomb played a leading role in meeting these charges, especially in the area of program development. (Additional specific program developments are detailed in a later chapter.)

To Professor Whitcomb, 1926 was a year of particular importance. He took advantage of the university sabbatical policy, as he had in the past, to travel to Paris with President Hughes to observe the development of Technical Schools on the European Continent (Whitcomb 1918). Coinciding with this trip was the completion of a new Industrial Education building.

In 1927, the department of Industrial Education moved into its new building made possible by a special appropriation by the legislature. This building is of fire-proof construction throughout and when completely equipped will have cost $100,000. Considerable new equipment has been purchased and more is being added each year (Miami Bulletin, January 1927).

While Professor Whitcomb's leadership and lobbying efforts were largely responsible for the special legislative appropriation leading to the new building (Fusco, 1974), he humorously cited the following factors:

Dean Brandon's repeated comments about the noise made by what he (Brandon) called the Buzz Saw in the basement of Harrison Hall, two floors below his classroom where he was using the direct method in teaching French to freshmen may have had more
to do with the department of Industrial Education getting a new building than any other one factor (Whitcomb, 1941).

Professor Whitcomb provided leadership not only within the Practical Arts movement, but also campus wide. During his first year of residence, he served on no less than three standing committees: Classification and Scheduling, University Publications, and Athletics. He was later to serve on the additional committees, Selection of Faculty (1908), and Appointments and Employment (1909) to name a few.

Professor Whitcomb's leadership was not limited to on-campus program development. Throughout his career, he was cited by both Miami and National Colleagues for his contributions to the field. The following is only a partial listing of his more notable contributions:

"Cabinet Making" published as a Miami Bulletin, January 1912 and presented at the meeting of the National Society for the Promotion of Industrial Education. (Annual Report, 1908).
Secretary-Treasurer of the Miami Valley Industrial Arts Association, 1917-1918
(Annual Report, 1917).
Address: Practice Teaching in Industrial Education,
Conference of Specialists in Industrial Education,
Terre Haute, Indiana, 1918
(Annual Report, 1919).
President: Miami Valley Industrial Arts Association,
1918
(Annual Report, 1919).
Address: National Vocational Education Association
Annual Meeting, St. Louis, Missouri, topic
unlisted, 1918
(Annual Report, 1919).
"Practice Teaching in the Manual Arts and Industrial Education," 18th yearbook of the National Society for the study of education, 1918
(Annual Report, 1919).
"The General Project Method of Teaching the Industrial Arts," the Industrial Arts Magazine, 1919
Member: Executive Committee of the Ohio State Industrial Arts Association, 1934
(Annual Report, 1936).
"Organizing Practical Arts Activities for Boys 12 to 18 Years of Age on the Basis of Interest and Needs," Miami Publication (no date).
"The Student and His Knowledge," unpublished work presented to Oxford Mens Club, March 25, 1940.

Professor Whitcomb maintained a constant and measurable intensity in his professional contributions to the field. It also should be noted that, while Professor Whitcomb was personally involved in off-campus presentations, sabbaticals and publications, his on-campus presence did not diminish. His mentorship encouraged his faculty and staff to be involved similarly, and so they were. The
ability of Whitcomb to motivate others personally to high levels of achievement was another of his characteristics shared by true leaders.

Possibly one of Professor Whitcomb's greatest honors in recognition of his accomplishments and leadership in the field came in 1934. In that year his Alma Mater, Franklin College, conferred upon him the Honorary Doctor of Laws Degree (Annual Reports, 1935-36).

In 1941, Dr. F.C. Whitcomb retired from Miami University. In his retirement address, once again were found bits of wisdom of a true leader. He reflected on his staff as such:

Maybe the staff is too much inbred, but in seeking for the best instructional material we had to choose the best and here they are, our own graduates... (Whitcomb May, 1941).

In leaving, Dr. Whitcomb imparted his philosophy:

My most ardent desire as I quit active service at the University is that all phases of the Arts in Education may continue in the closest of relationships as has been my aim for all these years. Practical Arts is a broad field of education comparable to the languages and literatures, and Physical Sciences, the Biological Sciences and the Social Sciences, each of which should be closely integrated for most effective results in learning and for values in full and complete living in this complex world. (Whitcomb, May, 1941).

WILLIAM D. STONER

In 1941, Professor W.D. Stoner assumed the chairmanship of The Industrial Arts Education Department from Professor Whitcomb. Stoner, a graduate of the Miami Industrial Arts program, continued the high standards of
intensity and excellence as established by Professor Whitcomb. This standard of leadership was to continue under Stoner until his retirement at the close of the 1960-1961 school year.

Mrs. Katherine Foss, widow of the late Dr. Maurice Foss of the Industrial Education faculty, provided the following early history of Dr. Stoner:

Dr. W.D. Stoner had been a student at Miami before W.W.I. coming from Minster, Ohio, (north of Greenville). He had completed two years when he enlisted, and he and his wife Cecile were at Camp Sherman before he went overseas. After the war, he taught at Kent in the Manual Training Program under the recently enacted federal Smith-Hughes Act, and Maurice Foss was in his classes during this freshman year. Stoner had decided to enter the nursery business in Kent, and had built a house (with cedar lined closets), but sold it to re-enter Miami as a graduate assistant and earn the Bachelor's Degree.

William D. Stoner joined the staff of the Industrial Arts Department within the Practical Arts Division in 1924 as an assistant, along with Mr. William Wagner (Bulletin, 1924-1925). While his initial assignment was that of assistant, by the 1925-1926 school year, the University Bulletin series classified him as an Instructor. During that year he had primary responsibility for the 210 Furniture Construction and 310 Building Construction courses as well as non-teaching assignments, such as serving on numerous campus wide committees.

The 1929-1930 academic year brought Professor Stoner the rank of Assistant Professor. Also added in 1929 was responsibility for a new course offering; 120 General
Woodworking, a five credit hour course designed for "students who have not had similar high school experience" (Bulletin, 1929-1930). In 1930-1931, he assumed additional leadership in the new 520 Minor Problems course. This progressive increase in course load responsibility, both in instructorship and development, serve to demonstrate his early potential as a leader.

In 1938, Professor Stoner left Miami to complete his Doctoral Program in Industrial Education at The Ohio State University. Ezel's text, Industrial Technology Education at The Ohio State University, lists William David Stoner as having received a doctorate in 1940 under the advisorialship of the noted William E. Warner. While completion of a doctorate program does not provide conclusive proof of leadership, it is accepted as an accurate indication of scholarly excellence.

In 1940, Mr. Stoner's efforts at Miami were rewarded with a promotion to Associate Professor. The 15 year effort leading to this promotion in rank, while not of particular significance in regard to time frame, serves to symbolize the slow and deliberate nature of the Miami tradition for advancement of the era.

In 1941, Professor William Stoner assumed the chairmanship of the Industrial Arts Department from Professor F.C. Whitcomb. At his retirement dinner, Professor Whitcomb characterized Professor Stoner as
enthusiastic and of "untiring energy". Professor Stoner, a man known for his zeal for fishing was also noted as such:

He is just as enthusiastic in all of his educational duties and problems as in fishing. One of these days I hope to be with him when he catches a really big fish.

It can only be surmised that Whitcomb, in his own inimitable style, was giving reference to Stoner's future as an educational leader. Professor Whitcomb further describes the pre-chairmanship of Professor Stoner:

The Department of Industrial Education has tried at all time, in addition to its regular duties in the preparation of teachers in its field of teaching, to be a service department (as the president desires) to all divisions of the university. Pre-engineering, Architecture, Art Education, Home Economics, and Physical Science majors have units in drawing and shopwork. When the Civil Aeronautics Authority needed an instructor for ground work, our Professor Albaugh was the man for the job; in the establishment of semi-professional certificate courses the department has an important place; at present more that fifty out-of-school boys and young men from Oxford University and vicinity under the auspices of NYA, are spending fifteen hours a week learning Auto Mechanics, Machine Shop activities, Welding and Blue Print reading under the direct charge of Professor Yaekle and Mr. Aber, of Stewart High School, and Professor Grinnell. This work is being done in the interest of the general preparedness program. To Dr. Stoner is given the credit for arranging the entire program.

Dr. Stoner, as a student of Warner, assimilated much of the Warner philosophy and leadership. Stoner, as Warner, was very interested in promoting scholarship on the part of his students and staff. In fact, the relationship between Stoner and Warner had a unique and direct
impact upon Miami.

Dr. Stoner was interested in promoting scholarship in the students and got a chapter of Epsilon Pi Tau (established at Miami), which had been started by Dr. William Warner at Ohio State, and Dr. Stoner was inducted there. Dr. Warner was a frequent visitor to campus and gave talks at the annual banquets on several occasions. Dr. and Mrs. Robert Edmiston were also invited, and Dr. Edmiston addressed the group at one time. By this time the banquets were held in the ABC rooms of the student center, and the student president of E.P.T. also talked. These young men were very good speakers, and enthusiastic, and usually brought their girl friends, if any. The staff members also brought their wives (Foss, 1985).

The Warner impact upon the program offerings was both direct and significant due to the efforts of Stoner. The emergence and development of the Gamma Chapter of Epsilon Pi Tau (National Industrial Arts Honorary Fraternity) at Miami to provide leadership and recognition to students and faculty was a direct result of the Warner-Stoner relationship.

In his first year as chairman, Stoner was a man of action. He was pleased with the department and the reputation it was earning. It was during those years that almost all of the teachers of Industrial Arts in Cincinnati and Dayton had taken extensive courses with the Industrial Education staff (Fusco, 1974).

Under the leadership of Stoner, appropriate shop-work was carefully integrated into the theory-base of the program. It was a standing policy under the chairmanship of Dr. Stoner that individual project design was to be encouraged, and no set project was ever to be assigned to a class.

During the 1940s, under the direction of Dr. Stoner, the program offerings were expanded greatly from previous
years, and were a reflection of the national changes in educational thought. In addition to orientation units in industrial arts, the following sample of courses added by Dr. Stoner reflect the program diversity:

- 127 Engineering Instruments and Computations
- 128 Method of Engineering
- 252 Industrial Drawing and Home Planning
- 259 Machine Design
- 291 Relief Printing
- 327 Industrial Ceramics
- 227 Arts and Crafts
- 358 Architectural Details
- 367 Automotive Theory and Practice
- 369 Everyday Science and Mechanics
- 398 Photography and Silk Screen Printing
- 520 Technical Problems
- 550 Problems of Industrial Arts Design

The Chairmanship of Dr. Stoner was subjected to a unique challenge with the onset of World War II. Because of the enlistment of most young men of university age, the department was left with a limited clientele.

In answer to the challenge, Dr. Stoner implemented the V 12 program. This program was designed for the industrial related training of personnel from Wright Patterson Air Force Base in Dayton, and the contingent of Miami-based Naval Trainees. The program provided highly motivated students who presented few disciplinary problems and allowed Stoner to maintain the faculty and staff. The V 12 also saw Dr. Whitcomb surface for a short time to teach drafting to military women.

After W.W.II, Dr. Stoner persuaded the university to set aside 60 rooms for students intending to major in Industrial Arts who would not have been
eligible to enter the university because of their test scores. Since all freshmen had to live on campus, this gave highly motivated students an opportunity to graduate, and many went into teaching the first year or two, and a high percentage then went into other areas where so far as we knew they did very well, and were a positive influence. The teachers also enlisted the help of industrial businesses to help with high school equipment and put on good community open-nights. During this time I worked in the office of the Dean at various times in the School of Education and would see Dr. Stoner sitting in the waiting room to get some adjustments in grades, or special tests for "his" boys. I didn't see any other chairman go to all this trouble or time (Foss, 1985).

The 1947-1948 academic year saw plans underway for a new home for the Industrial Arts Department, to be named David L. Gaskill Hall after a former member of the Board of Trustees. This facility appears as a direct reflection of Dr. Stoner's ability to capitalize on the post war push for an increase in the number of properly trained "technology" or industry teachers. His foresight in anticipation of the increased demand for competent and well trained educators stands as but one hallmark of his career.

With the completion of Gaskill Hall came a slowing of the rapid developmental pace set by Dr. Stoner. This is not to say that he was inactive, yet the curriculum was modified little with the exception of the addition of electricity related courses in the late forties under Mr. Yaekle and electronics courses in the late fifties under Dr. Shrader. It appears that Dr. Stoner shifted
professional emphasis to the development and advisement of graduate student and faculty members.

Dr. Stoner possessed several unique personal qualities which set him apart from his colleagues, as a leader. Yet, these qualities greatly added to their respect and admiration of him. Mrs. Foss described his personality with the following story:

Dr. Stoner would have made a good business man. He was cheerful, optimistic, a good mixer, conversationalist and stood behind each member of his staff. One story that I liked was when Maurice (Foss) had finally bought a care to drive back and forth to Cincinnati for his residence, and I told Mrs. Stoner that I'd like to take her to a meeting in Audrey - a much used Model T Ford. Dr. Stoner was most protective of Mrs. Stoner, but he told me, "If Catharine says she can drive, she can drive. Go ahead!" I didn't have that much confidence in myself, but we got along all right, even though it was raining- naturally, no power steering (Foss, 1985)

It was this type of incident that caused Dr. Stoner to be so highly respected by those around him. His total faith in his fellow man to rise up to meet any challenge-and then supporting the decision, was unique.

WILLIAM M. RAMSEY

Professor William M. Ramsey represented another example of leadership potential nurtured among students within the Industrial Education Program at Miami to return to Miami in later years. Mr. Ramsey, as many others at the time, elected to complete the two-year curriculum in
Industrial Education in 1923, receiving a Teachers College Diploma and a State Provisional Certificate in Industrial Education.

Upon leaving Miami with his diploma and certificate, Mr. Ramsey was employed by the Fairmont High School in Ohio. His twenty-one year teaching experience there (1923-1944) provided him the opportunity to develop many of the leadership skills which he was to later employ at Miami. While at Fairmont, he took principal responsibility for curriculum development, classroom/laboratory instruction of Industrial Arts, and excelled in various coaching endeavors.

As a teacher at Fairmont, approximately forty miles from Oxford, Mr. Ramsey further pursued his collegiate career at Miami. In 1935 he was awarded the Bachelor of Science in Education Degree, to be followed by Master of Arts (M.A.) Degree in Industrial Education in 1945.

Upon completion of the M.A. program, for which he had spent the years 1944-1945 in residence, he was employed for the 1946-1947 academic year as an assistant professor (Miami Bulletin, 1946). Working in close collaboration with Professors William Stoner and John Whitesel, and Associate Professors Maurice Foss, Arthur Bauer, Albert Grinnell, and William Yaekle, Ramsey established himself as a very professional and competent teacher educator.
In 1961, William M. Ramsey completed a post-graduate course of study at Michigan State University. This event closely coincided with his assumption of the duties and responsibilities of departmental chairman at Miami at the retirement of Dr. Stoner. It has been speculated that his style of quiet yet assertive leadership played a major role in his selection as chair. Certainly his responsibilities in advising Physical Education majors, Industrial Education majors, and coordinating the Driver Education Program helped to establish his leadership and scholarship.

During Ramsey's years as chairman he saw further growth in many areas. Drivers Education mushroomed from one course in the sixties to numerous courses... He saw the beginning of many summer workshops and evening classes. (Fusco, 1974)

Under Dr. Sonter, the Industrial Technology option had been established for students interested in entering the business and industrial fields. Professor Ramsey continued those programs initially, and added many professional Industrial Education courses as offerings. Mr. Ramsey notes, in a personal letter of February 1985:

At the time, the program was moving from a project orientation to a student orientation with continuing emphasis on physical skills... The program at Miami was primarily to develop teachers of Industrial Arts in the public high and junior high schools of Ohio. Second consideration was given to those who desired positions in industry. Miami's reputation as a developer of industrial arts teachers was notable throughout the U.S.
Mr. Ramsey practiced a departmental philosophy that garnered support from some segments of power on campus—and alienated others. The philosophy of the department was that many students would succeed in the department despite difficulties in some other area. This closely paralleled that of Dr. Robert Edmiston of The School of Education who was empathic in his belief that intelligence could not be measured in one field alone. Failure in one area did not predict failure in another.

While little documentation exists as to the impact of this philosophy, it stands to reason that it was not necessarily a popular stance with the campus administration. Many post war concessions were made to the Industrial Education Department by the Liberal Arts-bent administration in response to both national and local leadership. During Professor Ramsey's term as chairman in the early 60's, it appears as if some of that power base was diminished.

Mr. Ramsey recounted a series of events in a personal letter in 1985 which had a tremendous impact upon the course of Industrial Education at Miami:

As chairman I was always supported by Dean Bogner and by Dr. Edmiston, who headed the Practical Arts Program. There were no leadership changes during my tenure as chairman except the removal of the Industrial Tech Program from Industrial Education.
At this time a new man (Bowers) was brought into the Industrial Tech. Program. It soon became apparent that his philosophy was so far removed from mine that we could not work together. I requested that the two programs be separated and that I continue to chair the Industrial Ed. Program. Dean Bogner approved this move and it was so ordered.

While the two programs were united the same faculty served both (programs) but after the separation Industrial Tech. developed its own faculty...

As to the separation of Industrial Arts and Industrial Tech: the differences in philosophy of those involved, it became apparent that the integrity of the Industrial Education Program could only be retained by separation. Thus, students and faculty were in one or the other program. Administrative duties were separate and there was total dis-association.

The decision of Mr. Ramsey to disassociate the educators from the technologists is quite evidently the clearest example of his leadership of the program. His commitment to provide a quality environment for the promotion of non-vocational industrial education in accordance with established state guidelines left him no alternate choice. His decision to retain an emphasis on education appears as an outgrowth of his early Miami years under the influence of Drs. Whitcomb and Stoner.

An area of intense interest to and leadership by Professor Ramsey was that of the recruitment of Industrial Arts students.

My thesis was a study of recruitment for Industrial Education students. Low teacher salaries at the time made recruiting difficult. We invited students
from the high schools to visit the department. The entire department was totally involved in increasing the number of students in Industrial Education. They were also very much interested in turning out the very best qualified teachers possible...(Ramsey, 1985).

This interest and the leadership that he provided in the area enabled the department to grow to record numbers. His relationship with Dr. Edmiston provided for the continued close ties between Industrial Education and Physical Education into the late 1960s. As discussed in the section of this text under Program, many young people who studied coaching in Physical Education received transfers to, and certificates from, Industrial Education. The selection of Industrial Education as a major during the sophomore or junior year proved to be more the norm rather than the exception, and thus, much of Professor Ramsey's recruiting took place on campus.

William M. Ramsey retired from the faculty of Miami University in 1967. While his philosophy of Industrial Education was "most influenced by Fred Whitcomb, Dr. Wm. Stoner and Dr. London of Missouri" (Ramsey, 1985), he will long be remembered for his personal contributions in the areas of recruiting, Driver Education and the autonomous nature of the Industrial Education Department.
On September 1, 1967, Professor Charles A. Bunten assumed the recently vacated chairmanship of the Industrial Arts Education Department at Miami University. As the successor of Professor Ramsey, he had the dubious distinction of piloting the program through a period of expansion to its demise in 1982.

Professor Bunten began his Industrial Arts career at Eastern Illinois University, receiving his Bachelor of Science degree in 1949. He quickly extended his credential base with a Master of Science in secondary education from Bradley University in 1951 and post masters study at the University of Illinois in educational administration in 1951-1952. His doctoral degree (Ph.D.) was received from the University of Missouri in 1955 with a triple major: Industrial Education, Guidance, and Educational Administration.

His experience as an educator was no less diverse than his education, taking advantage of many opportunities to practice the craft of teaching in many environs. A review of his teaching credentials calls to attention his diversity of experiences.

* Elementary School 1940-1942, 1956-1957
* Jr. High Industrial Arts 1949-1953
* Ball State Univ. Industrial Arts 1955-1956
* N. Texas State Univ. Industrial Arts 1956-1959
* S. Illinois Univ. Industrial Arts 1959-1965
* Univ. of Hawaii Industrial Arts; Acting Chair, 1965-1966
* Miami Univ. Industrial Arts; Chair 1967-1982
This broad experiential base served as an excellent foundation on which to build a posture of intelligent leadership.

After assuming the Miami chairmanship in 1967, Professor Bunten embarked upon an ambitious program of update and modernization within the department. It has been speculated that his initial zeal, coupled with his rather quiet personal demeanor, presented an aura that many faculty members found disquieting. For, while his intentions were always future focused and dynamic, he chose the quiet path of leadership and was slow to express emotion.

At the time of his assumption of leadership, the Industrial Arts Department was sharing in the good fortune of the national and state push for certification of Industrial Arts Teachers. The program received in excess of $300,000 in response to the severe national shortage of Industrial Arts Teachers. This money provided for curriculum redesign, faculty professional endeavors, facility upgrades, and stipends paid to teachers willing to attend recertification classes. With this "seed" money upon which to found change, Professor Bunten had an enviable position on campus.

In the initial two years of his chairmanship, the complexion of the Industrial Education changed in response to the federal push in vocational education. With the title
and slight philosophical shift to Industrial Education, the program was able to access pre-vocational training funds as provided by the 1963 Vocational Education Act. The shift met with mixed emotions, mostly positive, on the part of the staff due to their "Missouri Bias" towards vocational education. (It should be noted that while the program was under the leadership of Professor Stoner, the Ohio State University/Wm. Warner aversion to vocational education was the accepted departmental philosophy. One former faculty member noted that "Stoner would cross the other side of the street to avoid passing Dr. Beryl Shumaker, Ohio Director of Vocational Education.")

During those first two years, the department was reorganized to reflect a configuration very similar to that of the State of Ohio's cluster concept, or the later Jackson's Mill Symposium statement. Classes were grouped around the topics of professional studies, visual communications, power and transportation, and materials and processes. Course titles, descriptions and format also were modified to reflect the update. This configuration was to remain in effect throughout the remaining years of the program.

The topic of updating the department to reflect a more "state-of-the-art" Industrial Technology Education curriculum was one of constant discussion throughout his tenure. The pressure of change in a university
setting that was unforgiving of mistakes was intense.

Professor Bunten summarized the main dilemma during an interview on May 6, 1986:

There were some problems with the staff over the extent of change. The early staff possibly thought that we were moving too rapidly while the young staff of the seventies felt that we were not moving rapidly enough. In reality, any movement was difficult.

During the same interview, he also discussed the impact of change on enrollment. It was this topic, more than any other, that prevented the leadership of Professor Bunten from totally reorganizing the curriculum from one of traditional industrial arts to one of "state of the art" Industrial Education/Technology.

When we would try to establish a plan for the change of Industrial Arts, what should we change it to? We needed to maintain our enrollment, which was heavily dependent upon non-majors. Most of our plans became modified rather quickly when it became apparent that most service course students weren't interested in advanced woods research, or similar courses...

We did offer a number of advanced level, specialized courses for our majors, but enrollment was pretty limited. Our introductory level courses were very big in terms of numbers. Woods, Crafts, Graphics and Drafting gave us very good turn-outs of students.

We were as up to date as circumstances would allow.

A particularly notable facet of the leadership of Professor Bunten was that of staffing. Throughout his years as chairman, his faculty members were of exceptional calibre both in teaching and in their own leadership
activities. Discussed elsewhere in this text are the Aerospace Technology and Driver Education Programs under Professors Whitesel and Shrader, respectively. While they were on staff long before Professor Bunten, his leadership and encouragement allowed them to build their programs into nationally recognized educational entities. Professor Shrader noted often that, "a leader should be there when you need support, and out of the way the rest of the time." It seems that Professor Bunten fit that charge well.

In the 1970s, Professor Bunten was successful in recruiting several staff members who would later assume leadership roles themselves. It can be said that he was able to nurture their abilities, take advantage of their talents, and provide an excellent reference for their advancement. A brief review of some of those staff members and their positions as of this writing gave credence to the acute perception of ability of Dr. Bunten in regards to staffing.

I Dr. G. Eugene Martin, Associate Dean of the College of Education, Texas University, San Marcos, Texas
II Dr. James T. Ziegler, Assistant to the Dean, Miami University, Oxford, Ohio
III Dr. Robert Shearer, Assistant Director of Career Services, Miami University, Oxford, Ohio
IV Dr. Ming H. Land, Departmental chair, Appalachian State University, Boone, N.C. North Carolina
V Dr. James LaPorte, Industrial Technology Research, Virginia Polytechnia University, Blacksburg, Virginia
These, and other faculty members of the era, have distinguished themselves in the field by way of national offices held, publications at all levels both in and out of the field, and personal example.

In regard to staffing, Dr. Bunten was quick to place credit on others and not on himself. He refused to assume credit for staffing while noting the following:

Staffing at Miami was relatively easy. The appeal of Miami as a fine educational institution, and Oxford as an excellent community to live in made my job easy...

Dean Bogner was also quite supportive of our staffing efforts. He was willing to do basically whatever was needed to get the right people to come to Miami. If that took pushing the salary schedule, within certain limits, then he was willing to do so. With our department really getting more than its fair share of monies, why, quality applicants were always more than we could handle.

A negative aspect in acquiring a good staff was in the disruption of continuity within the department. If young and ambitious personnel were brought into the university, they were likely to move on or talk of moving on to positions of greater challenge. This became quite evident with Professor Martin leaving for Texas in 1980. The electronics and woods programs were later instructed by non-terminal degreed staff, people who were only temporary and transient. This resulted in a decreased sense of continuity and direction for both programs, but particularly the electronics area.
Dr. Bunten was instrumental in establishing the Industrial Technology program on both the Hamilton and Middletown branch campuses. These programs allowed for the temporary and partial reunification of the teaching and non-teaching industrial related courses. For a period of approximately six years the programs flourished, providing apprenticeship and upgrade courses to local industries such as the General Motors Corporation and Champion Papers, Incorporated. They also permitted part time graduate students to study at facilities within their home communities.

The direction of the branch campus programs was one of intense debate and disturbance. Under state guidelines, programs in education received state subsidies. The Ohio Board of Regents refused to allow a special exception to policy in this regard and Professor Bunten was asked to share a dual chairmanship—split between the College of Education and the School of Applied Science.

At face value, the prospect of a dual chairmanship appeared to have been an enviable position. Yet, Professor Bunten realized that the philosophies of the personnel involved prohibited any duality. He did not believe that he could adequately split his loyalty, and thus, chose to remain in education alone. This decision included the unconditional release of the branch campus
programs to Applied Science, including a sizeable number of students major.

Professor Bunten often was cited by the faculty as being very interested in scholarly activity. This philosophy was not one of mere lip service, but one of example. Dr. Bunten brought to Miami a number of projects begun earlier in his career in which he revelled. An excerpt from the previously noted interview adds some insight into the motivations and activities of Professor Bunten.

While at Southern Illinois I had a neighbor who was a physiologist. It seems like we were always working on one project or another, cabinets, coffee tables, and such things.

The university president at the time was very interested in faculty development and research, and was very good about providing seed money for projects. I was interested in plastics and wanted some equipment for my lab, while my neighbor was interested in developing some new lab equipment.

The university was very good at providing support, all the way through the patent attorney. In our case, I guess that we ended up with four patents, two of which turned out pretty good. We did start a number of other projects, but my duties at Miami became my most important task...

I always tried to foster that same atmosphere at Miami. I wanted the staff to be activity people, and encouraged that in any way that I could.

A review of Professor Bunten's patents and ideas illustrated that he was an individual of intensity and thoroughness. In brief, the following are his patent efforts:


7. Development: Toothbrush holding device.

This level of personal activity was viewed as but one facet of leadership by example.

In 1980, in response to the state mandated teacher education redesign, Professor Bunten led the department through a very difficult period. If he had allowed the forces within the faculty advocating a radical change to a technology program to prevail, he predicted that the majority of non-majors would not register for departmental courses. If he had ignored those members advocating change, he would have ignored the national trends in the field. The compromise curriculum adopted was never put into effect, as the department was dissolved at the time when change was to begin.

At his last official act as department leader, Professor Bunten was very effective in assisting his departing staff in securing new positions. It has been said by various faculty members that possibly the greatest gift of leadership bestowed upon a faculty is the chance to begin anew. Professor Charles A. Bunten assisted his staff in starting anew, a task which saw him begin his own well deserved retirement.
SUMMARY

In the spring of 1906, Fred Campbell Whitcomb was recruited by Miami University to take charge of what then President Benton referred to as "Arts and Crafts." Throughout his thirty-five year tenure at Miami, Professor Whitcomb directed the establishment of thirteen departments within the College of Education. His efforts in the field included not only the nurturing of faculty and students, but also significant contributions to the literature.

Professor William D. Stoner followed Whitcomb as department chairman in 1941. Stoner was a former Miami graduate who had completed his doctoral work under Dr. Warner at The Ohio State University. Professor Stoner directed many curricular advances including the establishment of the Gamma Chapter of Epsilon Pi Tau in 1931. He encouraged those around him to be continually involved in the pursuit of knowledge, in both course work and affiliations. His efforts in recruiting and staff support left a legacy of quality personnel.

In 1961, after the retirement of Professor Stoner, Professor William M. Ramsey assumed the role of department chairman. Under his direction, the program areas including Driver Education and Industrial Technology grew in both diversity and quality. As a Miami Alumnus
with a sense of loyalty and history, it was a difficult task for Professor Ramsey to disassociate the Industrial Education program from the Industrial Technology program, which became a part of the School of Applied Science.

Professor Charles A. Bunten became department chairman in September of 1967 after the retirement of Professor Ramsey. Noted as a bright and inquisitive scholar, his encouragement of faculty developmental and research efforts resulted in the Industrial Education department ranking at the top of the College of Education in terms of the numbers of outside dollars secured by a department. Under his chairmanship, Driver Education flourished and the numbers of university students served reached all-time highs: one of seven students on campus.

His efforts in recruiting brought highly talented young faculty to the department, a staff who would seek advancement and promotion outside of the limitations of the department due to their aggressive professionalism.
CHAPTER IV
THE EDUCATIONAL PROGRAMS

The Industrial Education Department had two program areas. One was industrial education and the other was driver education. The latter was introduced in 1924. Any discussion of program assumed that a set of goals and ideals exists which discern between quality and substandard education. For industrial education at Miami University, the following standards and guidelines were assumed:

The Council (ACIATE) believes that teaching is a profession and that the teacher must be a professional in every sense of the word. He must be not only a competent scholar in this field, but liberally educated in diverse areas of human concern; not only expert in the art of teaching, but directed by well-defined, functional practices, but a creative change agent in the educational environment.

The Council further believes that developing these qualities requires an educational program which includes not only professional teachers, but content and learning experiences relevant to contemporary needs; not simply an organizational scheme, but a dynamic learning environment organized for effectiveness in teacher education; a program permeated by a sense of direction which is not only sensitive to the realities of present-day schools, but dedicated to leading future teachers of educational possibilities (Undergraduate Standards, 1977).

The extremely close relationship that exists between teacher and program is often difficult to separate. As defined by the American Council on Industrial Arts Teacher
Education (ACIATE), the industrial arts professional is "not simply a manager of existing educational practices, but creative change-agent in the educational environment (Undergraduate Standards, 1977). The emphasis on creativity and positive environmental change can speak of one area: program.

Within the preceding definition are references to a dynamic learning environment organized for effectiveness in teacher education and permeated by a sense of direction. For any industrial education program area to thrive, these two principles must coexist. Throughout the history of industrial education at Miami University, certain non-teaching vocational program areas have existed, and are discussed and reviewed with these same constraints.

For the purposes of this study, the Industrial Education Department's program was divided into two topical areas. Area number one was concerned with the general undergraduate and graduate program, which, in fact, could be further subdivided into teaching/non-teaching and major/non-major topical components. The second topic area to fall within the parameters of this study was the Driver and Traffic Safety Education program, including both undergraduate and graduate programs.

The 1977 Standards and Guidelines for Undergraduate Program Evaluation in Industrial Arts Teacher Education (ACIATE) set forth several specific guidelines
upon which the industrial education program is based: goals which lead to preparing teachers who are professionally ready to enter the profession uniquely qualified to achieve the purposes of industrial arts in the elementary and secondary schools.

In 1980, the Standards and Guidelines for Graduate Degree Program Evaluation in Industrial Arts Teacher Education (ACIATE) were published as a vehicle for the evaluation of graduate industrial arts teacher education programs. For the purposes of this study, the following three ACIATE charges were used to critique the Miami program:

1. Develop master teachers through the improvement of technical and professional competencies appropriate for the classroom and/or laboratory.

2. Contain the necessary program elements for individuals who wish to become teacher educators and researchers.

3. Provide programs leading to professional career changes and/or advancements in fields of education such as guidance, supervision, or administration at various education levels.

The Driver and Traffic Safety Education program at Miami presented an interesting question in relationship to this study: could industrial arts program standards, both undergraduate and graduate, be applied to the Driver Education program? While strict adherence to the stated goals would prohibit cross-application, this study loosely applied the same standards to all programs to
assure consistency.

The most obvious and readily studied evidence of program evaluation was that of curricular development and course offerings. While this study extensively researched all areas of program development, course offerings comprised the most visible symbol of programmatic development.

INITIAL GROWTH AND DIVERSIFICATION

Under the sanctions of the Normal School, also referred to as the State Teachers College, at Miami, the Practical Arts Program was founded approximately 1904. While no earlier records have been found to substantiate course offerings prior to the 1904-1905 school year, the Miami Annual Report dated 1905 states the following:

In addition to handwork, mat weaving, cardboard construction, thin wood work, basketry in raffia and rattan, the Board of Trustees have ordered that by the opening of the school year of 1905-1906 there shall be added full courses in bench woodwork.

This was followed in the 1905-1906 Annual Report by the following description of the program under the leadership of Director B.O. Davis:

Discussion of the characteristics of cutting edges for wood, care and adjustment of tools, warping and seasoning of wood...students desiring to pursue the course in Manual Training must pay to the treasurer the required fees, to cover costs of materials, and to provide himself with a working suit of apron and jacket before being admitted to classes. Such suit need not cost to exceed seventy-five cents.
The courses were described as entailing a time commitment of "three hours a week, one credit hour each term" (Annual Report, 1906). Courses begun for the 1905-1906 school year were primarily summer woodworking courses: Woodwork for Grade Teachers and Woodwork for Secondary Teachers (Appendix A, B).

The 1906-1907 school year brought the addition of Fred Campbell Whitcomb to the staff of the Ohio State Normal School of Miami. He was Director of Manual Arts and Professor of Manual Training. In addition, he was the first staff person at Miami to utilize the term "Arts" in the direction of the program area. It should be noted that the Annual Report of the University dated February 1907 lists Manual Training within the School of Liberal Arts, and Manual Arts within the State Normal School.

During the first year under Professor Whitcomb, the Normal School conferred as its highest honor a two-year diploma and a state special teachers diploma. Also offered was a one year course for township teachers and numerous "special courses" as needed. While seemingly a spartan offering, this proved to be very much "state-of-the-art" for education in 1906.

A review of the course offerings revealed several selections which became hallmarks of the program at Miami. Furniture Design and Construction, Art Metalwork, Mechanical Drawing along with Materials, Tools, and Methods
remained pretty much intact throughout the entire history of the program. These four courses provided a core around which design, creative thought and problem-solving techniques were taught through the medium of the practical arts.

In the summer of 1907, a course was offered in the manual arts for special teachers and supervisors. It was offered in conjunction with the History and Organization of Manual Training and several other basic courses. Of importance is the extent of offerings for the summer of 1907. While enrollment records no longer exist pertaining to that summer, it can be assumed that the need existed and was fulfilled as evidenced in the later explanation of offerings.

Whitcomb commented on the first year of the program with the following description:

I taught several sections of two-year Normal Girls Manual Training and a class in "Mechanical Drawing" composed of Liberal Arts students. A few Liberal Arts students elected a course in furniture making. Also, I spent several afternoons at the Oxford Public Schools...(Whitcomb, 1941).

The presence of a high proportion of "non-major type" students in the courses offered also stands out as a characteristic of the program throughout its history. No doubt the nature of the courses and staff contributed to a high enrollment of non-major students. It was this great interest which initially gave impetus to
the expansion and growth of the program.

The fall of 1907 brought the organization of two-year curricula in industrial education and public school arts, a first in Ohio. This was followed in 1908 by curricula in music and home economics. Also in 1908, the Division of Practical Arts was formed officially by the University under the direction of Professor Whitcomb.

The 1908-1909 school year saw the continuation of the two year diploma program with Dea Carr Murray, Harry E. Roberts, W.C. Wilson and E.H. Petry as students. Mr. Petry served as an assistant under Professor Whitcomb and remained at Miami as an Instructor of Manual Arts.

In 1908-1909, a basic course, Woodworking was added as a Manual Arts offering. The "ing" suffix reveals a philosophical bent towards process and action, which was the direction of courses of the time. The 1908-1909 University Catalogue describes the new offerings as:

1) From sketches and designs made by the student, followed by working drawings, tracings, and blue prints, a number of simple pieces of woodwork and furniture are made in the shop. The correct use of proper tools is emphasized.

2) By means of lectures, readings, drawings, and shop work the following topics are considered:
   The classification of and evolution of tools, joints and the principles of joinery, forms of fastening, wood finishing, structure, properties and seasoning of wood, the principle species of wood, the North American Forest, the enemies of the forest and lumbering.

3) Shop methods and care of the shop. Six hour credit.
The 1908-1909 school year also brought a Mr. Mobberley to the staff as an instructor. While his tenure lasted but one year, he was credited by Professor Whitcomb as being a primary force in the development of the woodworking course.

Drawing and Handwork, Elementary Mechanical Drawing, House Structure, Sanitation and Decoration, and Sheet Metal Work were added as courses in 1909-1910. Gone was the two-year diploma program in Manual Arts. No explanation was found. Yet even with the dropping of the Manual Arts two-year program, there was direction towards the emerging Practical Arts Teacher Program.

The years of 1910, 1911, and 1912 involved rapid growth and expansion for the new programs. Special teachers of Manual Training were expected to complete a rigorous course with an emphasis on pre-engineering course work. Public School Art likewise continued to develop its offerings and rigor. An upgrading of the facilities was undertaken, and noted in the February 1912 University Catalogue.

Manual Training and Drawing. The Manual Training rooms are on the first floor and in the basement of the east wing of the Main building.

The woodworking shop is provided with twenty large and modern double benches, each with its own tool cabinet and drawer for students' work. All of the general tools needed are included in this equipment. A gasoline engine furnishes power for the following woodworking machines: turning lathes, combination rip and cross cut
saws, jointer, and planer. For the metal working courses, forges, anvils, vises, hammers, and other small tools are provided. A very large pottery kiln recently has been installed, making possible the most important use of clay in the schools. Both the mechanical and freehand drawing rooms are well equipped with tables, easels, stools, boards, instruments, and models.

Not only were the Manual Training/Arts facilities being upgraded at that time, but likewise the University library underwent a major shift. In an era when the University was practicing a rigid conversatism and the practical arts were expanding in their scholarly pursuits, the library system must have proven an invaluable asset. In February 1912, the University Catalogue thus described the Library System:

The University Library contains 35,000 volumes; the libraries of the two literary societies for men contain about 1500 volumes. The new card catalogue will cover the entire collection of books and pamphlets. For the maintenance and enlargement of the library, the State Legislature makes a liberal appropriation annually. The library is particularly rich in the records of the United States and of the State of Ohio. During the past year the University has been placed under obligation to alumni and others for several valuable gifts.

Students may draw from the library three volumes at a time, and these may be kept two weeks unless specially restricted. Unless there is other demand, books may be renewed. Persons not members of the university are allowed to take books from the library at the discretion of the librarian.

The book stacks are not open to the students in general; but cards of admission may be given by the librarian on recommendation of an office of instruction.
Professor Whitcomb stated in his professional papers that the Practical Arts students made "good and practical" use of the library facilities. He also noted that the woodworking laboratory was called upon on "more than one occasion" to be of service in the repair and maintenance of various pieces of the library furniture. Surely this close relationship served to enhance the status of the program and its students.

In 1912-1913, the first four-year curriculum in Industrial Education was offered at Miami (Appendix C). The June 1913 Annual Report cites the following directive:

...the University Senate passed the following regulations: 1) it was voted that the degree of Bachelor of Science in Education be conferred upon those students who completed the four year courses in Agriculture and in Manual Training...

Attached to that directive was an adopted four-year course of study which detailed precisely which courses were necessary for graduation. Closely following the adoption of the four-year curricula, "The first Bachelor of Science student to be graduated from Miami University, Harry Franz (who completed a Liberal Arts curriculum the previous year,) was graduated in Industrial Education" (Whitcomb, 1942).

In 1913 the Industrial Education Department (Manual Arts) had the distinction of having the first Bachelor of Science in Education graduate. He was Harry Franz, who majored in Industrial Education. Mr. Franz and Mr. Mobberly were among the first graduates from the newly
formed Teachers College in 1910. These two men were among the first to participate in these courses that were set up to aid in supplying public schools with teachers in Drawing, Industrial and Manual Arts, and teachers of vocational courses in Trades and Industry" (Fusco, 1974).

Though the first few years of its growth showed promise, the program area was not without its detractors. Whitcomb believed that the Practical Arts were "against the Miami tradition of an ultra conservative type of education" and "under many handicaps" (Whitcomb, 1942). Nicholas Murray Butler, in his monograph The Argument as of 1888 outlined much of the dilemma faced professionally, a dilemma experienced by Whitcomb:

The argument which placed Manual Training in the school has commended itself to the ablest and most thoughtful educators all over the world. I do not recall a single name of the first rank that is in opposition. Huxley and Magnus in England, Sluys in Belgium, Breal and Salicis in France, Salomon in Sweden, Paulsen and Goetz in Germany, Hannak in Austria, Seidel in Switzerland, and Gabrielli and Borgna in Italy are leading the thought of their respective countries on this subject. In Sweden, in France, in Germany, and in the United States, professional schools for teachers are expounding this philosophy and the methods of teaching it.

A movement at once so far reaching as that in favor of Manual Training, has not come into educational thought since Comenius burst the bonds of mediaevalism two and a half centuries ago. It is the educational question of the time. Other matters are important as affecting administration, organization, methods of teaching, and other details, all having to do with applications of principle, but the Manual Training movement is a principle itself. As might have been predicted, it meets with no little opposition and forces of tradition are
arrayed against it as something new; and it is doubtless well that this is true, for education is altogether too important a matter to be swayed by any and every theory.

Any new movement to establish itself in education must run a gauntlet of opposition and criticism, the safe passage of which is a guarantee of excellence. The Manual Training movement has successfully run this gauntlet and is today the newest phase of educational thought. In the first place it is a deduction from our increasingly complete knowledge of mind, and in the second place it meets the demands for a more practical education required by the conditions of contemporary life. It so happens, and happily, that the education which our increased knowledge points to is more practical, in the best sense of that much abused world.

While Professor Whitcomb may never have read the work of Butler, the dilemma was the same. It was the responsibility of programs, such as the emerging Practical Arts program at Miami, to not only provide the quality demanded of the closely scrutinized area but also to produce a new breed of practitioners to perpetuate and advance the thoughts and curricula.

Quality and reward were early hallmarks of the movement at Miami. As early as 1909 Professor Whitcomb was provided his first two assistants, Thomas Moberly and Mr. Petry. This tradition of assistants being provided the opportunity to teach directly under the mentorship of program leaders was to continue throughout the history of the program. The selection of first-rate assistants (as viewed by Miami) was evidenced by the high number of assistants who would later be employed as
staff persons in the department (Appendix D).

The period from 1910 through 1915 saw an expansion of course offerings in response to the new degree programs. The following courses were first offered during that five-year span:

Public School Handwork
Object Drawing and Sketching
Mechanical Drawing
Elementary Design
Art Appreciation
Descriptive Geometry and its Applications
Paper and Cardboard work: Book Binding
Clay Modeling and Pottery
Architectural Drawing
Constructive Drawing
Building Construction
Cabinet Making
Machine Design
Observation and Teaching
Sheet Metalwork
Organization of Manual Arts
House Planning
Forging: Bench Metal Work
Architectural Drawings; Topographical; Patent Office

A review of the newly developed courses led the researcher to the following observations:

1) Most courses were of a technical nature, and apparently designed for technical education.

2) Most courses encompassed a rigorous problem solving curricula aimed towards the application of knowledge in a new or creative fashion.

3) The courses demonstrated diversification from strictly drawing and woods to construction metals, movable materials and course organization.

4) The courses included teaching observation as a specific pedagogical area.

Up until 1915, the primary values expressed in the program were disciplinary. Fusco in 1974 described the
early manual training manual arts hand work with the
following commentary:

These values (disciplinary) were stated in such
terms as developing neatness, accuracy, patience,
persistence, love of labor, manipulative skill,
honesty and character. Other values were rated
as subordinate as possible by products, but not
as objectives to be worked for consciously. The
whole case for the work rested upon the basis of
disciplinary psychology. The result was that the
courses or the schools consisted almost wholly of
manipulative activities, largely dictated to
pupils. Manuals and other books on paper folding,
cardboard construction, raffia weaving, basket
making, sewing, exercises in woodworking and
Venetian ironwork are examples of dictated
instructions to be followed explicitly. The
pupil had no opportunity to think or create, to
invent or experiment, or in any other way use
initiative or originality.

1915 THROUGH 1941: THE EXPANSION YEARS

The academic year 1915-1916 was a year of great
beginning for the program area. Gone were the terms
Manual Arts in favor of Industrial Education and
Industrial Arts. This name shift was a result of much
lobbying on the part of Professor Whitcomb, that the
program area might reflect the national philosophical
and pedagogical shift more accurately.

Dean James Russel and Professor Gordon Bonser of
Columbia University had a strong impact on the name change
at Miami, for it was Professor Whitcomb's passion to
"keep up" and stay "state-of-the-art". Building upon
Charles Richards' 1904 call for Industrial Arts, Russell advocated studies in many subjects to help understand the industries. He (Russell) concluded that:

The chief consideration in the course of study is the ordering of industrial processes by which raw materials are transformed into things of greater value for the satisfaction of human needs (Russell, 1909).

This definition was followed by Bonser's classic definition of 1923 and served as a basis for the development and strength of industrial education at Miami through its history. Bonsers' definition of 1923 often is cited as a foundation of twentieth century curricula.

The Industrial Arts are those occupations by which changes are made in the forms of materials to increase their values for human usage. As a subject for educative purposes, industrial arts is a study of the changes made by man in the forms of materials to increase their values and of the problems of life related to these changes.

With a new philosophical bent (teacher education being of primary importance) and a new name: so arose the new department within the newly organized Miami University Teachers College. This was a great achievement towards academic credibility within the liberal arts based Miami University.

Another Miami graduate was promoted from the ranks of assistant to assistant professor in 1915. Forest T. Selby, a graduate of the Normal College in Manual Training was employed, and assigned an assistant of his own: Asa Earl Geeting.
The year 1915 also saw Professor Whitcomb leave the University briefly on sabbatical. While little documentation exists as to the direct impact of this venture upon the program, the nature of his trip deserves note. A letter written by Whitcomb which appeared in the *Miami Student* newspaper of Thursday, October 14, 1915, described a portion of his sabbatical (Appendix L):

To start on a ten to twelve thousand mile trip in a Ford (a Ford is called a "tin lizzie" out here) across plain, mountain and desert startled some of our friends in southern Ohio not a little, I fear. But we are eight thousand miles on our way and are still alive: the Ford continues to rattle on, giving little trouble...

...leaving Oxford on June 3rd, we went to Chicago, where several schools and colleges were visited before they closed for the summer vacation...

...As planned, we entered the Yellowstone National Park on August 1st - the date when the park was opened for the first time in its history to touring automobiles...Our machine was the first one through the park.

Professor Whitcomb further detailed his venture in a *Miami Student* letter dated November 25, 1915:

Some of our friends in Oxford intimated that probably we would ship our machines from the coast and come home by rail, but on the 8th of November, after having traveled 10,784 miles, and having been gone a few days over five months, we reached Oxford in the same Ford in which we left. Some repairs have been made and a few new rattles had developed, but we were able to get home.

The very nature of such an extensive overland trip on a yet sporadically completed national roadway system in a vehicle of the Model A vintage was a mammoth accomplishment. Miss Alice Whitcomb, daughter
of Professor Whitcomb, was quick to point out that of primary interest to her father and a reason for the high mileage recorded on this trip was Professor Whitcomb's personal drive to observe many of the "Industrial Arts-like" programs in existence at the time.

The 1915-1916 University Catalogue gives the following description of the facilities available to the new Industrial Education Department, still located in "Old Main". Of note is the increased capacity from 20 students to 35 students (Appendix E and F).

Industrial Arts rooms are on the first floor basement of the east wing of the main building. The woodworking shop is provided with modern benches for 35 students each with its tool cabinet and drawer for student work. All the general tools needed are included in this equipment. A gasoline engine furnishes power for the following woodworking machines: turning lathes, combination rip and cross cut saws, jointer, mortise and tensor machines and planer. For the metal working courses forges, anvils, vises, hammers, and other small tools are provided. Both the mechanical and freehand drawing rooms are equipped with tables, easels, stools, boards, instruments and models.

It can thus be seen that the Industrial Education Department was equipped to teach primarily in the three prevalent industrial areas of the time: woods, metals, drawing.

The 1916-1917 University Catalogue contained an interesting bit of information to this study in regards to the four-year program.
Students in Industrial Education are advised to spend one or more summers during their course in practical work in the industries. The demand for teachers who have had industrial work in commercial shops is increasing each year.

The student may take any one of the following combinations with the course in Industrial Education: Industrial Education and mathematics, physics, agriculture, or physical education.

The emphasis on industrial experience and the engineering based double majors reflected a carry over from the manual training days. It served a valid structure and purpose as the 1917-1918 school year was to begin. For it was on April 6, 1917, that the U.S. Congress under the direction of President Wilson formally committed the United States to World War I (Appendix G).

In Washington D.C., the U.S. Bureau of Education focused much attention on the industrial arts. In May of 1918, a group of advisors under the direction of the Commissioner of Education issued a statement which affected the development of courses in the department.

The demand for large numbers of young people having some practical mechanical ability is so great that no school should hesitate to do what it can in any line of technical and mechanical instruction for which it had, or can secure, the necessary equipment and teachers (Barlow, 1967).

The course offerings through the early 1920s reflected the war's effect. Courses such as Map and Topographical Drawing, Pattern Making, Concrete Construction, Printing,
Map Making, Map Reading, Industrial Drawing, and Design were designed to serve not only the developmental needs of the Industrial Arts field, but also the war effort.

Staffing through the war years (W.W.I.) included:

<table>
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<th>Assistants</th>
<th>Faculty</th>
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<tbody>
<tr>
<td>O.C. Martin</td>
<td>F.C. Whitcomb</td>
</tr>
<tr>
<td>Clyde Pierson (to faculty)</td>
<td>Forest Selby</td>
</tr>
<tr>
<td>William Kluber</td>
<td>J. Warren Smith</td>
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<tr>
<td>Richard Grubsch</td>
<td>Oliver Wiard</td>
</tr>
<tr>
<td>Albert Grinnell (to faculty)</td>
<td>Jessie Clark</td>
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<td>Herschell Applegate</td>
<td>Walter Brunsman</td>
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<td>Wm. Curran</td>
<td>Edmond Parrott</td>
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<td>Floyd M. Jackson</td>
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<td>Bryan Ketcham</td>
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<td>Edmund Parrott</td>
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The "Roaring Twenties," and the post war prosperity brought added growth to the department. The faculty was expanded in 1924 to include Assistant Professors Alfred Hobbs in automobile courses and William Stoner in woodworking in 1924, two additions which had a dramatic and far-reaching impact upon the department and the field in general. In 1926 Eugene Albaugh was employed to replace Professor Hobbs and to carry on the work which Hobbs had begun in the automotive area (Appendix H).

The twenties saw further growth for Industrial Education. Continued growth in woods took place with the introduction of the factory method of furniture making taught by Professor Grinnell.

Even though the Industrial Education Department continued to grow with new courses and ideas,
"Mother Miami" seemed to remain stagnant in her approach with conservative education. At this time in the twenties, students were required to attend chapel twice a week in Old Benton Hall. According to the wife of one of the Industrial Education Department professors "it was a fine way to study for the next class." (Fusco, 1974).

Nineteen twenty-six heralded a new beginning for the Industrial Education Department: the opening of a new home. The new Industrial Education building, which initially was named the Whitcomb Laboratory, provided the facilities and autonomy necessary to become truly an independent unit on campus (Appendix I).

In 1926 the Department of Industrial Education moved into its new building made possible by a special appropriation by the legislature. This building is of fire proof construction throughout, and when completely equipped will have cost $100,000. Considerable new equipment has been purchased and more is being added each year.

At his retirement dinner in 1941, Professor Whitcomb gave details to the academic process credited to the lab equipment in Old Main. While his comments were of a humorous vain, a great truth may have rested within.

Dean Brandon's repeated comments about the noise made by what he called "the buzz saw" in the basement of Harrison Hall, two floors below his classroom where he was using the direct method in teaching French to freshman, may have had more to do with the Department of Industrial Education getting a new building than any other one factor.

With the completion of the new facility in 1926, the transition from Manual Training to Industrial Arts
also was completed. No longer was drawing to be a separate program taught primarily by a female staff to elementary majors. The curriculum was unified under the Industrial Education title and format to provide for a singular structure and professional presence.

The late 1920's brought a new degree of specialization to the faculty. Professor Stoner organized the woods program, Professor Ginnnell took charge of drawing courses, Professor Whitcomb concentrated his efforts on pedagogy and professional development and Professor Albaugh assumed responsibilities in metals and automobile related courses. In 1929, Professor W. Harris joined the staff to instruct and develop the printing graphics area.

The great degree of support garnered by Professor Whitcomb and staff for the department was of particular importance to program development. A 1927 University Bulletin presented a letter of support by Dean Minnich; an unprecedented positive reaffirmation of the University's support.

Every intelligent person will be called upon to deal with things as well as works. Much of the beauty and art must be expressed through the work of man's hand upon material objects.

No education is complete without experiences in creating, fashioning, and constructing in wood and metal. Such experience, too, is necessary that one may appreciate the skills of workmen and artists. He must have such training
as to give him the feeling of mastery in the appointment in the modern home, the vehicle of travel and the cultivation of yard and garden.

Such experience and training will yield in his social life an appreciation of labor and its products, as well as the spirit of cooperation with fellow man in all occupations.

Training and industrial arts will serve as an introduction also to the tremendously industrial age in which he must live and earn a living, dextrous hands quicken intellectual life and greatly widen the interest.

Industrial education serves to substitute intelligent appreciation for staggering words in the presence of great engines of power and speed of the monumental skyline of architecture.

Industrial education is an integral part of the curriculum of every American boy and will have an increasing portion of his school schedule."

While official letters of support in official university publications are few, support existed nonetheless. Professor Whitcomb and his colleagues were quite adept at promoting interpersonal relationships both on and off campus which would lend a positive aura to the department. Activities such as fishing trips and shared sabbatical trips were frequent and inclusive of Deans, Provosts and University Presidents.

A high degree of specialization in woodworking, metalworking, drawing, or printing was noted in the 1929 University Catalogue as possible course concentrations to prepare teachers for unit-shop instruction: the generally accepted format of the time. Also available were combinations of
specialization "to prepare for junior high school or small city or village teaching." Electricity and auto-mechanics were added to broaden the scope of the department, along with the addition of equipment valued in excess of $10,000. (Catalogue, 1929)

In 1929 teachers primarily used the project method of instruction. Thus exhibiting little change from the earlier years.

The project is the unit of instruction adopted. The student during his college course makes many articles for his own use and also gets production methods through class construction of school equipment. The carpentry class builds garages and other small buildings. In practically every instance real jobs of construction are undertaken (University Catalogue, 2/30).

The emphasis placed upon practicality can be viewed only as a reflection of the conservative nature of the field in 1929-1930. Such activities can be viewed readily as pre-vocational in nature, demonstrating the tendency of industrial education to continue to ally itself with the vocational philosophy as opposed to a general or liberal education philosophy.

The first appearance of graduate level course work came in 1929-1930 with the addition of course number 500: Problems in Practical Arts Education. This course offered the opportunity for intensive study or investigation of specific phases of practical arts education, yet primarily in Industrial Education (University Catalogue, 1930).
Appropriate problems were found in the objectives of the student's specific practical arts curriculum to allow for research. All viewed as valid areas for investigation were standards and ideals, testing and measurement, and shop or laboratory activities. In each phase of this course, initially taught by Professor Whitcomb, a piece of creative work was required as evidence of successful research. (Floyd, 1974)

Several additional courses for advanced instruction were offered in 1930. Included in this offering were 301 Architectural Details, 310 Carpentry, 350 Furniture Construction, 360 Architectural Design, and 370 Automotive Theory and Practice. With the exception of the 500 Problems in Practical Arts Education, all were designed to produce a higher level of technical expertise in a specific subject area.

The 1930-1931 school year saw the addition of five new courses of note, and very little change in faculty and staff. This possibly was due to the stock market crash of October 1929 and the Great Depression of the 1930's. Barlow, in his 1967 *History of Industrial Arts*, discussed the impact of the depression on industrial arts nationwide an impact which was reflected in the activities of the Miami program and staff.

Like all other aspects of American life industrial arts "tightened its belt" during the depression. However, there are few evidences that the depression created any degree of real panic among industrial arts
educators. School enrollment was increasing, and the tenor of discussion in industrial arts during the early thirties was one of optimism. Chief topics included the future, change, attitudes, and philosophy. Perhaps the discussions were too optimistic, since they seem not to have dealt realistically with problems that involved economic needs.

1931-1932 heralded the addition of two new advanced level courses: 520 Technical Problems and 530 Problems in Industrial Arts Design. Both were created in response to the demand for greater rigor in the program, and as provided a format in which specific professors might advance themselves professionally.

520, Technical Problems, advanced technical and economic problems in the field of practical arts education (Stoner)

530, Problems in Industrial Arts Design, detailed study of relation of design to present-day applications. Prereq., 12 hours of approved college work in drawing. (Grinnell).

A development of the 1930s was the founding of the Gamma Chapter of Epsilon Pi Tau. The Gamma Chapter was a direct result of the William Warner Ohio State University influence upon both the faculty and program at Miami. Its addition allowed the Industrial Education Department to retain equal status with other campus-wide programs, by offering a forum for the recognition of outstanding members of the academic program.

The 1934-1935 University Catalogue provided the first official note (in catalogues) of a Master of Arts program in Industrial Education. Whitcomb on the other hand noted in 1941 that:
Since 1930, the degree Master of Arts, had been added to the practical arts offering and twenty students have received this degree. At present some twenty additional students are working toward the master's degree.

A more complete discussion of the graduate degree program is in a later section of this chapter.

The pre-war days of the late 1930s also brought change in the form of increased expectation of the student body. Beginning with the freshman class of 1938, a 2.25 average was required of all courses within a selected major. Also, no student was allowed to continue beyond the sophomore year without an overall grade point average of at least 2.0. An increase in emphasis on student teaching also was a product of the time, with better prepared people being sent into the classroom and laboratory as future teachers.

1942 THROUGH 1947: THE EFFECTS OF WORLD WAR II

Academic year 1940-1941 heralded the beginning of a new period of change for the Industrial Education Department at Miami University. Professor Whitcomb announced his retirement, effective at the end of the school year and William Stoner was designated as the new department chairman. With the change in leadership came a change in vitality and direction. Many program changes became apparent as the year closed and the United States entered World War II under Professor Stoner. The
1941-1942 University Catalogue highlights the program and changes:

The curriculum is designed to prepare teachers and supervisors of Industrial Arts for the public schools. Instruction and laboratory experiences are provided in arts and crafts; automotives including driver education; electricity including radio; graphic arts including photography; industrial drawing including machine drafting, and descriptive geometry; metals including bench metal and machine shop practice; welding; and woods including housing.

Although the department is primarily concerned with the preparation of teachers, a number of courses have been set up to meet the needs of students in other divisions of the university. Any student outside the department may, with the approval of his advisor and the consent of the instructor, elect any course offered.

The preparation of supervisors of industrial arts reflected the national demand for state and local supervisors. A renewed emphasis on service courses for non-majors reflected Professor Stoner's desire to involve as many students as possible in the program from a cross-section of majors.

The particular University Catalogue issue (1941-1942) cites a number of pertinent facts which had an impact on the Industrial Education Department. Under Chairman Stoner, and Associate Professor Grinnell, Assistant Professor Whitesel, and Instructors Yaeckle and Foss, the curriculum was revised and the department name was changed to Industrial Arts Education. Industrial Arts Education remained the only Practical Arts Education and Master of Arts program available. Also offered were
numerous war-effort classes:

During the present academic year the University is cooperating with the Federal Government in offering special courses to prepare men better for work in the defense industries. These courses are of two general types. Under the supervision of the State Department of Education, the Department of Industrial Arts is offering a group of shop courses for out-of-school youth. Classes meet on campus in the evening, and the work offered is below college grade.

An Industrial Arts Education staff member, Professor Albaugh had the unique distinction in 1940-1941 of helping to organize the civilian pilot training program at Miami: a somewhat natural outgrowth of his interest in transportation systems.

Beginning with the summer of 1940, Miami University has been designated by the Civil Aeronautics Administration as a center of civilian pilot training. Both the private (preliminary) and the restricted commercial (secondary) courses are now being offered. The ground school instruction is given in the Industrial Education building on the university campus. The flight instruction is offered at Middletown, Ohio, under contract of the Civil Aeronautics Administration with the Queen City Flying Service, Inc. (University Catalogue, 2/42).

Development of this program by Professor Albaugh demonstrated that the department was capable of supplying curricula and staffing for a broad spectrum of societal needs, a practice dating from Professor Whitcomb's program diversification of 1907 to the driver education offerings of 1982 under Professor Shrader.
A sense of the overall war-time involvement of the Industrial Arts Education Department can be derived from Professor Whitcomb's retirement address.

When the Civil Aeronautics Authority needed an instructor for ground work, our Prof. Albaugh was the man for the job; in the establishment of semi-professional certificate courses the department has an important place; at present more than fifty out-of-school boys and young men from Oxford and vicinity under the auspices of the N.Y.A., are spending fifteen hours a week learning automechanics, machine shop activities, welding and blueprint reading under the direct charge of Professor Yaekle and Mr. Aber of Stewart High School, and Prof. Grinnell. This work is being done in the interest of the generally preparedness program. To Dr. Stoner is given the credit for arranging the entire program. Prof. Harris developed such knowledge and expertness in the graphic arts that he has been called to a responsible position in a commercial firm in Cincinnati.

The facilities and efforts of the department changed from being principally a teacher education program to the intensive vocational preparedness program during the War. Even so, Professor Stoner reorganized the program into thirty-six course offerings, which would not be fully implemented until the late forties (Appendix K). Those courses, derived from University Catalogues of the time were as follows:

101-102 Orientation Units in Industrial Arts Education
Unit 1 Hobby and Recreational Activities
Unit 2 Unspecialized Mechanical Activities
Unit 3 Recording Experiences
Unit 4 Reclaiming and Refinishing House Furnishings
Unit 5 Practical Electricity
Unit 6 Preserving Records
Instruction in the various programs followed the trend of specialization begun earlier in keeping with national norms. Professor Foss, a Miami Graduate and self-taught furniture designer, took over the woods related offerings, including construction courses and other select courses as engineering instruments and computations. Professor Grinnell specialized in the drawing and design courses, a major assignment in the war years. Professor Bauer
instructed the crafts, metals, and some driver education coursework. Professor Whitesel was called upon to organize the graphic arts offerings, including the new photography and audio-visual area. Professor Yaekle's specialty was the automobile, and so took charge of those courses, and later filled in as needed. Professor Stoner, as department chair, was responsible for most of the 500 level courses.

When war was declared Miami University just about became a ghost town. This holds true for the Industrial Arts Department which continued course offerings of war related subjects only. At this time a program referred to as V12 was started, which saw service groups from the Air Force come down from Wright Patterson Air Force Base in Dayton for training in industrial related areas. The Navy boys were here at Miami already; in fact these boys were the only boys on campus during the war. The V12 program was part of the basic training for these men. It lasted 6 weeks at a crack and provided experience in heatpower, drafting, descriptive geometry, and radio.

As stated, there was no active university program in Industrial Education during the war. For this reason some of the staff considered leaving Miami to find full time employment. Professor Art Bauer considered going to Richmond (Indiana) because there were no boys on campus and Professor Ramsey worked locally in 1945 in Industrial Arts at McGuffey School because of the war.

As recalled by some of the staff at that time, V12 was good because the military boys posed no discipline problem. Either they did the work required or their supervisor would ship them off before they could realize what happened (Fusco, 1974).

The war programs can be credited as having had a positive impact upon the department for several reasons:
1) The war course offerings provided employment for faculty and staff.

2) Programs such as radio provided an opportunity to explore and develop new and emerging technologies such as electricity, electronics and communication systems.

3) By rising to the challenge and making a valuable contribution to the war effort, the department was to receive some measure of thanks, gratitude and positive image building.

4) The war programs provided initial access to federal funding sources previously either untapped, inadequately utilized, or non existent.

5) At the close of the war, the department was able to rapidly assimilate many of the G.I. Bill students who had participated in the preparedness programs.

It was with a sense of relief and excitement that the department exited from the rigors of the war years and entered the post-war social order. Courses, which had been conceived earlier, became a reality in the late forties. The University at large experienced several major shifts in administration and direction, and so the program experienced shifts.

THE FINAL YEARS

The post-war years at Miami brought a return of the Industrial Arts Education program and an expansion of both the staff and facility. In 1947-1948 plans were underway for the construction of the new home of the department. This facility, named Gaskill Hall after former Miami Trustee
David L. Gaskill, supplanted the old Whitcomb Laboratory and provided a monumental increase in both physical space and campus presence. Gamma Grams, the official publication of Miami's chapter of Epsilon Pi Tau described the new facility in the 1948-1949 issue.

Greetings from the Industrial Arts Education Staff:

We hope you will like the picture on the cover. This is David L. Gaskill Hall--future home of Industrial Arts Education at Miami. We will share the Hall with Naval Science and the heating plant. The receding wing to the east or left is the new south extension of our present building. This new wing will add approximately the same amount of floor space we now occupy. The east extension of the present building, which is planned for the near future, add a similar area to our floor space.

This new wing will be used as follows: The central section of the ground floor will house an extended automotive and driver education laboratory. This area will be equipped with modern automotive inspection, testing, and service equipment. A departmental library, two class rooms, a visual education room, and an arts and crafts laboratory will include facilities and experiences in art metal, leather modeling, jewelry, ceramics and plastics. The third floor will provide a general service laboratory for use by any and all departments on the campus. It will also house a lithographic laboratory, one large copying camera room and three small dark rooms. A general graphic arts will also be located on this floor. This laboratory will provide facilities and experiences in letter press, intaglio, planographic, block and silk printing, and book binding. The final plans for this new wing are practically completed and we hope construction can get underway by early summer. If all goes well it should be ready for use by the summer of 1950. The east wing will not be undertaken for a few years.
With the new facility came a new presence on campus, and added responsibility. The program was challenged not only to prepare quality industrial arts instructors and to provide service courses, but also to meet the emerging image of the growing liberal arts university; an image not necessarily in keeping with that projected by most "shop class" majors (Whitcomb, 1941).

In 1953, the Miami family witnessed the inauguration of John D. Millett as the sixteenth president of the University. President Millett was a vital proponent of a broad and thorough education, the foundation for professional skills gained through a comprehension of the vast range of man's intellectual effort. The manifestation of this philosophy was the adoption of a "common curriculum" in 1954: general requirements for students of all divisions designed to acquaint them with "the magnificent boundaries of human knowledge and to emphasize the attributes of the humane man, whether his special interest be in the arts, in philosophy, in social organization, or in science" (Havighurst, 1969).

Walter Havighurst, in his authoritative history of Miami described the common curriculum thought process as envisioned by scholars such as President Millett. It is within this description that lies the first true signal of the Industrial Arts Education Departments' future under the new president.
In the twentieth century America had developed a belief that all must be educated and yet there was nothing in particular that an educated person must know. Now Miami was joining the movement toward a general education, a common body of knowledge and discipline which could become a basis for shared purposes and aspiration. It had been observed that the old disciplines of rhetoric, logic, classical literature, natural and moral philosophy, were all but lost in the proliferating new curricula, and their absence left a vacuum quickly filled with opportunistic and vocational studies designed to aid the individual as a competitor rather than as a citizen and a human being. Yet it was the discarded disciplines that had produced the modern democratic state, and without them new generations could not understand the creative principles of their own society. The common curriculum aimed to bring all Miami students to an awareness of the nature of the universe and of man's place in it and of his destiny.

While industrial arts scholars might argue that indeed the curriculum was/is a part of general education, it is apparent that this was not a Miami philosophy. With the increase in requirements for the common curriculum, and the academic rigor found therein, the industrial arts student had less time for industrial arts courses. In fact, industrial education hours were reduced by 15%. The industrial arts student being generally of a more practical than philosophical nature, found increasing difficulty in maintaining academic status and grade point average.

Also of importance in the early days of President Millett was the adoption of selective admission policies. In 1958 the Board of Trustees adopted a policy providing
that the university might give preference in housing to students other than those who have been admitted on warning for not meeting the high degree of scholastic achievement sought at Miami. This policy served as a method of scholastic achievement sought at Miami. It policy served as a method whereby the University denied housing to "sub-standard" students, but not admission. Since Miami also required all freshmen to live in campus housing, admissions became restricted very effectively.

Mrs. Maurice Foss gave Dr. Stoner's relationship to the restrictive admissions and housing policy.

After W.W.II, Dr. Stoner persuaded the university to set aside 60 rooms for students intending to major in Industrial Arts who would not have been eligible to enter the university because of their test scores. Since all freshman had to live on campus, this gave highly motivated students an opportunity to graduate (Foss, 1985)

Faculty members for the department in the early fifties were Professors Stoner and Whitesel, Associate Professor Grinnell, Assistant Professors Foss, Ramsey, Bauer, Yaekle and Rueggeberg, and Instructor McArthur. Of this group, all had completed coursework at Miami and were considered by the department to be the best in their field of expertise.

The early fifties brought little change in course offerings, with the only additions being 157 Engineering Drawing (Bauer), 213 Woodworking for Pleasure and Profit (Foss), 508 Organization and Administration of Industrial
Arts Education (Stoner), and 211 Advanced Studies in the Teaching of Woodworking (Foss). Many of the courses designed during the war years were implemented at this time. Thus, a strong and diverse program was offered a program which was to see little overall change through the eighties.

In 1955, Professor Yaekle left the staff and Mr. Shrader was employed as an Assistant Professor. With the exception of a one-year leave in 1958-1959 to complete his doctorate, Professor Shrader, or "Doc" to those who knew him, was to remain on campus as both an instructor and prolific Driver Education Program developer through the final years.

Under Professor Shrader, in 1956, a new workshop/program was offered in conjunction with General Motors: Technical Automotives for Industrial Arts Teachers. This program, which continued through 1967, was the foundation of the rapidly growing and diverse automotive course offering begun by Mr. Hobbs. Professor Shrader also developed the electricity/electronics field in late fifties.

A review of the course offerings of 1959-1960 revealed the depth and diversity of the department at a time of national attention on technology and the educational systems allied to the technology. Instruction and laboratory experiences were provided in the following areas: Arts and Crafts, Automotives, Driver Education,
Electricity including Radio, Graphic Arts including Photography, Industrial Drawing including Machine and Architectural Drafting and Geometry, Metal, and Woods including Housing and Cabinetry. Noted in the 1959-1960 catalogue was that forty-five semester hours in Industrial Arts Education were required for majors and thirty semester hours were required of those minoring in the department. Courses listed in the Industrial Arts Education Department for the 1959-1960 academic year were:

101. Diversified Activities in Woodworking (3) Foss
102. Diversified Activities in Metalworking (3) Rueggeberg
103. Exploring The Graphic Arts (3) Whitesel
104. Practical Electricity (3) Shrader
127. Engineering Instruments and Computations (3) Foss
128. Materials of Engineering (3) Foss
151. Engineering Drawing (3) Grinnel
152. Engineering Drawing (3) Bauer
*155. Industrial Drawing (2) Ramsey
*156. Home Planning (2) Ramsey
157. Engineering Drawing (3) Grinnell
158. Engineering Drawing (3) Bauer
213. Woodworking For Pleasure and Profit (3) Foss
*227. Arts and Crafts (3) Bauer
228. Plastics (3) Bauer
257. Home Planning (3) Grinnell
265. Engineering Laboratory (3) Rueggeberg
266. Engineering Laboratory (3) Rueggeberg
*296. Printing and Engraving In Business (2) Whitesel
301. Elements of Industrial Electronics (3)
*302. Applied Electronics (3)
356. Industrial Drawing and Blue-Print Reading (3) Grinnell
368. Driver Education and Safety (3) Ramsey
369. Everyday Science and Mechanics (2) Ramsey
Advanced Courses
211. Machine Woodworking (3) Foss
212. Furniture Design and Construction (3) Foss
*258. Machine Drawing (4) Grinnell
At the close of the 1960-1961 academic year, Chairman Stoner retired from active service at Miami. After an intensive selection process, Professor William Ramsey was appointed Chairman of the Department, and remained until his retirement in 1967. His leadership created far fewer immediately visible changes in program than had the transition from Professor Whitcomb to Professor Stoner. Once again, Miami had selected one of its own to take charge of a department. He remained in that
position until his retirement in 1967 where Professor Charles Bunten was hired as the final chairman of the program.

The early 1960s found Industrial Arts Education still within the Practical Arts Division of the College of Education. As described in the Miami publication, The School of Education (10/1/60, series 59, #5):

The School of Education offers Practical Arts curricula in the fields of Art Education, Home Economics, Industrial Arts Education, Physical and Health Education for men, Physical and Health Education for men and women, Health Education and Recreational Leadership.

Each curriculum in Practical Arts leads to the Degree Bachelor of Science in Education and the State Provisional Special Certificate to teach, without examination, in the public schools of Ohio.

Of note is the broad range of course offerings. Each, with the exception of Recreational Leadership, can be traced directly to the leadership of Professor Whitcomb and the Manual Arts Program.

Industrial Arts Education and Physical Education and Health Education for men remained a major/minor combination throughout the early sixties under the direction of Professor Ramsey. While other major/minor combinations had since been discontinued, Professor Ramsey's close personal relationship with Dr. Edmiston and the "Phys. Ed." staff insured the carry-over, and its resulting positive effects on enrollment.
By 1960-1961, courses in electronics had been developed by Professor Shrader. Offered in 1960 were the 301 Elements of Industrial Electronics and 301 Applied Electronics courses. Each had prerequisites of Practical Electricity (1AE104) and Aeronautics 341-342 from the Arts and Science Department. At this time Professor Shrader was listed in the Arts and Science Department as the only faculty member under Acting Chairman Cocanaugher, Teaching Radio Theory and Electronics.

The summer program continued to flourish into the early sixties. Professors Foss, Grinnell, Ramsey and Shrader were found conducting workshops or special sessions in courses such as Driver Education, Furniture Design, Advanced Industrial Drawing, Advanced Studies in Woodworking, Problems in Industrial Arts Design, and Advanced Automotive Theory and Practice. These programs served the continuing educational needs of the teachers "in the field" who desired enrichment or advancement courses yet could participate only during summer terms.

The sixties also saw the expansion of the Academic Center Program of the University, which included the industrial arts program. By 1960, according to the 1961 University Catalogue the following enrollments were noted:
These programs and numbers increased so significantly in 10 years that the Dayton Center became Wright-State University and the Hamilton-Middletown centers became fully developed regional campuses. It was at these regional campuses that the industrial education program expanded.

By 1963-1964 the curriculum had seen further refinement and development. Advances in courses included the following offerings: Materials of Engineering, Photography and Plate Making, Industrial Plastics, Plane Surveying, Machine Design Engineering Laboratory, and Electro-Mechanical Maintenance. Many of the courses were in response to the rapidly expanding industrial technology program, which was a non-teaching option at the time.

The 1963-1964 University Catalogue provided the following description of the Industrial Technology major within The School of Applied Science:

The program in Industrial Technology is designed to prepare students to enter Industrial-Technical fields with a well-rounded cultural and technical background.

The curriculum is flexible, permitting each student to have maximum advantage of his interests and abilities. Specialized instruction

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<th>Location</th>
<th>Total</th>
<th>Undergraduate</th>
<th>Graduate</th>
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<td>392</td>
<td>118</td>
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<td>322</td>
<td>241</td>
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<tr>
<td>Middletown</td>
<td>460</td>
<td>241</td>
<td>111</td>
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<tr>
<td>Dayton</td>
<td>1655</td>
<td>1229</td>
<td>429</td>
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<tr>
<td>Piqua</td>
<td>341</td>
<td>301</td>
<td>40</td>
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<tr>
<td>Extension</td>
<td>136</td>
<td>301</td>
<td>62</td>
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<tr>
<td>High School Students</td>
<td>26</td>
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is offered in the areas of Machinery and Machine Design, Power and Mechanics, Electricity and Electronics and Maintenance. Instruction in one or more of these areas is arranged to meet individual needs.

Students completing this program are prepared to enter industry and gain experience in occupational and professional classifications in various fields of research and development. As Plant Superintendents, as Design Engineers, as Production Supervisors, or in Industrial Sale, the demand for Industrial Technology Graduates in the foreseeable future is unlimited.

It can be seen that with students from both industrial arts education and industrial technology sharing laboratory facilities and professors, that the possibility of conflict of interest was great. While the Applied Science faculty desired a more intensive technology base to their courses, the education staff saw the need for instruction in pedagogy in each laboratory. The promise of unlimited career choice and top salary for "tech majors" loomed bright in the eyes of education majors who could expect to go from graduation into lower salaried positions.

The 1963-1964 Annual Report noted the emphasis placed upon recruitment by the Industrial Arts Education Department. An open house was held in Gaskill Hall for high school students interested in industrial arts, with over 250 attending. Also held was an open house at the Columbus Plaza Hotel during the annual Ohio Industrial Arts Association Conference Meeting, for the purpose of recruiting quality graduate students.
It was noted in that same annual report that the department had experienced a 60% increase in enrollment since the 1959-1960 school year, with 40 active graduate students in attendance. This was due possibly to the course offerings at the Middletown and Piqua Academic Centers. Courses offered were 102, 104, 105, 137, 151, and 152 (described elsewhere in this text).

A proposal containing information on "Laboratory Equipment Inventory and Proposed Program of Replacement" was submitted to the Dean's office in 1964. This proposal, asking for financial support in improving the facilities of the department over the next five years, accompanied a report in the expenditure of $16,000 on electronics equipment by the department.

In the 1965-1966 academic year, the philosophical differences between Professor Ramsey of Industrial Arts Education and Mr. Bowers, Director of Applied Sciences, were creating friction at the University. It is appropriate to refer to the University Catalogue again in this regard. The industrial education program is cited as providing a broad based educational experience in many technologies, and is "primarily concerned with the preparation of teachers". The Industrial Technology program under Mr. Bowers elected to provide quasi-engineering students for technical non-teaching fields. Many of the same faculty and laboratories were utilized
through the early seventies at the Hamilton and Middletown centers, with a declining cross utilization on the main campus.

The 1965-1966 Annual Report of the Dean lists the following faculty of the Industrial Arts Teacher Education programs:

*Associate Professors Foss and Ramsey
*Assistant Professors Bauer, Rueggeberg, Shrader and Kuzma
*Visiting Instructor Keller

The faculty members were noted for instructing within the department as well as elsewhere by teaching service courses for Industrial Technology majors.

The department was noted, but not commended, for a successful 33 1/3% increase in classroom enrollment over 1964, which also was a good year. Student enrollment had increased to over 500, many of whom were service course non-majors, a trend which caused difficulties in funding justification into the eighties.

To further emphasize the bifurcation in the industrial technology programs, the 1965-1966 Annual Report lists the following new courses offered:

- It-114, Basic Industrial Electricity
- It-204, Advanced Electricity
- It-205, Basic Electronics
- It-304, Industrial Electronics
- It-315, Digital Technology
- It-414, Electro-Mechanical Control

With the possible exception of It-315, all other courses were being provided through the Industrial Education
Department to education majors and non-majors alike. Yet, even with this obvious duplication of effort and services, "the new courses were approved unanimously by the faculty council on April 15, 1966. There were no objections from the University Senate" (Annual Report, 1966).

The Industrial Technology program at Miami University has as its objective role in the rapidly expanding fields of technology in the major areas of Electricity-Electronics, Computers, Machines, and Materials. It fills a large void in the educational field by providing a new approach to the solution for a sound preparation of work at the Bachelor's Degree level.

In view of the liberal arts thrust of President Millett's philosophy, it was sometimes difficult to ascertain precisely how and where the technology division fit into the University. It was assumed by some faculty members that a "hidden agenda" existed based upon political factors; an agenda which was to prove unfavorable to the educators.

The 1967-1968 academic year was an important point in the development of program at Miami. All members of faculty and staff participated in professional meetings such as the Ohio Industrial Arts Associations annual conference in Columbus and the Miami Valley Industrial Arts Associations meeting in Dayton.

Mr. Rueggeberg and now Dr. Shrader were noted in the 1967-1968 Annual Report for attending National Defense Education Act (NDEA) organizational meetings and successfully acquiring NDEA funds to conduct five of eight proposed workshops in the summer
Control; Mr. Kuzma with Modern Visual and Techniques; Dr. Shrader on Industrial Teaching Techniques, Industrial Safety Engineering, and Industrial Plant Security. These workshops, for both educators and industrial personnel, were a welcome addition of funding and prestige for the department.

The status of industrial education relationship to demand and the university was noted in the 1966-1967 Annual Report and gave an indication of the difficult times ahead.

The increase in enrollment of Industrial Education majors has been greater than anticipated for the 1966-1967 school year. Even with this increase, the supply of Industrial Education teachers is far below the demand, and enrollment should continue to increase greatly in the coming years. This will require a close look at equipment and space needs for the department in the very near future. Any further space utilization by other departments using Gaskill Hall will seriously affect the future of the Industrial Education Department.

Not only did the need for industrial arts teachers continue, but needed space was allocated to the Audio-Visual Department in later years. Equipment and space needs continued to be problem areas, and were later cited as contributing factors in the dissolution of the program.

Since Mr. Ramsey planned to retire as Department Chairman effective July 1, 1967, a search for a new chairman ensued. In March, Dr. Charles Bunten of the
University of Southern Illinois was contracted to fill the vacant chairmanship. Dr. Bunten began his work at Miami at the beginning of the 1967-1968 academic year, and continued through the closure of the department in 1982.

As the sixties drew to a close, the core of the Industrial Education Department remained much as it had been since the forties. The basic course load had seen some change, but the fundamental orientation towards woodworking, metalworking, and drafting had seen little change. A review of the courses offered for the academic year 1967-1968 demonstrated this fact.

With the assumption of the chairmanship, Dr. Bunten immediately reorganized the course offerings around the career cluster concept being advocated by the State of Ohio's Department of Education. The three conceptual topics were Industrial Education, Materials and Processes, and Visual Communications. This organizational shift was in response to national and state needs, as well as the need to update the image of the department on campus.

In the 1968-1969 academic year, several new courses were enacted to add rigor to the departmental offerings. With a new emphasis on research, the advanced courses had little difficulty in meeting the challenge of an increasingly academically oriented Miami. Even so, as Mr. Rueggeburg was noted for stating in his classes:
Miami is more interested in the why; while Industrial Arts emphasizes the how of the why.

The trend of Miami into the seventies of an increased emphasis on research and "scholarly pursuits" as opposed to the undergraduate education which was its stated mission, was the source of great difficulty to the department. While Industrial Education, and in particular the Driver Education program under Dr. Shrader continued to increase the number of students served, those students were of an increasingly non-major status.

In 1970, under the restructuring of Dr. Bunten, and further refinement of the stated cluster areas, several new courses were developed. These courses in many cases, were nothing more than updated or advanced levels of the older classes: but updated to reflect the philosophical and technical changes of our society.

281 Plastic Processing
281 Applied Electricity
312 Light Shelter Construction
321 Machine Tool Laboratory
331 Plastics Laboratory
335 Industrial Arts for Elementary Teachers
351 Technical Illustration
371 Engine Analysis
381 Applied Electronics
382, 383 Radio & T.V. Fundamentals
410/510 Seminar in Industrial Education
432 Experimental Materials and Processes Laboratory
434/532 Research in Materials and Processes
441 Advanced Photography
451 Design Analysis
464/564 Research in Visual Communications
494/694 Research in Power and Transportation
497, 498, 597, 598 Fundamentals of Aerospace Education
691 Contemporary Concepts in Industrial Education
The growth and development of the Industrial Technology major during this same period was somewhat less dramatic than that of the Industrial Education program. With the division of resources, both physical and human, Mr. Bowers and his School of Applied Science elected to emphasize the computer and business courses as an information base. While the Systems Program grew into one of the most powerful and influential programs on campus, the technology program suffered from inadequate staffing, resources and majors.

The 1971-1972 University Catalogue gave the first official voice from the Industrial Education Department that the major not only was designed to prepare students "to teach and supervise,..." but also could provide "career opportunities in related fields..." This obviously was an attempt to appeal to a more diverse segment of prospective students, without detracting from the central purpose, teacher education.

The Department of Industrial Education prepares students to teach and supervise Industrial Arts, Drivers Education, Aerospace Education, and Related Work programs at the Elementary and Secondary, and post high school levels. With the expansion and development of technical institutes and junior colleges, two year technical school graduates are encouraged to prepare for teaching in post high school programs.

Even though preparation for teaching is the major function of the department, completion of an Industrial Education program provides career opportunities in related fields in business and industry. Special technical
competencies may be developed by a careful selection of courses in a specific area.

A student majoring in Industrial Education will complete 72 hours of course work with a minimum of 20 quarter hours in at least one of the following areas of concentration: Materials and Processes; Graphic Communications; Power and Transportation.

In response to the Industrial Arts Curriculum Project (IACP), developed at the Ohio State University, Miami offered several summer workshops in that program. Seminars in manufacturing and construction were used as vehicles to introduce both undergraduates and returning graduate students to the rationale, structure, and materials of the project. While the materials and format were of the highest quality, the adoption of the IACP program by those in attendance at the Miami seminars was slight. This may be viewed as a response to the initial perceived cost of program implementation or to the "Here's what Ohio State's been up to" attitude pervasive at Miami. These courses were offered as Industrial Education 410/510 and 434w/534w through the coordination efforts of Dr. Martin and Dr. Shearer.

Throughout its history, Miami's Industrial Education Department had maintained a very conservative nature. The decade of the seventies, under the direction of Chairman Bunten (a non-Miami graduate), heralded the opportunity for change and advancement. While major changes never came to fruition, many subtle shifts are notable.
The first shift of the seventies, already noted, was a restructuring of the course offerings to reflect the emerging reorganization of curricula nationwide. This movement, given impetus by the IACP and the Jackson's Mill Curriculum project, was central to the continuing education of the Miami staff, and thus became an influence on the curriculum. The accepted cluster areas of Construction, Manufacturing, Transportation and Communication became organizational structures for Miami.

The second shift, also noted previously, was the redefinition and revitalization of specific offerings to better reflect industry, technology and research. No longer was the project the vehicle for instruction in all laboratories, a la Selvidge and Friclund. The curriculum of the seventies was organized to reflect a more academic approach to the technologies. A socio-economic analysis of industry and technology supplemented the project-process model of instruction.

The third shift, and possibly that of greatest promise to the department, was in the employment of a core of very gifted young faculty members who distinguished themselves immediately as both gifted educators and quality leaders in the field. The previously accepted policy of "hiring one of our own" had been broken with the employment of Professor Shrader in 1955, Chairman
Bunten in the late sixties, and was followed by the employment of Professors Martin, Shearer, Ginther, and Ziegler. (While Martin had completed his M.A. at Miami, his doctoral studies and subsequent professional duties had taken him from Miami to the University of Maryland).

The employment of "outsiders" provided a source of vitality and vigor to the environs of Miami (although with a definite University of Missouri university influence) allowed the faculty to question and to grow professionally. As the decade of the seventies drew to a close, and a new curriculum development effort was undertaken, this non-conservative Miami trend came to the forefront.

The fourth shift of the seventies was that of including greater participation among technical students, primarily at the Hamilton and Middletown regional campuses. Branch campus development proved to be a trend of great controversy, primarily in the areas of staffing, resources and credit. These programs flourished for a brief period but were destined to failure partly because of the political wrangling between the industrial education staff under Chairman Bunten and the technology staff under Director Bowers.

The main thrust of the controversy evolved around one central issue, that of subsidized support. Under a state approved formula, any technical program in education was funded at the educational rate of approximately $350
per FTE (full time equivalent). Due to special state support of non-educational technical programs, the rate per FTE was in excess of $700 for "tech" classes. After a prolonged period of negotiations by both Dr. Bunten and Dean Bogner with the Ohio Board of Regents (no staff included) for a special exception to policy, the Regents determined that no exceptions were to be made.

Complicating the funding issue was the administration of the program by Dr. Bunten of Industrial Education. Justification for administration and staffing at the lower educational rate caused personal conflict at most levels of the administration, including that of the Hamilton campus Director, Dr. Phelps. A feasibility study to ascertain the logistics of Dr. Bunten holding a dual chairmanship, answering to both the Dean of the College of Education (Bogner) and the Director of Applied Science (Bowers), resulted in a negative report on that possibility and it was dropped as a potential solution to the dilemma.

The program at the branch campuses, principally designed and developed by the Industrial Education staff, was assigned to the School of Applied Sciences in about 1976, under the chairmanship of Mr. Esposito. The program included apprenticeship courses for the General Motors Fisher Body Plant of Hamilton and advanced educational programs for the staff of the Champion Paper
Mill of Hamilton, to name only the two principal industries served. In later years, after the split in staffing and resources, the branch campus program suffered from the same reductions and difficulties experienced by the main campus technical program.

The seventies were marked by an increase in faculty. With Professor Shrader taking principal responsibility for the Driver Education Program (beginning in 1967) where growth exceeded the rest of the department, resources were made available for graduate assistants to assist in laboratory instruction and supervision. Dr. Martin, who had replaced the retired Dr. Foss in the woods courses, became widely known professionally for state and national activities including being president of the Ohio Industrial Arts Association (a second for Miami, after Dr. Whitesel). Both Dr. Martin and Dr. Shrader, because of their state and national affiliations, along with others such as Dr. Whitesel (Executive Director of EPT), were responsible for an increase in the prestige and respect afforded the Industrial Education Department.

Staffing in such areas as the electricity/electronics laboratories proved to be an unsettled area within the department. Dr. Ziegler, while providing a growing and enriched program, left the classroom in the late seventies to participate as the Industrial Education representative on the Dean's staff investigating the state
mandated Teacher Education Redesign. While several very capable individuals instructed in the laboratories in the absence of Professor Ziegler, such as Dr. Hardin and Dr. LaPorte, the sense of continuity and direction was lost. The program, initially nurtured by Professor Shrader as an outgrowth of his "radio theory" courses of the late fifties, was to remain an area of incomplete potential utilization.

The automotive courses, assigned to Professor Shearer in the early seventies, also were an area of controversy throughout the later years. University opinion of the college level instruction of mechanics and automotive courses was relatively low, leading to sparcadic funding and low esteem. The physical location of the laboratories, virtually under the power plant smoke stack, added to its low visibility and image. With a university shift to a semester program in 1978, scheduling for automotives courses under Dr. Shearer increased dramatically. By 1982, five full sections of automotive courses were offered, thus providing for additional FTE's. In excess of $10,000 was spent from 1979-1982 to upgrade the laboratory.

The graphic arts program, under the direction of Professor Kuzma flourished in the seventies. Primary areas of interest, though, were in the photography courses and silk screen printing areas. Technical Graphics, Type-setting, Office Lithographic Processes, and other classes designed for area majors saw little growth and were
offered only as needed. Once again, courses which attracted a high number of non majors were very popular.

The crafts laboratory also was an area of tremendous demand and utilization. Required of Interior Design majors and highly thought of by many liberal arts majors, the crafts area also provided for high enrollment of non-majors. Courses such as Lapidary, General Crafts, Leatherworking, Plastics and Model Building were alternately taught by the staff, though principally by Dr. Ginther. It was not unusual for Industrial Education majors to get closed-out of scheduled required courses in the laboratory for one or two quarters because of the tremendous demand.

The late sixties brought the retirement of Professor Whitesel from the Aerospace Education Program and the Industrial Education Department. The program which had grown from a single service, course in the late fifties to a fully funded and internationally recognized program in the mid sixties was to exist but three years after his retirement with those three years as a division of the Industrial Education Department. The dynamics of staffing had once again proven to be at the very center of program vitality. While Professor Whitesel was replaced by very capable individuals, his network of contacts and intimate involvement in the program had proven to be the two factors which could not be replaced. And so, an
area which provided majors within the Industrial Education program dwindled into oblivion.

Through the final years of its existence, during the early eighties, the Industrial Education Department continued to provide a quality educational product to a clientele which continued to be in demand. Into the eighties there existed few universities in Ohio which continued to maintain Industrial Arts certification as an option. The Ohio State University specialized in graduate education; Kent State, Bowling Green, and Ohio University offered programs into the eighties that were primarily non-teaching options in technology. Also producing a few teachers were Ohio Northern University and Central State University and Wilmington College. Miami was the principal source of Industrial Arts teachers for the Southwestern Ohio service area, in a period when the demand for industrial arts teachers had decreased from its peak in the mid seventies, the demand for teachers continued.

The final years were marked by a change in the faculty of the department. Professors Whitesel, Ramsey and Foss had retired and gone on to other pursuits. Professors Kuzma and Rueggeburg were enjoying partial retirement by teaching only selected courses not exceeding one semester per year. Professor Ziegler had become increasingly involved with the Dean's staff in the re-design of Miami's teacher education program, and less involved with instruction in Industrial Education.
Professor Martin resigned to assume the chairmanship of the Industrial Education Department at Southwest Texas State University in San Marcos, Texas. Professor Shrader, involved with students registering for the Driver Education Program, was virtually removed from the mainstream of Industrial Education instruction. Professors Land, Shearer, Ginther and Bunten continued to teach and administer courses as a foundation or core staff. Instructors Mills, Ross, Ahnor and Schueger assumed the ever increasing role of "utility" teachers, covering courses as needed.

A review of the University Catalogue of the final year of the program 1981-1982, provided the source information for several observations as to the progress shown by the department (Appendix P).

1) Many "old friends" continued into the curriculum of the eighties: introduction to woods, metals, the automobile, electricity, drafting and graphic arts.

2) A new curricular area had been introduced as the study of the relationships which exist between labor, management, society and materials.

3) Many courses remained which had skill development as their fundamental basis, as designated by their "ing" suffix: Machine Wood Processing, Machine Metals Processing, Plastics Processing, Surveying, etc.

4) Advanced levels to all topical areas had been developed as advanced skill development courses.

5) Several courses which had disappeared in the early 1900s had reappeared: Industrial Arts for elementary schools, Instructional Procedures.

6) Driver Education had expanded its offerings to rival those of the entire 1906-1907 Practical Arts Program.
In the spring of 1982 in the midst of a reported severe budget crisis in the State of Ohio, the Industrial Education Department at Miami University was dissolved. The logistics, reasoning, and rational for this action are outlined elsewhere in this investigation. Suffice it to say that at the time, it existed as one of the strongest staffs educationally in the College, and outside funding sources rivaled any found elsewhere in the College of Education. The decision was enacted which immediately caused the program to cease as a viable entity within the University structure.

DRIVER EDUCATION

Automobile related courses at Miami University began during the 1925-1926 academic year. It was housed in the Industrial Education Department. It began as a single course and had grown into a full program area granting both undergraduate full degree titles and graduate degrees. The program continues to be offered as a division of Health, Physical Education and Recreation Department.

The 1925-1926 University Catalogue cited the first Automobile related course to be offered formally by Miami University.
420 Automobile Theory and Practice. A thorough study of all phases of Automobile Mechanism, Repair and Operation is made through class discussions, readings and shop practice. Some of the topics considered are the frames and springs; steering gears and front axles; rear axles and brakes; clutches; transmissions and universals; engines-parts, troubles and repairs; oiling, cooling and fuel systems; ignition and batteries; starting motors and generators; tire construction and repair. Garage shop methods and repairs, making auto tools, painting etc., are given consideration. Automobile designing, the mathematics and working drawings of the trade, equipment for garages and shops receive class attention. Cars of four or five makes are used in the shop. Text: Kuns, Automotive Trade Training. Four hours credit. Mr. Hobbs.

The next year, 1925-1926, the University Catalogue listed the following course offering within the Industrial Education Department. While lower numbers usually indicate an earlier development, this course series seems to have developed in reverse.

410 Automotive Theory and Practice. Automotive Mechanism, repairs and operation; garages shop methods; construction of automobile tools. Cars of four or five typical makes are included in the shop equipment. Four hours credit. Mr. Hobbs.

Looking at the course descriptions from those two initial years, a question naturally arises. Even with the simplified systems of the mid-1920s, how could two four-hour courses adequately cover the scope of topics presented? It can be assumed that under the leadership of Professor Whitcomb, an avid automobile enthusiast, and Mr. Hobbs, these courses were designed to survey the topic area and to promote interest in it.
Formal training along with the availability of automobiles and their parts and tools made even the most basic of courses a challenge.

In 1928, Professor Albaugh took charge of the automotive courses, offering the 410 Theory and Practice course. His interest in transportation systems provided the necessary vitality to promote the automotive courses into the early forties, at which time Professor Yaekle assumed control.

From 1938 to 1941, Professor Albaugh taught not only the Automotive Theory and Practice courses, but also designed and instructed Operating an Automobile. This course, which emphasized responsibility, maintenance, economy and beauty was at the forefront of the Driver Education movement. His published text, A Series for Junior High School Driver Education, gained widespread acceptance as a learning activity supplement (Kovach, 1980).

Of importance to the development of the Miami program were events occurring state-wide in the Driver Education field.

In 1938, Cleveland Public Schools developed a program in cooperation with the Cleveland Automobile Club whereby every high school offered Driver Education and Training under a trained teacher. In July of 1939, the Ohio Traffic Safety Council was first organized. It consisted of public officials and public-spirited citizens who believed that public support of traffic safety was vital in attaining effective and balanced programs in order to reduce the
extremely high rate of traffic related accidents and deaths. In 1941, Cleveland adopted the first city-wide program of Driver Education (Kovach, 1980).

In response to the growing sentiment in the state, Professor William Yaekle at Miami organized and taught such topics as Traffic Rules and Regulations, Mechanical Techniques and Corrective Measures. Though this course was technically "on the books", its full implementation was slowed due to World War II.

The Ohio Legislature, in 1942, gave further impetus to the Driver Education movement in Ohio, by adopting section 6296-II (d) of the General Code of Ohio. The legislature provided the necessary legal push to make formalized and creditable Driver Education a reality.

The registrar may in his discretion waive the examination of any person applying for license who presents a certificate indicating that he has satisfactorily completed a course of instruction in Driver Training, provided, however, that the State Department of Education must have approved the course of study as meeting their minimum requirements and allow credit for the completion of the course.

The late forties brought rapid movement state-wide into the Driver Education field. Within an increasing number of public school systems, offering the courses for the first time, the demand for a teacher certification programs was great. Andrew Kovach, in an unpublished 1980 paper on the early development of Driver Education in Ohio, gave the following account of the events of
In 1947, the Governor of Ohio, Thomas J. Herbert, appointed a Traffic Safety Committee of State officials to study the Traffic Safety problems and to coordinate the safety activities of all state department concerns in any way with the activities of the Ohio Traffic Safety Council and other interested groups. (Shaffer, 1947). Between the years 1947-1948 state approved courses to train high school teachers in Driver Education and training were initially established at Miami University, Kent State University, and Wilmington College...

The need for formalized, state approved courses became more apparent in the school year 1948-1949, approximately 200 high schools in the state of Ohio were offering courses in Driver Education and Training! This represented more than a 100 percent increase over the school year 1945-1946.

At Miami, between the years of 1941 and 1953, Professor William Yaekle taught the course Driver Education and Safety, along with the Automotive Theory courses. His expertise in, and love of the automobile, provided a firm basis for the development of the curriculum. These attributes contributed to Professor Yaekle's becoming a regional troubleshooter for the General Motors Corporation when he left Miami.

With Professor Yaekle's departure, Professor Ramsey assumed the teaching load and direction of the Driver Education program. This also was at the time when Professor Shrader was employed to further develop the Automotive curriculum area. The late fifties saw little movement in the Driver Education program, existing primarily as a
one-course certification area.

The 1960-1961 Annual Report noted a turning point in the development of the program.

The department has its own Driver Training car which eliminated dependence on the Oxford automobile dealers for gratuitous service.

Implied in this terse statement is the University's dislike of relying upon outside sources for services provided to its students.

When Professor Ramsey assumed the department chairmanship in 1961, Driver Education was assigned to Professor Robert Shrader. Driver Education seemed to be a natural extension of Professor Shrader's initial involvement with transportation systems. Having developed the advanced automotives courses, and as director of the "Technical Automotives for Industrial Arts Teachers" program in cooperation with General Motors from 1956-1967, he had exhibited a dedication which would prove to be a driving force in the field.

The decade of the sixties remained relatively quiet for Driver Education at Miami. Two events of note did occur which had a positive affect on the program. The first was Shrader's development of the 467 Organization of Driver Education and Highway Safety course.

Problems of traffic and highway safety and the development of techniques, methods and materials of program development (University Catalogue, 1968-1969).
The second event, as noted in the 1966-1967 Annual Report was the development of a media program by a Driver Education Graduate Assistant.

Mr. Treadway, in cooperation with Dr. Jack Neil and Driver Education teachers in the WMUB-TV viewing area, has organized a television course in Driver Education. "Sportsmanlike Driving" consists of thirty television lessons and will first be televised this fall.

Professor Shrader became the director of the Driver Education program in 1968. As such, he was able to utilize his energy and personal resources to capitalize upon an era of rapid growth and technological change in the field of driver education.

In 1969, the Driver Education program received its first simulator as a result of state funding. The Link simulator, a rather impressive white trailer unit, was located alternately at the Hamilton Campus and the Oxford Campus. It provided state-of-the-art instruction in a non-hazardous environment, capable of instructing sixteen students in a variety of skill, decision-making and perceptual areas. This large white trailer was accepted by the University as a temporary structure, and housed in "out-of-sight" locations.

The first Ohio course in Driver Education Driving Range Management was offered at Miami in 1970. This program, when combined with simulator use and the creative energy of Professor Shrader, produced other firsts for Miami:
1) Alcohol-Drugs and Driving course for Driver Education teachers (1970)
2) Alcohol-Drugs and Driving for Ohio College and University Professors (1971)
3) Driver Education-Special Education for Driver Education and/or Special Education teachers (1972)
4) Recreational Vehicles Workshop (1974)
5) Recreational Vehicles: Motorcycle Education for Teachers (1972)

Other firsts for Driver Education at Miami included the Programmed Learning Systems for Driver Education (a multi-media approach, 1975) and the Driver Education Administration and Curriculum Update of 1979.

Interspersed amongst the series of "firsts" was a practical and systematic curriculum development effort. The 1981-1982 University Catalogue noted the following course offerings:

- 293 Driver, Traffic, and Public School Safety Education
- 393 Organization and Administration of Driver Education and Highway Safety
- 495 Practicum in Driving Simulators
- 694 Research in Driver Education
- 596 Driver Education Range Management

It can be concluded that not only did the Driver Education program promote the basic concepts of Driver Safety, but also it was the vehicle by which advanced studies in safety education were conducted.

The program under Professor Shrader had an impact upon the Industrial Education Department that was two-fold and of great significance. The first major contribution was increased enrollment and its resulting influence. The second was that of attracting increased resources especially with outside funding.
As related to the first contribution, the State of Ohio, and the country in general, increasingly became aware of the death toll upon the highways during the seventies. Courses in Driver Education achieved a level of acceptance and credibility heretofore absent. With this acceptance and attention grew an increased emphasis upon certification and career possibilities. Certification requirements increased from the minimum of one course in 1970 to three courses required by the mid-seventies. As an extra-school activity, it provided a convenient second area of certification for teachers and the resulting second source of income.

Interest in and demand for Driver Education courses at Miami grew from fewer than 100 students enrolled in 1970 to over 500 enrolled per year in 1981. At a time when the College of Education was suffering from fluctuating enrollments, Driver Education was staging a 500% increase. This high enrollment figure served to boost the overall totals of the Industrial Education Department, although the vast majority of students served were non-major undergraduate students. Aiding in enrollment was the push for certification of all Physical Education majors in driver education.

The tremendous popularity and attention given the program allowed for the support of an
average of two graduate assistants per year from 1969 through 1982. It also supported the acquisition of physical resources such as the multi-media laboratory, office and administrative support, travel and development funds, and automotive laboratory equipment.

Between the years of 1969 and 1979, Professor Shrader was successful in having twenty one (21) federal and state proposals accepted and funded through which Miami gained more than $182,154 (Shrader, 1982). In 1971 Professor Shrader successfully secured $159,000 of federal and state monies for development of the Southwestern Ohio Safety Center to be constructed on the Hamilton Campus. Technical and logistical problems precluded the utilization of those funds and they reverted to the funding agencies.

This extremely large amount of funding placed the Driver Education Program as either first or second in the College of Education of areas attracting outside funds through the seventies. Aside from the obvious positive results of such funding, several sources have noted a sense of resentment or jealousy throughout the Miami educational community. In an era of progressive difficulty in the acquisition of resources, it seemed as if the Driver Education program constantly was receiving funds.
Professor Shrader, in an interview on April 21, 1986, noted his success at acquiring funds:

I was always on top of what the legislatures and congress were up to. If they announced an allocation of $150,000 for research on a particular topic, a few months later announcement would come that some other university or organization had been granted $135,000 or $145,000 of that money. I went after the five or six thousand that was going to slip by—or the ten to fifteen thousand. I was never very greedy, but I couldn't stand to see that money just lie there either.

In much the same fashion as he remained abreast of funding sources, Professor Shrader remained state-of-the-art in terms of research and legislation pertaining to Safety Education. A topical review of several of his other activities revealed his total commitment to the field.

- Member of the Advisory Committee on Driver Education for the Ohio Department of Education
- Executive Committee Chairman of the Ohio Driver and Safety Conference, 1974-1977
- Chairman of ODSEA Committee on Legislative hearings for Driver Education in Ohio, 1975, 1976, 1977
- Instrumental in the formulation and writing of Ohio State Standards for Driver Education in 1969, revisions in 1972 and 1978
- Participation in over twenty North Central High School Evaluations
- Hosted at Miami the National Student Safety Program
- Participated in the development of a curriculum in Traffic Safety Education for Jacksonville State College of Alabama in 1977
- Assisted in Training Indiana State Troopers in emergency Driving procedures and Motorcycle Education, 1977 and 1979
- Member of the National Safety Commission
- Presented numerous papers at national, state and local meetings or conferences
- Coordinated Free vehicle inspections in Oxford (1972-1976) in cooperation with local authorities and the Ohio Highway Patrol
• Conducted Traffic counts for Oxford, 1976
• Conducted Pedestrian Traffic Survey for Oxford in 1977
• Conducted Bicycle/Pedestrian Safety Seminars in Oxford, 1979-1980
• Helped organize Butler County's DWI Counter Measures Organization, 1975
• National "Policies and Guideline" series co-chairman while representing Ohio Colleges and Universities to the fifth National conference on Safety Education in 1978

Professor Shrader's commitment to safety education provided the opportunity for many students to participate in the resulting activities. His achievement of having a great number of projects underway concurrently was successful in maximizing student involvement and in the diversification of influence by the program. It was, however, not always looked upon favorably by all members of the Miami educational community who concentrated their efforts on one scholarly project at a time.

Possibly the most lasting influence upon the field of Driver Education that can be attributed to Professor Robert Shrader was the nurturing of his son, Professor Joe Shrader. Dr. Joe Shrader graduated with a B.A. from Miami's Industrial Education program in 1973. He received the M.Ed. from the Driver Education program in 1974. Then in 1979, he was granted a Ph.D. in Driver Education from Michigan State University. He now is a tenured faculty member of the Driver Education Department at Eastern Carolina University in Greenville, North Carolina. He has "taken-up the slack" created with his
father's retirement and continues the tradition of quality Driver Education which was so central to the Miami program.

As of this writing, the Driver Education program at Miami has been transferred to the Health, Physical Education and Recreation Department at Miami. The Master's level programming has been virtually discontinued due to the fact that Professor Shrader was replaced at retirement by two instructors: both lacking graduate ranking. This situation has left the State of Ohio without a graduate level degree program in Driver Education.

SUMMARY

The topical area which was to become the Industrial Education began in 1904 as several introductory Manual Training Courses within Miami University. Beginning in 1906, under the direction of Professor Fred C. Whitcomb, the Practical Arts Division experienced growth and diversification which came to include thirteen separate major areas by 1940. Initially it began as a two-year certification area, primarily for female elementary teachers. Only then a four-year curriculum was begun in 1912 and a graduate program in 1930.

Graduate or Teaching Assistants in laboratory classes were used widely by senior faculty members, with many of
those assistants themselves later assuming faculty positions. Prior to the employment of Professor Whitesel, and later Professor Shrader, only Miami graduates were appointed to the staff of the department. This policy continued to be the norm until Professor Ramsey became chair. Under his chairmanship, more "outsiders" were hired, though not to the exclusion of Miami graduates.

The department responded to the climate of World War II by modifying its course offerings sharply. Participation in such government programs as the V-12, Radio School, and Civilian Flight Training provided for the maintenance and upgrading of facilities, and an entrance into such topical areas as electricity, surveying, and construction techniques.

The post war years, under the direction of such scholars as Professors Stoner and Whitesel, brought an expansion of facilities, program, and staff. Up-to-date facilities were constructed and equipped, much of the major stationary equipment resulting from the post-war surpluses.

Faculty and staff participation at local, state, and national levels was instrumental in the establishment and nurturing of such organizations as the Ohio Industrial Arts Association, the American Industrial Arts Association, the American Council of Industrial Arts Teacher Educators,
and the Ohio Driver Safety Education Association. This participation not only provided a forum for professional growth among those directly involved, but also established a practical model of professionalism for the pre-service population.

The Driver Education program, under the direct leadership of Professor Robert Shrader grew from a one course service area into a multi-course program offering both an undergraduate minor as well as the only Master of Arts Degree program of its type in Ohio. In the late 1970's and early 1980's, it generated more student credit hours and outside funding dollars than any other single area of the Department. Innovative courses and their respective necessary equipment provided the department with high positive visibility and a state-of-the-art equipped certification area: range management and range, simulation and simulator, multi-media production and equipped classroom, drug-alcohol programming, and perceptual equipment.

The Aerospace Education program although not a direct part of the Industrial Education Department was under the direction of Dr. Whitesel, a professor in the Industrial Education program. Its rapid growth pattern was similar to that of Driver Education. As a fully self-supported program, it provided a center of scholarly productivity
in curricular area which promoted a future-focused technological base. After the retirement of Professor Whitesel in 1969, staff instability and waning administrative support contributed to the decline and eventual closure of the Aerospace Program in the mid seventies.

The graduate program, formally adopted in 1930, provided for both the recertification and advanced degree areas of many teachers from the southwestern Ohio. Courses were designed to provide for indepth study and skill development in every topical area within the department. Innovative curricula such as the Industrial Arts Curriculum Project of The Ohio State University, were presented within a summer seminar format in an effort to provide state-of-the-art philosophy and program development.
CHAPTER V
THE DISSOLUTION OF INDUSTRIAL EDUCATION
AS A DEPARTMENT AND PROGRAM AREA AT
MIAMI UNIVERSITY
AN INTRODUCTION

In the spring of 1982, by order of the University Senate, the Industrial Education Department, the Guidance Department, and the McGuffey Laboratory School were dissolved. For the purpose of this study, only the dissolution of the Industrial Education Department has been detailed.

The American Heritage Dictionary defines dissolution as:

2) Termination or extinction by deconcentration or dispersion.
4) Annulment or termination of a formal or legal bond, tie, or contract.

The Industrial Education Department was terminated, as per definition, by an orchestrated deconcentration of faculty and resources. While the formal annulment of the bond which maintained the department as a University entity was immediate, the dispersion of resources (both physical and human) took approximately four years to complete. The acts governing this dissolution served as the primary thrust of this chapter. Secondary, but not necessarily lesser importance, were the mechanics of the post 1982 years.
From a management perspective, it would be expeditious to assert that as of 1982 an Industrial Education Department at Miami University no longer existed. In reality, as determined by a careful review of the contributions and legacies of the program as outlined in Appendix P, it appears as if the impact of the department will continue for many years to come. While there is no formal framework within the University in which the Industrial Education Department may exist, the components remain for the fulfillment of Woodward's charge:

Hail to the skillful cunning hand!
Hail to the cultured mind!
Contending for the world's command,
Here let them be combined.

It should be made clear that no finger points to any one person, event, or circumstance which brought about the demise of the Miami University Industrial Education Department. The writer interviewed or corresponded with as many people who were involved with the department as could be located over a two year span. Many different theories were ventured as to the causes and effects of the department's dissolution. The effects were far more easily documented than the causes. For every problem there is a solution which is simple, direct, and wrong (Mencken, 1980).

Changes in the administrative roles at the University brought with them changes in policy and philosophy, as well as procedure.

From the beginning, the Industrial Education Department was like a family. The members looked after
each other, celebrated happy events together and consoled each other in sad times. A closeness still exists among those who were part of that faculty (Shrader, 1986).

Changes within the department were discussed and decisions made on the basis of consensus. Therefore, it came as a particularly shocking upheaval when an arbitrary decision to dissolve the department was announced. There would be no arbitration, no compromises and absolutely no question of maintaining the department. The "family" was broken asunder. Members with tenure and too young to retire were scattered among other disciplines: Home Economics, the Dean's staff, Career Planning and Placement, and Health and Physical Education.

Retrenchment can often distort traditional patterns of supervision and control...a historic, workable pattern of decision making can evolve into a stalemate and mutual blaming under conditions of retrenchment (Gilmore, 1983).

At the time of dissolution there were many questions to be answered. Some were immediate: what happens to the equipment? How long before the building and facilities must be vacated? What was to become of the staff in regard to rank and tenure? What was the status of student majors within the department? How would non-majors fulfill requirements for service courses such as Drafting and Driver Education? Other, more long term questions also arose: Where would the service area of Southwest Ohio turn for Industrial Arts Teachers? Where would part-time graduate students complete their programs? What impact might the closure of the Miami program have elsewhere?
Psychologists assert that a basic requirement for the best possible mental health is that of feeling needed and wanted and appreciated. Professors who had spent their professional lives preparing for and teaching a discipline they felt was worthwhile and which contributed to the betterment of society were embarrassed, frustrated, and bitter to be told they were no longer needed or wanted. They did not feel appreciated.

An example of a lack of consideration was shown for the department by the University at such a traumatic juncture, example not conducive to good teaching and learning, was to be teaching a class while someone from "across campus" was going around the room "with a tape measure in one hand and a coffee pot in the other" preparing to move in. This type of incident occurred on an increasingly frequent basis as the last few months of spring, 1982, progressed (Shrader, 1986).

Objectivity is difficult, perhaps impossible, when educators participate in such a disheartening operation. It also is difficult when pain is recent. Four years after the dissolution of the Industrial Education Department at Miami University, it was easier to step back and review the events more logically than before. There was the danger, however, that given too much elapsed time, important dates and events would be lost as personnel move, or forgot and consequently that valuable information would have been lost for all time.

"The times they are changing." A major question, difficult to answer seems apparent. Was Industrial Education, as it was taught at Miami, obsolete? Would an attempt to attach
to the surge in business and technology in such areas as robotics, industrial safety and industrial design have changed the result?

Within every organization, there are two opposing forces at work. One force works towards growth, change and innovation; the other, towards stability, continuity, and repetition. Both forces are necessary and desirable. It is no resolution to the resulting dilemma to attempt to abolish the one force or the other.

In systems parlance, the forces are referred to as the need for an adaptive mechanism and for a maintenance mechanism.

Domination of either the maintenance mechanism or the adaptive mechanism is an untenable situation which soon kills the organization. The organization dies either of lethargy or over-exertion. Too much change can be as harmful as too little. Too little growth leave one stunted; too much, cancerous (McLaren, 1982).

Max Rafferty, late U.S. Commissioner of Education, in an article in the Hamilton, Ohio, Journal News (no date) once stated that the American symbol should not be the eagle, but the pendulum. In no segment of American society is this more true than in the philosophy of education. It is possible that, more than any other one factor, the swing of the pendulum brought about the demise of the Industrial Education Department at Miami University.

In the early days of Miami, the value of work with the hands in a skillful fashion lent itself to the emerging educational theory of John Dewey and others. Knowing "how" was an integral component of any body of knowledge. In the rush towards increased specialization and scholarship, an elitist attitude developed which left the general practitioner in low esteem.

Attempts have always been made to measure the results of teaching. These always have fallen short because of that
immeasurable, but most important of all, factor: the ripple effect. This is described as the impact of one teacher on one student when that influence carries into future society.

It was the German Rationalist Hegel, who observed that history always has its thesis, antithesis, and synthesis. The thesis is not difficult to recognize and to state, nor is the antithesis. It is the synthesis, that melding together of the positives and the fancies (none deliberate, but unavoidable in an emotion-charged situation) to come to an objective, logical, and accurate conclusion which presents the challenge and the reward.

A homely poster found hanging in the home of one professor succinctly but accurately states thesis, antithesis, and synthesis applicable to this study:

The society which scorns excellence in plumbing as a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water.

THE DISASSOCIATION OF A DEPARTMENT

The actual decision to dissolve the Industrial Education Department, and the actuation of that decision, were very swift. The reasoning given at the time was brief and not open to comment nor question.

As reported by the Futures Planning Task Force of the School of Education and Allied Professions in their report of February 25, 1982, the main thrust behind the dissolution of the department was a severe budgetary crisis (Appendix N).
Because of an unpredicted shortfall in income, the State of Ohio in January 1982 announced significant reductions for colleges and universities for the present academic year and even greater reductions for 1982-1983. These events forced a change in the amount of reductions from $300,000, which would be cut from the 1982-1983 budget and $200,000 from the 1983-1984 budget. The dean would reduce $100,000 by 1982-1983 and the task force would reduce $400,000 (Task Force Report, 1982).

This budgetary crisis did not come as a great surprise nor without warning. The State of Ohio had recently elected a new Governor, Richard Celeste, which signaled a change in state political dominance. With any change in leadership is expected some philosophical and political posturing, as a method of creating image (Cyphert, 1980).

The administration of Governor Celeste made issue of the fiscal policies of the previous administration under Governor James Rhodes. A "sea of red ink" was declared at the state level, and a crisis mentality swept over the leadership of Ohio in response to the projected deficits. It was within the circus atmosphere of a state budgetary crisis that the Miami reductions were declared (R. Shrader, 1986).

Lending to the College of Education and Allied Profession's early warnings was a review of enrollment patterns. Since 1974, with some initial fluctuations, the enrollment pattern of the college had dropped significantly. From a high of 39,088 total semester credit hours in the fall of 1974 to a low of 25,706 credit hours in 1980, the college had experienced a negative 26.09%
movement. While enrollment increased by 5.28% in 1981, the dramatic drop did not go without notice (Task Force Report, 1982).

The drop in enrollment of the college was not a phenomenon specific only to Miami University. National trends of the seventies saw a downturn in enrollments and a decrease in demand for teachers. It should be noted though, that some areas of certification remained areas of need with a demonstrated shortage of teachers, such as science, math, and industrial arts (Task Force Report, 1982).

Perhaps it should also be noted that the enrollment count was only of majors in the field. No provision was made to count majors in other disciplines who elected industrial education "service courses". This accounted for much of industrial education enrollment.

During the seventies, the Industrial Education Department enrollment patterns closely paralleled those of the rest of the college. From a high of 56 undergraduate and 29 graduate degrees awarded in 1976, the numbers decreased to 38 and 15 respectively during the 1980-1981 academic year. Even with this marked decrease in graduates, the student credit hours (FTE's) generated by the department remained relatively stable (Task Force Report, 1982).

One more confounding facet of the enrollment and budget reductions was that of the instructional staffing ratio. The previously noted Future Task Force Report called
attention to the disparity in staffing formula numbers for
the college:

A report to the Executive Vice President for Academic
Affairs and Provost concerning the Oxford Campus
instructional staffing, November 19, 1981, shows the
School of Education and Allied Professions with a
budgeted full-time equivalent staff of 144.50. By
contrast the modeled FTE staff called for 123.08
(graduate award holders budgeted to the instructional
staff were counted as part of the staff when teaching
fellows equal 1/3 FTE and a graduate assistant equal
1/4 FTE. Instructors hired with Teacher Education
Redesign funds were also counted as part of the budget
staff.

Another set of data compares the six academic divisions
with budgeted faculty and their use of the instructional
and departmental research budget dollars, enrollment,
and student credit hours. EAP accounts for 17.6 per­
cent of instruction and departmental budget, but con­
tributes 15.3 percent of the enrollment and 13.96 per­
cent of the student credit hours.

With the college taking a disproportionately large share of
the available monies, it was only a matter of time before a
realignment took place.

All retrenchment can be viewed ultimately as feedback
from the wider environment about the relative value
of the organization's goods or services to persons
outside of the organization (Gilmore, 1983).

In an effort to address the issues of declining enrollment
and budget shortfalls, a Futures Task Force (previously noted)
was appointed to make specific recommendations as to how those
shortfalls should be reconciled. Noted in the February 25,
1982 report, was the following three-pronged charge:

1. Develop recommendations as to the future directions
for EAP commensurate with an anticipated reduction
in resources.

2. Formulate recommendations as to how the divisional
budget can be reduced by $300,000-$400,000 for the
1983-1984 academic year.
3. Formulate recommendations as to how budgets in some departments/units within the division may be increased through reallocation of resources.

The Task Force, with its charges, was composed of six members from the college. Dean Jan Branch participated as an ex-officio member and Professor Charles Skipper served as the formal chairman. Much to the credit of Professor James T. Ziegler of the Industrial Education Department, his recent activities on the Dean's staff in the State Teacher Redesign effort enabled him to secure a position on the Task Force.

The Task Force, in dispatching its duties, collected a variety of data from many sources. The methods of data gathering were apparently as diverse as the persons questioned. Questionnaire responses were returned from the faculty (37), chairs (8), Assistant Deans (3), service unit directors (4), selected faculty (17), faculty who requested interviews (25), the Provost and the Associate Dean of the Graduate School. There was an open meeting for the faculty and staff. Hence they were presented the quantitative indicators of faculty ratios, student credit hour productivity, income expenditure index, cost per student credit hour, number of majors, number of degrees awarded, and employment demand (Task Force Report, 1982).

Because budgets are quantatative judgements, data must be quantified to be included. The process of quantification, however, is most often an arbitrary judgment as to the quality of the program, or why citizens have chosen the program (McLaren, 1982).
A review of the Task Force report (Appendix N) revealed the nature of the data collection and analysis. The format was quite open-ended and subject to individual interpretation. Follow-up interviews were conducted in an attempt to alleviate any misunderstandings which might have arisen from written responses.

In the midst of the data gathering and analysis, a siege mentality was evident throughout the Division. The magnitude of the projected cuts was so great that no one staff member was assured of being spared from the eventual reductions. To compound matters, the final report deadline for the Task Force was advanced by one month, from April 1 to March 1, 1982. Needless to say, activity was intense and as efficient as possible given the constraints of time and staff (Ziegler, 1985).

The Task Force examined each service and administrative unit using the following criteria:

1) Was it an essential service?
2) Was it important but not essential?
3) Not important to our mission?
4) What will the demands on the unit be like in the next five to ten years?
5) Could there be reductions, reorganization or expansion?
   (Task Force Report, 1982)

Within their analysis of data the Task Force established elimination targets. These were determined by convergence of the identification of low ranking by chairs (or verbal identification of dispensable programs) and an analysis of low statistical indicators. Addressed in the data analysis
were the following questions pertaining to those elimination targets:

V. Can unique value of Elimination Targets be established now or in the future:
   A. Evidence of national, regional or state reputation of program/faculty as leading in the profession.
   B. Evidence of program fulfilling an important social need.
   C. Evidence of program fulfilling an important need or value (divisional significance).
   D. Evidence of probable turn around in near future of low status (definite foreseeable change in employment market, student demand, etc....

VI. Can unique value of Elimination Targets be established now or in the future:
   A. High chair/low statistics (same as V, A.B.C.D.)
   B. Low chair/high statistics opposite evidence to V, A.B.C.D.)

VII. For non-unique Elimination Targets and Reduction Targets programs, identify number of visiting and non-tenured faculty and determine savings through non-renewal of contracts and elimination of support services and resources.

VIII. Determine transfer possibilities (or retraining needed) for tenured faculty in Elimination Targets and Reduction Targets based upon identification of programs with high statistical and high chair convergent ratings needing additional support (development targets.)

After a somewhat hurried analysis of the data, proposals were taken before the Task Force by individual members. Each proposal was voted upon after considerable discussion. Only those proposals which received a majority of affirmative votes appeared in the final report. On February 25, 1982, (four days ahead of schedule) the proposals were published in the form of recommendations (Ziegler, 1985).
Of the seventeen Task Force recommendations, fifteen were adopted. The only major changes were in numbers eleven and thirteen. Recommendation eleven was reversed to eliminate a half-time teacher assistant position in the nursery school. The reversal of recommendation thirteen brought about the closure and dispersal of the McGuffey Laboratory School.

Of great impact was recommendation number seven. On a split vote of 3-2-1 the Task Force recommended the elimination of the Industrial Education Department from Miami University. The abstention came from a faculty member who felt a moral obligation to not participate in this particular vote (Ziegler, 1985).

Recommendation 7 - The Department of Industrial Education be dissolved effective 1982-1983. This would include elimination of one secretarial position, the Department Chair position and operating expenses. Retirements should not be replaced and the tenure track position should be eliminated in 1982-1983. The redesign funds supporting the two visiting faculty revert to the Dean's office.

The Driver Education Program should be transferred to the Department of Teacher Education.

It is the judgment of the Task Force that there will never be sufficient resources to update and maintain the laboratories and there has been a consistently low number of graduates over the past twenty years. Further, it is the judgment of the Task Force that Industrial Education is not a high priority program in the School of Education and Allied Professions.

With the publication of the report, it was only a matter of days before the recommendations were only slightly modified and adopted. In accepting the report, the college was to

The most common form of retrenchment is to distribute cuts more or less evenly across all units. This option is politically more feasible than cutting of an entire program or department because it is less likely to be sharply contested. The consequence of this approach is that a cutback hurts those that deserve it the least, that is, the most efficient. A highly efficient unit has the greatest difficulty implementing a retrenchment order since it had operated with less fat in the paste (Miles, 1980).

The closing of the academic year 1981-1982 saw several immediate changes already taking place. Staff had been reassigned or allowed to leave, no new majors were formally accepted. Driver Education was transferred to Health, Physical Education and Recreation (at their request), and the facilities were reassigned to other university entities. The final days of the 1981-1982 school year were extremely demoralizing and depressing for faculty, staff, and students due to those events (Shearer, 1985).

Of note was the reality of the 1982-1983 academic year. A total of thirteen new majors were admitted to the then non-existent program, largely due to a commitment to national letters of intent signed by Miami athletes who wished to have Industrial Education as a major. The university in its never-ending commitment to athletics, ensured a final four years for students in a non-existent major in vanishing laboratories with diminished staffing and resources.

The last few students were instructed primarily by Mr. Mills, Dr. Ginther, and Mr. Rueggeburg. Dr. Ginther, as the
Transitional Program Leader, had transferred his rank and tenure to the Home Economics Department. So the circle was complete. Professor Whitcomb of Manual Training gave Home Economics its birth, and Home Economics provided a final assignment to one of the last tenured faculty member of Industrial Education, Professor Ginther.

DISSOLUTION: A DISCUSSION OF POSSIBLE CONTRIBUTING FACTORS

The dissolution of the Industrial Education Department at Miami University while swift and irrevocable in the spring of 1982, may be perceived as a virtually inevitable and anticipated event. It was an action not without historical warning signals. It was not without its political gamesmanship, or lack of same. In the final analysis, it may have been an action which needed only an appropriate crisis or catalyst to be actuated.

As early as the tenure of Professor Whitcomb, the department was the subject of attacks and misunderstanding from various factions on campus. Professor Whitcomb noted that, "It has not been an easy task to develop arts in education in an ultra-conservative and classical institution such as Miami University." He went on to note that, "There may even be members of the faculties who do not fully realize just what this industrious work on campus means" (Whitcomb, 1981). The lack of adequate housing, equipment and facilities during those early years
was to change little throughout the century. Industrial Education is greatly in need of increased housing. Home Economics never has had the real home that it deserves. All departments in the Division of Practical Arts should have greatly increased housing and equipment facilities. It is not too much to expect that these several departments be as adequately equipped as similar departments in the more progressive high schools. Our urgent need is for carrying on much more scientific research in these several fields of education. Practically nothing has been done in research in these fields of Technical Education here, and Miami University should take a leading position in the development of ideas and ideals in all aspects of the arts in education (Whitcomb, 1941).

Throughout the history of the program, the topics of equipment and facilities, as pointed to by Professor Whitcomb were constantly at the forefront. Laboratory courses traditionally had been considered to be significantly more expensive than academic courses, though that argument appears as valid if large lecture courses were compared to small laboratory courses. While Miami did provide a major facility improvement in the late forties and early fifties, this was little more than a gesture of appeasement to a department which had performed famously during the war effort (Whitesel, 1986).

The only significant purchases of stationary equipment for the department took place just after W.W.II. Professor Albaugh was suave enough to persuade the administration to purchase military surplus industrial equipment for the laboratories, equipment that remained largely in service
through 1982. Even many of the laboratories in the new Gaskill Hall utilized this heavy industrial model equipment. Yet even well maintained equipment eventually became obsolete and inefficient.

Location of the Industrial Education Department in a facility which also housed a University power plant was but one more example of the prevailing low esteem afforded the program. For years, many majors seemed to revel in the "shop rat" image. Many of the students who were on campus only because of special housing considerations given the department took great pride in their non-academic image within the ivy covered confines of campus (R. Shrader, 1986).

Location of the department in Gaskill Hall, some distance from the College of Education's main facility and offices (McGuffey Hall) in later days, lent to the non-positive image of the department as noted by Jelden and Laporte in an unpublished paper of February 21, 1983.

At Miami, though, the department was housed in a single building. It was some distance across campus from the building which housed nearly all the other departments within the school, including the administrative unit. As a result, it was difficult to nurture inter-collegial ties among faculty members at both institutions. It is intuitively less painful to make "tough decisions" about distant relatives than it is about those with whom you interact on an on-going basis; the implied social subleties play a more important rule when forced decisions are required.

The decade of the sixties was one of both the promise and growth and the warning of troubled times. Both
perspectives were the result of significant changes in leadership inside and outside the Department. Many shifts of leadership tend to bring about "hallmark establishing" philosophical and administrative shifts.

When President Millett assumed the Presidency of Miami University, his stated goal was to reestablish a firm liberal arts orientation to the University. This program, along with the common curriculum as discussed in an earlier chapter, saw little room for courses or departments such as Industrial Education. Within the Liberal Arts philosophy of President Millett, the area of vocational or vocational-like (many educators do not clearly differentiate the two) programs was "opportunistic" and not necessarily in the best interests of the institution.

As the director of an emerging school, Applied Science, and not formally granted a deanship, Mr. George Bowers conducted the business of a non-teaching technology based program with success, as measured by the continued existence of the school. Mr. Bowers, B.S. and M.A. graduate in Industrial Technology from the Stout State Institute of Wisconsin distinguished himself at Miami as being quite anti-industrial education.
The relationship between Mr. Bowers and the Industrial Education staff was strained at best. While some of the "old guard" professors, such as Rueggeberg and Shrader, were able to conduct civil relationships with Mr. Bowers, others such as Professors Ramsey and Bunten were unable to contain their dissatisfaction. Both faculties fought for what they believed to be honorable principles, and the result was a split in the program into two distinct faculties (Ramsey, 1985; Bunten, 1986).

"Unattributable" rumors abound as to the extent of the infighting which took place in the sixties and seventies. Yet, even in the midst of discontent, the Industrial Education Department was able to establish, nurture and turn over a highly successful branch-campus program to the Applied Science staff. They also were able to develop and implement numerous industrial management courses at the request of Mr. Bowers, courses for which they received little credit (Bunten, 1986).

The transition from President Millett to President Shriver signaled yet another policy shift at Miami. From the hard driving liberal arts businessman to the likewise demanding historian, the faculty saw an increased emphasis on publications. When the soft spoken Chairman Ramsey retired in favor of the similary soft spoken Chairman Bunten, the department missed the opportunity to acquire another high-profile leader such as Professors Whitcomb and Stoner.
In the November, 1972 Report of the School of Education, Miami University to the National Council on Accreditation of Teacher Education (NCATE) President Shriver inserted a little noticed statement which was to be a harbinger of things to come. It should be understood that in 1972 the United States was in severe economic distress, mainly due to inflationary energy costs. Yet, regardless of the reasoning, the impact upon the university was the same as events ten years into the future: cutbacks (Appendix J).

Miami is at a crossroads where it must choose between selective excellence and reject over-extension into too many objectives and too many programs.

The university has been growing under the now erroneous assumptions of continued enrollment expansion, special funding for new programs, extensive federal funding, and a public willingness to support the kind of higher education this nation can ill afford.

Frankly, many programs and practices were begun because of the then likely prospect of adequate funding ahead. Now it is obvious that dollars for higher education will grow slowly, that the programs now financed inadequately will prosper according to our willingness to make hard choices and to shift resources from other programs that we had also hoped to support but which are of lesser priority, meaning and sense in the Miami setting. We wish it were not so, but we must make hard choices.

In general, the College of Education endured the crisis fairly well. The prime focus of those difficult times fell on the area of equipment and facilities. Gaskill Hall was in need of extensive upgrading.
due to changing spatial requirements, inefficient initial design, and the high usage of existing facilities. Had it not been for the few sporadic expenditures to maintain the building, the department might have been left homeless in the mid 1970s (Rueggeberg, 1985).

In the early seventies a detailed and prioritized list of equipment and materials to be purchased by the department was submitted to Dean Bogner. The Dean, while noted by several faculty members as being quite sympathetic to the department, was unable to provide the necessary resources to implement the purchase of equipment valued at over $250,000. This figure fluctuated some throughout the seventies, yet remained a standing request.

Dean Bogner actually provided us more than our fair share of the available funds through the seventies. This may have been one of the reasons for lack of total support in the end (Bunten, 1986).

Noted earlier, Professor Shrader as director of Driver Education was the recipient of federal and state grants totaling over $159,000 for the construction of a regional highway safety center at Miami. Though the true reasoning behind events may never be known, political wrangling as to utilization of those funds extended beyond the deadline for use of the money. As a result, Professor Shrader was forced not to avail the department of an excellent opportunity to expand its sphere of education and influence.
An administration that would allow such a windfall of funds, positive public relations, and opportunity for education to pass, was an administration that was not seriously committed to the promotion or expansion of the program. (R. Shrader, 1986).

The center, the first of its kind in Ohio, would be located on the north end of the campus.

Announcement of the $159,000 grant was made by the National Highway Safety Bureau and The Ohio Department of Highways...

The facility will be called the Southwestern Ohio Safety Center. Its training and research programs will be conducted in conjunction with area safety organizations, schools, industries, and other groups...

The project is intended to improve safety education in Ohio and to establish a training facility which will involve both the teaching of proven ideas and the potential for experiment and research (Journal News, 1970).

The seventies was a period that saw other programs in Driver Education stymied. One such program was a vehicle inspection facility for emission control, to be staffed by graduate Driver Education students. Though the rationale and structure, course of events for actuation and operation, and numerous other details had been carefully researched and presented, the university administration declined to commit any physical resources to help the program get started. Even though such a program would have met many program and societal needs, and would have been self-supporting through inspection fees, the administration determined that it was not in the best interest of the University (R. Shrader, 1986).
A review by this writer of the 1973 NCATE visitation committee report of January of that year yielded virtually the only written formal evaluative dialogue of the departmental facilities. In it was cited the degenerating physical resources.

Facilities for the Industrial Education program appear to be adequate in terms of size and variety of shops. Some concern exists, however, because much of the equipment is becoming outdated and there is no provision to replace expensive shop equipment on a regular, systematic schedule. Plans to do so have been drawn up in the past and will be updated in the near future. It is to be hoped that such steps can be implemented; the alternative is to face at some future point the problem of replacing substantial amounts of equipment all at once with a sizeable "one-time only" cost.

The prioritized listing of needs was upgraded almost yearly for the following ten years, to no avail. This resulted, as stated previously, in a budgetary "wish list" in excess of $250,000 for physical resource maintenance, repair, and replacement.

A review by this writer of the November 1974 NCATE Self-study Report yielded little commentary of the physical resources of the department, and with limited commentary in staffing and program. Comments pertaining to professional preparation and research activities relate to a period during which the department was indeed participating on many levels.

The major strength of the department lies in its dedicated teaching faculty with its wealth of experience, both teaching and non-teaching, and its high level of professional preparation.
The faculty needs a greater commitment to research and research reporting. As facilities are made available and teaching loads reduced, an increasing involvement in the research function should occur.

New programs could and should be introduced in developing technological areas. The present program in Industrial Arts teacher preparation should be expanded to include all Industrial and Technical Teacher preparation, from elementary to college and adult education programs. Within the capabilities of the department and the service needs of the region, programs of both a teaching and a non-teaching objective should be provided. This would require little specialized staffing and a minimum of facility modification, but would increase significantly the employability of students and also provide a basis for technological understanding for those students seeking alternatives to Liberal Arts offerings.

The department has fourteen full-time faculty members, nine with Doctor's Degrees. All faculty members have had industrial experience. All faculty members have been or are presently involved professionally in state and national committee work, publishing in their field, presenting papers at regional, state, and national meetings, or working with curriculum committees to develop state curriculum guides. Faculty members are presently writing textbooks at publisher's requests. Other members of the faculty serve as consultants to both public school systems and a variety of industries (NCATE Self Study, 1974).

Had there been a published comment from the department to the Self Study Report, a different perspective of the program offered, an itemized rebuttal might have included the following:

1) The faculty is currently, and has been for several years, actively engaged in research and research reporting. Professors Bunten, Shrader, Martin, Rueggeberg, and Shearer have all been involved in research and research reporting. Evidence of research
would include: 1968-1970 NDEA funded projects on Industrial Arts Teacher Certification; Multiple Driver Education projects funded (simulation, range, drugs-alcohol, multi-media) $159,000 Highway Safety Center (never capitalized); Industrial Career Oriented Workshop through the Ohio Department of Education ($21,000); Development of branch campus technical facilities; numerous national project contributions by Martin, Shrader, and Shearer.

2) Staffing in relationship to class size and teaching load precludes any more research than is currently being conducted. Since the university mission statement places prime emphasis upon teaching this is the priority of the department.

3) New programs have been introduced at the regional or branch campus level. Because of budget and funding constraints, their probability of expansion is in doubt. The question of administration of such new programs, whether by the College of Education or School of Applied Science, should be addressed at the top most levels of the administration.

4) With student placement at 100% and demand exceeding enrollment, what expansion of employability is justified? (Shrader, 1986)

After reviewing both the NCATE report as well as data available informally, the question of credibility, or possibly of interpretation of data arises. With a funding record rivaling any other in the college, surely research leading to grants was not an issue. With the College itself mentioning the development of non-liberal arts options, the technical nature of the program did not seem to be an issue. Yet, the overall tenor of the mid-seventies report was not positive towards the department.

Throughout the remainder of the final decade of the department, participation in grants and research projects
continued at a College-leading pace (Ziegler, 1985). While Professor Shrader accounted for the greatest number of grants and a resulting high dollar figure, other faculty members such as Professors Ziegler, Martin, Land, and Bunten, accounted for projects. (See Appendix 0).

Publications throughout those last years were also at an all time high. The most prolific of the Industrial Education Departmental staff were Professors Land, Martin, and Ziegler; though all the staff members published during the period. Professor Land was noted for his regular contributions to various professional periodicals and Professor Martin distinguished himself as a contributor to and editor of the American Council on Industrial Arts Teacher Education Yearbook Series.

Aside from the previously noted professional credentials of the staff and the deteriorating conditions of the physical resources, several other factors may have influenced the decision-making structure at Miami in 1982. It is this alternate set of reasons which very well might have had the greatest impact upon the final decision.

Between 1980-1982, President Shriver stepped down, and Dr. Paul Pearson became President of Miami. Also during that period, Dean Bogner stepped down from the College of Education and Allied Professions, and Dr. Jan Branch became Dean. As new leaders, both were in a position of making major changes in the University to fulfill their view
of Miami (and possibly that of the Board of Trustees).
President Pearson was employed by Miami as a financial leader and legislative liaison, neither role being partial to education. Dr. Branch, it was speculated, viewed industrial education as outdated and without value in a modern Miami (Ziegler, 1985). The death of Dr. Bogner precluded his expression of opinion about the department which could have been beneficial.

State mandated redesign of teacher education for Ohio also had a negative effect on industrial education. With an increased emphasis on pedagogy and a decreased emphasis on specific subject matter, laboratory courses became increasingly difficult to justify. A state-wide de-emphasis of industrial arts and other elective courses in public secondary education gave credibility to a de-emphasis at the University.

Possibly the most important facet of the dissolution was convenience. As one of the least understood programs on campus, it proved difficult to muster any consensus of support in the short time available from the announcement to the actual dissolution (Ramsey, 1985). As administrative functions, the rapid decision and expeditious execution of that decision, worked very well to minimize political "fall-out" (Bunten, 1986).

By dissolving the department, the $250,000 physical resources request was eliminated. On paper, this single facet of the entire retrenchment program justified the decision of dissolution. In reality, actual immediate savings to the division resulted primarily from the stated reduction of the chairmanship with its tenure track position, and the loss of
the departmental secretarial position.

Savings to the division which resulted from the loss of the two positions previously noted were largely offset by the resulting loss of grants and outside funding sources (over $178,000 between 1972-1981). The unusually large number of service courses, and the resulting credit hours generated, were maintained as units of other divisional departments. A review of the reallocation of resources revealed very little actual reduction, with the possible exception that the instruction of many courses reverted to non-tenured staff members. The following is a breakdown of staffing and faculty reallocation as of 1986, four years after dissolution:

* The machine and hot metals laboratory facilities were consolidated with that of Manufacturing Technology, resulting in the disposal of much outdated equipment and the retention of Professor Rueggeberg as instructor.
* The woods facilities were transferred to the Art and Interior Design programs.
* The crafts and some drafting programs under Professor Ginther were transferred to Interior Design.
* The advanced drafting program, and the electronics program, were transferred to Manufacturing Technology.
* Driver Education under Professor Shrader was transferred to Health, Physical Education and Recreation.
* Aerospace Education eventually was closed due to lack of interest and support.
* Graphics, principally an expanded photography program, was transferred to educational media.
* Professional courses were no longer required.

The department fared reasonably well under the university administration of President Millett. Several professors interviewed felt that President Millett promoted Applied Science courses as an alternative to Industrial Education. Others noted the allocation of funds for the completion of the East Wing of Gaskill Hall under Millett as symbolic of his support.
Under President Shriver, a sense of history was said to pervade University operations. It has been speculated that while the dissolution may in fact have been proposed under President Shriver, he refused to take action against a program which had contributed so much to the development of the University, and had so much yet to accomplish. The administration of President Pearson, an administration of "east coast businessmen", saw no such historical significance, or, at least none which would merit a commitment for the future in a "new Miami".

Like the flash of one's life that is reported by drowning persons, individuals and organizations under conditions of retrenchment intensely relive earlier choices. We see two maladaptive responses if the planning process does not allow for some thoughtful reflection on the past. One is characterized by nostalgia in which the past is uncritically evaluated as superior in every way to what the organization now faces. This nostalgia stops people from critically differentiating which are real historic strengths that need to be revitalized and which are no longer relevant to the organizations future. The other equally maladaptive response is an uncritical attack on the past. People may feel that the company (or unit or department) has never been good and never really had a chance of making it. Similar to nostalgia, this blocks the needed critical evaluation of the past. (Gilmore, 1983).

It has been rumored that Dr. Branch, while assistant Dean under Dr. Bogner, had a history of dissapproval of the level of funding received by the Department. Unfortunately, there was no voice within the Department which was able to convince her during those years that Industrial Education was much more than a costly service course area.
One factor cited by Dr. Branch on several occasions was the very low freshman enrollment within the department (Bunten, 1986). This fact was undeniable, even when viewed in light of the vastly increased sophomore, junior, senior enrollments; often seeing increased numbers of from ten or less to over 50 undergraduate majors (Ziegler, 1985).

With an allocation of 30 freshman dormitory rooms through much of the seventies, recruitment should not have been difficult. Yet, few high school seniors responded to extensive recruitment efforts on the part of the faculty and staff. Most majors were transfers from other areas such as Physical Education or had been "undeclared freshmen". This situation, when coupled with the very high enrollments in service courses, is said to have been not in keeping with Dean Branch's mission for the College.

The Task Force entertained many proposals for the achievement of economic stability in the college. While only those receiving a majority of favorable votes were included in the final report, at least one proposal bears review at this time for perspective.

Proposed was the discontinuation of the voucher system as payment to teachers who had cooperated in the supervision of student teachers. It was discovered that the vast majority of those vouchers were being sold on the
open market for $300-$350, a considerable savings over face value. After sale, most of these vouchers were being utilized in non-education areas such as the Division of Business within the School of Applied Science. An outright cash payment was proposed to minimize the colleges support of other programs. This proposal was summarily dismissed by the Dean, and did not come before a vote (Ziegler, 1985).

COMMENTS ON DISSOLUTION

Post dissolution commentary will probably continue throughout the lives of individuals affected by the move. In an effort to bring some sense of closure to the topic, one question asked of each individual interviewed for this study was, "What could have been done differently to prevent the dissolution?" The range of responses proved to be as broad as the diversity of persons interviewed.

Previous NCATE and State Evaluations were very complimentary. There was no negative criticism to speak of. No recommendations for significant improvements were made. I believe these evaluations had no impact on termination of the program. The final divisional evaluation by the School of Education Task Force appointed by the Dean had little or no effect upon the final decision concerning the program...

If a program had a history of distinguished service, I believe I would make every effort to help the program change, if change is needed, to meet current requirements and needs. If a program were no longer providing a service at
expected levels, I would simply terminate it and make the best provisions possible for students and faculty, much as Miami University did...

Innovative programs have not caught on for whatever reason. Maybe we need a new "something else", maybe Industrial Education isn't appropriate in today's (or tomorrow's) society...

I found myself caught in a non-winning situation. No matter what my personal beliefs were towards a major overhaul of the program, we faced the reality of being a service course department. Had we gone ahead with a major shift in 1980 as proposed by Martin and others, our time and efforts probably would have resulted in such a loss of students that we might have folded anyway. Not many non-majors wanted classes in technology. They wanted access to our labs...

Had we not pounded so hard for our equipment monies, we might not have been such an easy target.

I really believe that decisions had been made even before the Task Force was formed. It was a good way to accomplish their ends.

Professor James Ziegler, as a member of the Industrial Education faculty and the Dean's Task Force, provided much perspective to this study. From a series of interviews and personal conversations, the following comments were gleaned. The comments, while provided out of context, characterize the complex environment in which the department and Task Force existed.

We found ourselves in a tough spot. If we adopted the new curriculum we would finally be moving into the future—but we would for who knows how long lose students and staff. On the other hand, by old curriculum we kept students—and staff and the old equipment list and it appeared as if we didn't really know what we were doing.

The Dean seemed to know what she wanted even before the Task Force was charged. President Pearson had his own set of expectations for the university, and the new Dean was apparently the person to facilitate those expectations.
Dean Branch had participated as a member, I believe, of the committee that developed the new state minimum standards. As you know, those standards cut deeply into Industrial Arts in the junior and senior highs in Ohio.

State Superintendent Walters would not intervene on our behalf. He said that it was a university matter to be handled internally by the Board of Trustees. With Miami supplying 30-40% of Ohio's industrial education people, I could never understand his reasoning.

Dr. Bunten believed in keeping a low profile for the department. Even so, he was very good to his faculty and students, always looking for activity.

Professor Ziegler also noted on several occasions the opportunities missed by allowing Mr. Bowers of Applied Science to develop an independent technology program. He believed that the two combined programs would have generated enough majors and monies not to have been subject to even the discussion of dissolution.

A personal letter from former Chairman Ramsey, dated February 1985, provided yet another perspective and commentary on the loss program. Professor Ramsey had continued to be active in associations with the departmental and university staff. As a retired Oxford community leader, his comments were considered to be beyond reproach.

I had the feeling that the Industrial Arts program at Miami was tolerated. However, my experience in talking to staff members and others after the program was deleted led me to believe esteem than I thought. In talking to many people both on campus and off after the program was dropped I did not have one person who did not say it was a mistake to drop the program. Needless to say, I did not talk to the president, provost or dean.

Suffice it to say that all of the people I have talked to consider the elimination of Industrial Education as a mistake.
Professor Shrafer, the only faculty member to see his segment of the program survive, transferred his Driver Education area to Health, Physical Education, and Recreation. Yet, even from the position of fairsing relatively well, that program was to diminish after his retirement.

"Doc" Shrader speculated that one of the major missed opportunities of the department came about in the late 1960's. As vocational education was expanding in Ohio under the newly authorized Vocational Education Act, Miami and the University of Cincinnati were in competition for the monies available. Political gamesmanship, combined with Miami's natural aversion to "vocational anything", allowed U.C. to receive several millions of dollars over the ensuing years. This dividing of programs, according to Professor Shrader, left both programs weak and vulnerable. This weakness contributed to the demise of both the Miami and the U.C. programs at about the same time.

Under conditions of great uncertainty, the past can often be a major source of coherence. Organizations that have been entrepreneurial may have over-extended or lost the sharpness of their mission. A careful reexamination and critical reassessment of the past can often help an organization gain a renewed vision of what constitutes its care. This then forms an oasis of less turbulence from which more future-oriented initiatives can be considered (Gilmore, 1983).

Several persons who had a considerable interest in the program refused to comment about the dissolution. Professor Martin stated that the situation was politically charged
and not subject to simple interpretation. Any commentary which he might have offered would, by necessity, have been ambiguous and general in nature. This "non commentary" was viewed as significant in that those persons choosing that option were actively involved in professional industrial teacher education programs both at dissolution and at the time of interview.

SUMMARY

The Industrial Education Department at Miami University was formally dissolved by an act of the Board of Trustees in the spring of 1982. It was one of three programs terminated due to projected massive budget cuts precipitated by a statewide insolvency, the other two programs being the McGuffey Laboratory School and the Guidance and Counseling Department.

In January of 1982, the administration of Governor Richard Celeste predicted massive statewide budget shortfalls as a result of the alleged fiscal mismanagement of the previous Republican administration. This resulted in Miami being notified of a projected $2,000,000 reduction in support, with the College of Education to receive approximately $500,000 of that cut. While the reductions never actually took effect, the crisis created the mentality whereby whole program areas could be dissolved.
In January of 1982, a Task Force was formed by Dean Branch to investigate the impact of the projected reductions and to make recommendations as to the actuation of budget reducing measures. While a simple majority vote of Task Force members was needed to formalize a recommendation, the decision to act was ultimately left to the administration.

By a vote of 3-2-1, the Task Force (of which Professor Ziegler of Industrial Education was a part) recommended the dissolution of the department immediately, thereby saving the expense of the tenured chairmanship position and that of one secretary. Also reduced was the physical resource upgrading list mandated by NCATE, which was in excess of $250,000.

At the time of program termination, all faculty members were provided employment by Miami University, though some on a temporary basis only. One member left immediately due to the loss of tenure track status, subsequently being employed in another accredited university. All other faculty personnel remained for at least one year, but not all in the field of teaching. In succeeding years, other faculty members departed. A review of inter-university placement is as follows:

* 3 persons remained as Industrial Education teachers assigned to the Dean's office.
* 1 person transferred to University Placement Office.
* 1 person transferred to Department of Home Economics Interior Design.
* 1 person transferred to Department of Architecture.
* 1 person transferred to Department of Manufacturing Engineering.
*1 person transferred to Physical Plant.
*1 person transferred to Department of Educational Media.
*1 person transferred to Department of Health, Physical Education and Recreation.

Rank and status of the faculty at the time of termination included seven tenured faculty and four non-tenured individuals. There were four assistant professors, two associate professors, three full professors and two staff members. The department chairmanship was dissolved immediately as a formal entity, but an interim chairman was appointed to oversee the finalization of program.

In the fall of 1983, there were to be no new departmental majors, yet a class of thirteen was accepted primarily due to the demand of university athletes. Students continued in industrial education through the spring of 1986.

Prior to dissolution, there was no formal negative criticism of the department. All available NCATE and state evaluations were complimentary and cited no major faults. Cited were the need to increase professional research publication and the need to implement a program of physical resource improvement. Cited as positive were levels of scholarly achievement, student placement levels (99%) outside funding levels, and professional activity.

Enrollment patterns of the College of Education, in general, declined dramatically in the late 1970s. Even with university enrollment at an all time high, the college suffered from the national pattern of declining enrollment
due to a decrease in overall demand and esteem. Industrial Education during this period actually increased its enrollment numbers partially because of the success of Driver Education, as well as numerous introductory level courses.

The relatively low percentage of majors, in comparison to the high numbers of students served, was not an advantage in times of budgetary reduction. Separate support formulae were used for majors and non-majors, as well as educational technical courses being funded at about one half the level of "pure" technical courses. These factors combined to give an appearance of low numbers of students served at an excessively high per student expense.

The combined factors of low numbers of majors, extensive physical resources upgrading needs low esteem and understanding on campus, and an administrative view of possible inappropriateness, along with the budget crisis seemed to be responsible for dissolution. This combination proved to be insurmountable in regard to any efforts to save the program.

At the time of termination, support for the department was scattered and not viewed as being more than a token effort. There existed no formal process or procedure for access to a support network on a national/international level. Even independent telephone contacts were used in a last ditch effort to sway the decision makers. This effort probably was futile, as when the State of Ohio's Superintendent
of Public Instruction declined to lend his support, even in the face of continued demand for industrial arts teachers and a declining source of supply.

The dissolution of the program was perceived by some to be an inevitable occurrence, given the Miami liberal arts image and national trends away from traditional industrial arts. It's (the department's) inability to change its philosophy and image to one of appropriate technologies and high technical visibility was viewed as a major contributing factor to the program's termination.
CHAPTER VI
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The primary purpose of this study was to document and interpret a comprehensive and accurate history of the Industrial Education Department at Miami University. In the preceding chapters the researcher attempted to discover and detail the answers to six basic questions: 1) What was the origin of the Industrial Education Department at Miami University? 2) Who were the leaders in the faculty? 3) How did the program develop? 4) What lasting contributions were made to the field of Industrial Education? 5) What factors contributed to the demise of the program, and 6) How might these factors be of significance or contribute to the field?

This study was undertaken in the hope that it would make a contribution to the Industrial Education profession on two general issues: Can Industrial Education develop and co-exist within a liberal arts environment? Which factors contribute most significantly to the dissolution of an Industrial Education Department? Most specifically, this study was written for the edification of those who have a close association to the program at Miami University. It is hoped that all concerned can appreciate the seventy-six year historical heritage that
Miami University has in the industrial education profession.

BACKGROUND OF INDUSTRIAL EDUCATION
AT MIAMI UNIVERSITY

The Practical Arts Program at Miami University had its beginning in the universal public education movement of the mid 1800s in the United States. Out of this trend grew the manual training movement of the 1870s.

Calvin M. Woodward of Washington University in St. Louis, Missouri, generally is attributed with providing the major impetus of the Manual Training Movement. As Dean of the Department of Engineering at Washington University, Woodward developed a hands-on practicum.

The centennial exposition at Philadelphia in 1876 introduced American scholars, such as Woodward and Dr. John D. Runkle of the Massachusetts Institute of Technology, to the Russian System of tool instruction. This program was developed and presented by Victor Della Voss. The Della Voss philosophy, which had at its core the concern that students have the ability in practical situations to apply the theoretical and scientific knowledge acquired within a classroom structure, greatly affected curricular developments in the United States.

The Manual Training Movement was roughly divided into four evolutionary stages, the first being the Russian stage
popularized by Della Voss. The second stage, or Swedish Sloyd stage, added the production of practical items to the psychological foundations of the Russian system. The third stage, or Arts and Crafts stage, incorporated the spirit of craftsmanship, art and aesthetics. The fourth and final stage was the evolution of industrial arts which was a synthesis of the three earlier stages.

The success of the manual training movement gave rise to the need for a new type of teacher. The limited classroom success of tradesmen who were not educators, and educators with little or no training in the manual trades, gave rise to the need for this new type of teacher. The study of industry, in addition to the pluralism of humanistic and scientific curricula, provided the basis for study for the new teachers. As interest in industrial teacher education grew, many programs arose to fill that need, with the Miami University program being but one of many.

Within the context of the effects of the Industrial Revolution on the American society in the early 1900s, the Smith-Hughes Act was signed by the U.S. Congress. This act created a federal framework for directing and reimbursing certain types of Vocational Education.

The American vocational system was characterized by its emphasis on preparation for specific industrial trades. Many manual training programs, in order to gain access to funds allocated by the Smith-Hughes Act, became pre-vocational try-out programs with a definite philosophical
bent towards the skilled trades.

Miami University was established by legislative act on February 17, 1809. The doors were open to students for instruction in September of 1824. Its rigidly classical courses of study through the 1800s set the tone that would distinguish Miami as "The Ivy League" school of Ohio.

The mission of Miami University changed little from its inception. Emblazoned on the Miami Seal was the statement, Prodesse Quam Conspicci, or "To accomplish rather than to be noticed". This philosophy of quiet success had provided the direction for the development of all Miami programs, and most notable to this study, the College of Education.

The training of teachers began at Miami in 1902, with the establishment of the Teachers College, or Normal School. In 1904-1905 Director B. O. Davis offered the first manual training course to the "Normal School Girls".

In the fall of 1906, Fred Campbell Whitcomb became the Director of Manual Training and a Professor of Manual Arts at Miami University. In taking charge of the "Arts and Crafts" program, as President Benton described it, he assumed the responsibility of developing an entire practical arts program within the university.

Professor Whitcomb was credited with having provided the leadership which created thirteen programs within the Practical Arts Division of the emerging College of Education.
Progressing from a one course Manual Training curriculum for the "Normal School Girls" through two year diploma courses to four year baccalaureate programs, the early 1900s were seen as years of intense professional activity and program development.

DEPARTMENTAL LEADERSHIP: THE CHAIRMEN

The Industrial Education Department at Miami University developed rapidly as a program area, mostly due to its leadership both on and off campus. That leadership was principally the efforts of four men, the chairmen.

Fred Campbell Whitcomb was recruited by Miami University in 1905 and remained on staff until 1941. His years at Miami were characterized by a rapid development and expansion of the Practical Arts Division of the Teachers College.

Professor Whitcomb began instruction in the Manual Arts in a laboratory in the basement of Harrison Hall, or "Old Main" as it was known on campus. His instruction of courses in industrial arts in 1907 were state of the art offerings, as the national trend towards industrial arts had just begun in 1904 with Richard's noted journal article.
The first four year curriculum in Industrial Education at Miami University was organized by Professor Whitcomb in 1912. A graduate degree program was added in Industrial Education in 1930.

Professor Whitcomb was credited with having organized thirteen degree granting programs within the Practical Arts Division. The diverse areas of Art, Music, and Physical Education at Miami all were manifestations of Whitcomb's creativity and leadership.

Professor Whitcomb took several lengthy sabbatical leaves to view and review other emerging Practical Arts Programs. He was noted for embarking on several national automobile tours to see as many programs as possible. This curiosity and interest provided him with a perspective of national trends not otherwise available.

In 1926, the Industrial Education Department moved into a new facility, the Whitcomb Laboratory, made possible largely because of Professor Whitcomb's legislative lobbying efforts. This facility provided a sense of autonomy for the department as well as accommodating program expansion.

The accomplishments of Professor Whitcomb included numerous publications, professional association offices, and addresses to various associations. It was through this high level involvement that Whitcomb provided an example of professionalism to the faculty, staff and students.

In 1941, Professor William D. Stoner assumed the
chairmanship of the Industrial Education Department from Professor Whitcomb. As a graduate of both the Miami University Industrial Education Department and the Industrial Arts Department at The Ohio State University (OSU), Dr. Stoner was uniquely qualified to continue the quality program begun by Professor Whitcomb. It was this "inbred Miami nature" with the Ohio State "drive to question" that allowed Stoner to promote current and acceptable industrial education curricula at Miami.

The personal and professional relationship between Dr. Stoner and Dr. William Warner of The Ohio State University (OSU) provided the foundation for the frequent presence of Dr. Warner at Miami during Stoner's chairmanship. This presence included the formation of the Gamma Chapter of Epsilon Pi Tau at Miami, national professional fraternity, which was begun at OSU under Dr. Warner. Many opportunities were afforded faculty and students to discuss the rapidly developing field of Industrial Education with Dr. Warner, as well as with other prominent leaders of the time.

Under the leadership of Dr. Stoner, appropriate shop work was carefully integrated into the theory base of the program. Individual project design was encouraged in all classes, while set or standardized projects were not allowed to be assigned.

Dr. Stoner expanded the department's course offerings greatly to include courses which reflected current
philosophy and curricular development. Through the 1940s much of the program development evolved around war preparedness courses. After the war, his developmental efforts in course offerings included such courses as Automotive Theory and Practice, Photography and Silk Screen Printing, and Technical Problems.

The national post war attitude allowed Dr. Stoner to capitalize on three resources: High numbers of motivated students returning to college on the G.I. Bill; surplus equipment; and funds for the training of teachers of industry. He was successful in acquiring the funds necessary to build and equip the new David L. Gaskill Hall as well as securing guaranteed dormitory room assignments for sixty Industrial Education majors who could not meet the stringent university admission requirements.

Dr. Stoner was noted as an excellent faculty and student recruiter. His efforts on behalf of each constituency went beyond what was nominally required as demonstrated by his efforts in the recruitment of Professor Shrader.

Professor William M. Ramsey served as another example of leadership potential nurtured in the Industrial Education Department at Miami University. Assuming the chairmanship in 1961, Professor Ramsey became the third chairman of the Industrial Education Department. As a Miami industrial education graduate with post-graduate
studies at Michigan State University, Mr. Ramsey continued in the tradition of professional inbreeding.

During Mr. Ramsey's term as chairman it appears as if some of the post-war era power base for the department had diminished on campus. While student recruiting efforts were reasonably successful, the liberal arts nature of Miami under President Millett was not attractive to many "would be" majors. Professor Ramsey actively pursued quality students, yet much of his success was in recruiting majors either to cross over from another department or to elect industrial education after a year as an "undeclared major".

Mr. Ramsey was involved in a philosophical dispute over the nature of industrial education and industrial technology with the Director of Applied Science, Mr. George Bowers. These mid-sixties differences resulted in the division of the two programs, a separation viewed by Mr. Ramsey as necessary to preserve the academic autonomy of the Industrial Education Department.

On September 1, 1967, Dr. Charles A. Bunten assumed the vacated chairmanship of the Industrial Education Department. As the successor of Professor Ramsey, he had the dubious distinction of piloting the program through a period of expansion into its demise in 1982. He, like Professor Whitcomb, was not a product of the College of Education at Miami University, and thus, brought a fresh perspective to the department.
Dr. Bunten chose a quiet style of leadership for himself, a style not always understood by those around him. He encouraged the faculty, staff and students to press for excellence and achievement, but was not one who would express openly an emotional attachment, or the lack of same.

During his chairmanship, he re-organized the department curricula to reflect the national recognition of construction, manufacturing, communications and power as the four principal fields of study within Industrial Education. Curricular updating appeared to be a constant discussion topic during his chairmanship, a topic which proved to be very difficult to resolve.

Dr. Bunten was noted for his inquisitive nature, which lead him to design and patent several plastics related products. He also was constantly encouraging those around him to be creative in both personal and professional endeavors.

During his chairmanship, Professor Bunten oversaw the development of industrial education and technology programs at Miami's regional campuses, notably the Hamilton and Middletown Centers. Due to the inequity of state reimbursements for technical versus general education courses, circumstances forced Dr. Bunten to relinquish control of those programs to the Industrial Technology program within the School of Applied Science.
Professor Charles Bunten was forced into retirement in 1982 when the University dissolved the Industrial Education Department. Regardless of any and all contributions which he made to upgrade the Industrial Education Department at Miami University, (including updating curriculum, securing rank and promotion for faculty, and a 100% placement record for graduates) Dr. Bunten will be remembered as the quiet man who presided over the final days of the department.

INDUSTRIAL EDUCATION: THE PROGRAM

The Industrial Education Department at Miami University began as a program of manual training during the 1904-1905 academic year. Under the direction of Professor B.O. Davis, courses in basketry, mat weaving, and thin woodwork were offered to a population consisting mostly of elementary normal school students.

Professor F.C. Whitcomb was employed by Miami in 1906 to take charge of the "arts and crafts" course development. Teaching courses in the basement of Harrison Hall, Professor Whitcomb quickly added to the courses offered as well as to the presence of the practical arts area.

In 1907, a two-year curriculum in Manual Arts was organized. In 1908, the Practical Arts Division of the
Teachers College was formed, providing a formal area in which industrial education developed.

Most of the early industrial education courses were of a manual arts nature. The orientation of most of the early courses is illustrated by the "ing" suffix attached to the course titles: Woodworking, Metal Working, Mechanical Drawing. This is indicative of practical skill development as opposed to the craft of teaching: a reflection of the nationally accepted norm of program development.

A four-year course of study in industrial education was first offered in 1912. In 1913 the Industrial Education Department had the distinction of graduating Mr. Harry Franz, the first Bachelor of Science Graduate of the College of Education.

By 1915 manual training and manual arts gave way to courses offered under the direction of the newly formed Industrial Education Department. This new department combined all previous course selections within the two general categories of drawing and industrial arts.

Courses were taught in the basement of Harrison Hall, "Old Main", until 1925, at which time the Whitcomb Laboratory Building was constructed. Throughout the early years of the department, additions of tools and equipment proved to be of modern design and construction. The additional space and facilities afforded by the Whitcomb
Laboratory Building allowed the department to expand its course offerings and its sense of autonomy on campus.

Graduate courses were offered in the 1929-1930 academic year. The three courses common to the new Master of Arts (M.A.) program were Problems of Practical Arts Education, Minor Problems in Industrial Education, and Problems of Industrial Arts Design. As the only M.A. program offered by the Practical Arts Division of the College of Education until 1936, it provided the Industrial Education Department a leadership role on campus.

World War II caused the Industrial Education Department to modify its course offerings for the war preparedness effort. The V12 and other programs were designed to teach service-oriented skills to service personnel stationed in Dayton, Ohio, and at the Wright-Patterson Air Force Base in Fairborn, Ohio. Taught during the war years were courses in Radio Theory, Surveying and Topographical Map Making, Heat Power and Drafting. These courses, with emphasis upon the electricity/electronics component of the radio course, provided a broad experiential base upon which latter courses were developed.

The David L. Gaskill Hall, addition to and renovation of the Whitcomb Laboratory, was begun in 1948. Its funding was a result of the post-war emphasis on technical education and the lobbying efforts of Professor Stoner. The expanded building provided facilities for a department library, classrooms, a visual education room, automotive laboratory, and an expanded graphic arts area including photography.
The driver education program expanded rapidly in the late sixties and throughout the seventies as a direct result of the efforts of Professor Robert Shrader. This program area grew to service an excess of 500 students per term on both undergraduate and graduate levels by 1980. Innovative program design accounted for several "first-of-a-kind" courses for Ohio being offered at Miami: Driver Simulation, Recreational Vehicle Safety, Range Management, and various alcohol-drugs seminars.

Course development under Dr. Charles Bunten was a topic of controversy throughout the period of his tenure, 1967-1982. He was responsible for the initial restructuring of courses in 1967-1968 to reflect materials, processes, and professional courses as central philosophical themes to reflect state-of-the-art technology education. However, course content and emphasis changed little in the following years. At issue was the problem of alienating non-majors from courses if those courses were restructured too dramatically. Any reduction in student enrollment, even of non-majors, stood as an obstacle to curricular advances.

The Industrial Education Department was instrumental in developing technical courses at the Hamilton and Middletown regional campuses in the early 1970s. Due to varying state subsidies for technical versus educational courses, with technical courses funded at almost twice the rate of educational courses, the programs were turned over to the School of
Applied Science under Mr. George Bowers.

State mandated redesign of teacher education programs was begun at Miami in 1978. Dr. James Ziegler of the Industrial Education Department participated on the Dean's staff as a writer and developer in this regard. The Industrial Education Department was involved actively in the redesign effort, until the department was dissolved in the spring of 1982.

**DISSOLUTION**

The Industrial Education Department at Miami University in Oxford, Ohio, was officially dissolved at the end of the 1981-1982 academic year. Immediate actions taken by the university in this regard were discontinuation of the chairmanship and department secretarial positions; elimination of the program as an option for new or transfer students; reallocation of human, physical, and monetary resources to other university divisions.

The atmosphere which precipitated the dissolution of the department was one of a projected State of Ohio insolvency in the spring of 1982. This financial crisis, when filtered down to the College of Education, was projected to have resulted in a loss of $500,000 in state support to the college.

A College of Education Task Force was formed in the winter of 1982 to make recommendations to the University
administration as how to best reconcile the imminent revenue reductions. The Task Force consisted of six College of Education faculty members with the Dean as the ex-officio chairperson. All recommendations of the Task Force resulted from items presented to the committee and passed by a majority vote. Of particular importance to the Industrial Education Department was the presence on the Task Force of Professor James T. Ziegler, an Industrial Education Department member.

The Task Force recommended, by a vote of 3-2-1 that the Industrial Education Department be disbanded at the close of the 1981-82 academic year. All faculty and staff were offered reassignment within the University, at least temporarily. One department member left immediately due to the loss of tenure track status.

CONCLUSIONS

What is the lesson to be learned from this study? A review of the history of industrial education at Miami University allows us to see the inherent danger of a department relying heavily on a non-major student population. Such a service course orientation can provide for high visibility and funding when the economy is strong, yet can be used effectively against a department in times of budgetary crisis. It became apparent that had the department achieved a higher number of majors in
relation to the numbers of campus-wide students served, its dissolution might not have taken place.

The second conclusion of this study rests upon the issue of a program's perceived image. The Industrial Education Department was located physically quite a distance across campus from the College of Education offices, in a building shared by several non-college services (the Power Plant and Audio-Visual). It served high numbers of university-wide students in "how-to" practical introductory level courses. The conclusion can be made that the department had an image of being a non-essential entity on campus.

The third conclusion drawn from this study is that if an administration chooses to dissolve a program or department, they can act swiftly and efficiently. The dissolution of industrial education at Miami was total and complete in less than four months from the first formal discussions of severe financial constriction.

The fourth conclusion of this study is that departmental chairmen forge interpersonal relationships across campus that may be of help in times of political or economic uncertainty. Under Chairmen Whitcomb and Stoner, such activities as fishing trips and shared sabbaticals reinforced the position of the department on campus. Under Chairmen Ramsey and Bunten, a more low key perception of the department emerged. This stagnation of political alliances at all levels of the administration probably contributed to the relative
ease of dissolving the department.

The final conclusion drawn from this study is that the Industrial Education Department at Miami University had a high probability of dissolution, or radical realignment, even had the economic crisis of 1982 not emerged. The combined factors of low key leadership, low numbers of departmental majors, cross campus misperceptions as to its mission, lack of a clear and well articulated mission statement being a visible focus, and few administrative supporters, are indicative of an organization in the final phase of its usefulness life cycle. Organizational units viewed as being non-essential or not as contributing to the overall good are subject to discontinuation.

The researcher hopes that by reviewing the events surrounding the rise and demise of the program at Miami, a better understanding can be gained concerning the individuals and events which make up but one component of our past. The opportunity to look back and to say "what if..." provides the basis for growth into the future. Acceptance of this rich heritage possibly will provide for a stronger tomorrow.

RECOMMENDATIONS

Several related problems were encountered during the course of this study which should be considered for additional research. The following questions are considered significant.

Throughout this study, the researcher encountered many references to graduates of the Industrial Education
Department at Miami University, and their personal accomplishments and achievements. The questions should be asked: precisely who were the graduates, what might their achievements be, and how did their Miami heritage affect these achievements?

The second major area of interest that was encountered revolved around the issue of serving majors and/or non-majors by a department. How does a faculty resolve the teaching-research-service issue? How might that resolution be effected by administrative shifts and economic uncertainty?

The third problem area is that of service to education and non-education technical students. Do the goals of a purely technical program preclude a jointure with a technical teacher program? How might the two areas be combined to make better use of staff and facilities for strength on campus, or should they?

The fourth problem area relates to the utilization of the data gathered by this study. Can an analysis of the events and conditions surrounding the dissolution of one department be used as a basis for analyzing the possible demise of another department? What contrasts and/or comparisons can be made to other departments which have been, or may be, terminated?
APPENDIX A

THE FIRST COURSE OF STUDY IN MANUAL ARTS

1906–1907
SPECIAL COURSES

MANUAL ARTS

Several two-year courses are offered, each leading to a Special Teacher's Diploma, to persons who wish to teach or supervise Manual Training or Drawing or both. Others, such as superintendents, principals, and regular grade teachers, may gain some knowledge of the Manual Arts by selecting one or more of the separate courses.

TWO YEAR COURSES LEADING TO DIPLOMAS IN THE MANUAL ARTS.

I. For Teaching and Supervising Manual Training

FIRST YEAR

Education 11, Elem., Educa. and Genetic Psychology ...... 3
History 11, Institutional History ............................. 2
Drawing 13, Freehand Drawing ................................ 2
Manual Training 13, Design and Handwork for Lower Grades 2
Manual Training 14, Manual Training for Grades 5 and 6 .. 1
Manual Training 15, Manual Training for Grades 7 and 8 .  2
Manual Training 16, Materials, Tools and Methods ........ 1
Drawing 21, Mechanical Drawing ............................. 2
Electives .................................................................. 3

SECOND YEAR

Education 12, History and Principles of Education:
    a .................................................................. 2
    b .................................................................. 5
    c .................................................................. 5
School Administration 12 ...................................... 1
Manual Training 17, Furniture Design and Construction .. 3
Manual Training 18, Art Metal Work ........................... 2
Manual Training 19, Wood Turning ............................ 1
Manual Training 20, Theory and Practice of Teaching
    Manual Training .................................................. 3
Electives:  a .......................................................... 6
            b .......................................................... 3
            c .......................................................... 3

206
II. For Teaching Public School Art

FIRST YEAR

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<tr>
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<td>Drawing 13, Freehand Drawing</td>
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<tr>
<td>Manual Training 13, Design and Handwork for Lower Grades</td>
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SECOND YEAR

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<td>Electives: a</td>
<td>7</td>
</tr>
<tr>
<td>b</td>
<td>4</td>
</tr>
<tr>
<td>c</td>
<td>4</td>
</tr>
</tbody>
</table>

NOTE—By special arrangements, modifications of the above courses may be made to meet the requirements of those who wish to teach Manual Training or Drawing or both in the primary grades only or in the grammar grades only.
APPENDIX B

COURSE DESCRIPTIONS—MANUAL TRAINING

UNDER PROFESSOR WHITCOMB  1906-1907
13 a.b.c. Design and Hand-work for Lower Grades--This course includes the different forms of handwork which are profitable and practicable for grades one to four or five. The work is developed from the study of History and Literature, beginning with primitive life and ending with present social life. Designs are made and applied to work in clay, paper and cardboard, raffia, weaving and leather tooling. Six hours a week. Fee 50 cents a term. 2. Miss Robinson.

14 a.b.c. Manual Training for Grades V and VI--In the first part of the course problems which can be worked out in the regular class room with little equipment are considered. The latter part requires a simple bench equipment. Different materials are used. Designs and simple working drawings precede the work in construction. Fee 25 cents each term. Three hours a week. 1.

15 a.b.c. Manual Training for Grades VII and VIII--A thorough elementary course in bench work in wood and sheet metal adapted to these grades, and a study of some industries with the making of models of a few simple machines. A full bench equipment of tools used. Designs and working drawings made. Fee 50 cents each term. One hour conference and five hours shop work a week. 2.

16 a.b.c. Materials, Tolls and Methods--The following topics are considered by means of lectures, conferences, readings, drawings and shop work: The structure of wood, defects of wood, detailed study of the principal woods adapted to manual training purposes, the forest (life and care), lumbering and saw-milling, problems of construction, tools (evolution, classification, and action) and wood finishing. One hour lecture a week. 1.

17 a.b.c. Furniture Design and Construction--An advanced course. The principles of design are studied. Each piece of work is designed and a working drawing made before it is constructed. Carving, metal trammings and other means of decoration are employed. Fee $1.50 each term. One hour conference and six hours shop work. 3.
18 a.b.c. Art Metal Work—Instruction in riveted, hammered and beaten work in sheet metal; the making of shades and lanterns, and the forming of bowls, trays, boxes and other shapes, together with their decoration by chasing, enamelling, etc. Fee $1.00 a term. One hour conference and six hours shop work a week. 2.

19 a.b.c. Wood Turning—A thorough course in this subject. Fee 50 cents a term. Three hours a week. 1.

20 a.b.c. Theory and Practice of Teaching Manual Training—This subjects considered are: History and organization, cost and plans of equipment, relation to the child, society and the curriculum, problems of subject matter and method, course for different grades and different kinds of schools, etc.
Three lectures and conferences a week. Three hours observation and teaching a week. 3.
APPENDIX C

CONSPECTUS OF FIRST FOUR YEAR COURSE FOR SPECIAL TEACHING OF MANUAL TRAINING 1912-1913 (INCLUSIVE OF SPECIAL TEACHERS OF AGRICULTURE)
CONSPECTUS OF FOUR-YEAR COURSES

Special Teachers of Manual Training

<table>
<thead>
<tr>
<th>First Year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing 113</td>
<td>3</td>
</tr>
<tr>
<td>Drawing 118</td>
<td>2</td>
</tr>
<tr>
<td>English 1</td>
<td>6</td>
</tr>
<tr>
<td>Manual Training 114</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics I</td>
<td>8</td>
</tr>
<tr>
<td>Modern Language</td>
<td>8</td>
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</table>

<table>
<thead>
<tr>
<th>Second Year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing 114</td>
<td>4</td>
</tr>
<tr>
<td>Drawing 123</td>
<td>2</td>
</tr>
<tr>
<td>Manual Training 113</td>
<td>4</td>
</tr>
<tr>
<td>Manual Training 117</td>
<td>6</td>
</tr>
<tr>
<td>Modern Language</td>
<td>8</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>Elective</td>
<td>6</td>
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<table>
<thead>
<tr>
<th>Third Year</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Drawing 119</td>
<td>6</td>
</tr>
<tr>
<td>Drawing 122a</td>
<td>2</td>
</tr>
<tr>
<td>Education III</td>
<td>6</td>
</tr>
<tr>
<td>Industrial History</td>
<td>2</td>
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<tr>
<td>Manual Training 115</td>
<td>4</td>
</tr>
<tr>
<td>Manual Training 116b</td>
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<tr>
<td>Physics I or 2</td>
<td>8</td>
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<table>
<thead>
<tr>
<th>Fourth Year</th>
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</thead>
<tbody>
<tr>
<td>Chemistry 1 or 2</td>
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<tr>
<td>Education 116</td>
<td>2</td>
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<tr>
<td>Manual Training 118a</td>
<td>2</td>
</tr>
<tr>
<td>Manual Training 119</td>
<td>4</td>
</tr>
<tr>
<td>Manual Training 120</td>
<td>6</td>
</tr>
<tr>
<td>School Administration 114b</td>
<td>2</td>
</tr>
<tr>
<td>Sociology 3</td>
<td>6</td>
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</table>

Total Credits: 124
Special Teachers of Agriculture

(Rural industrial education for township superintendents and for principals and science teachers of high schools in agricultural communities.)

<table>
<thead>
<tr>
<th>First Year</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Botany I</td>
<td>8</td>
</tr>
<tr>
<td>Education III</td>
<td>6</td>
</tr>
<tr>
<td>English I</td>
<td>6</td>
</tr>
<tr>
<td>Manual Training 114</td>
<td>4</td>
</tr>
<tr>
<td>Modern Language</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
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<table>
<thead>
<tr>
<th>Second Year</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Education 114</td>
<td>6</td>
</tr>
<tr>
<td>Botany 2</td>
<td>4</td>
</tr>
<tr>
<td>Geology I</td>
<td>8</td>
</tr>
<tr>
<td>Modern Language</td>
<td>8</td>
</tr>
<tr>
<td>Sociology I</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Year</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Education 115</td>
<td>6</td>
</tr>
<tr>
<td>Botany 3</td>
<td>6</td>
</tr>
<tr>
<td>Drawing 114</td>
<td>4</td>
</tr>
<tr>
<td>Economics 1</td>
<td>6</td>
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<td>Physical Education</td>
<td>2</td>
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<tr>
<td>Sociology 3</td>
<td>6</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
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<table>
<thead>
<tr>
<th>Fourth Year</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Agricultural Education 116</td>
<td>2</td>
</tr>
<tr>
<td>Education 116</td>
<td>2</td>
</tr>
<tr>
<td>Manual Training 119</td>
<td>4</td>
</tr>
<tr>
<td>School Administration 114</td>
<td>4</td>
</tr>
<tr>
<td>Zoology 7</td>
<td>8</td>
</tr>
<tr>
<td>Elective</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
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</tbody>
</table>
APPENDIX D

CONSPUCTUS OF FIRST FOUR YEAR COURSE FOR
TEACHERS OF MANUAL ARTS 1913-1914
CONSPECTUS OF FOUR-YEAR COURSES

A. Special Teachers of Manual Arts

First Year
(Required for all)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Chemistry (Chemistry 1 or 2)</td>
<td>8</td>
</tr>
<tr>
<td>Object Drawing and Sketching (Dr. 113)</td>
<td>2</td>
</tr>
<tr>
<td>Elementary Design (Dr. 118)</td>
<td>2</td>
</tr>
<tr>
<td>Rhetoric and Composition (Eng. I)</td>
<td>6</td>
</tr>
<tr>
<td>Freshman Lecture</td>
<td>1</td>
</tr>
<tr>
<td>Woodworking (Manual Training 114)</td>
<td>6</td>
</tr>
<tr>
<td>Trig. Analytics and Shop Math. (Math. 113)</td>
<td>4</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
</tbody>
</table>

Credits required first year: 33

Second Year
(Required for all)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Mechanical Drawing (Dr. 114)</td>
<td>6</td>
</tr>
<tr>
<td>Constructive Design (Dr. 123)</td>
<td>2</td>
</tr>
<tr>
<td>Economic History of the U.S. (Hist. 113)</td>
<td>4</td>
</tr>
<tr>
<td>Cabinet-making (Man. Tr. 117)</td>
<td>6</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>General Physics (Physics 1 or 2)</td>
<td>8</td>
</tr>
<tr>
<td>Elective</td>
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</table>

Credits required second year: 31

Third Year
(Required for all)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology; Principles of Teaching (Ed. 111)</td>
<td>6</td>
</tr>
<tr>
<td>(Required for Major in Woodworking)</td>
<td></td>
</tr>
<tr>
<td>Architectural Drawing (Drawing 122a)</td>
<td>3</td>
</tr>
<tr>
<td>Building Construction (Manual Training 116b)</td>
<td>3</td>
</tr>
<tr>
<td>(Required for Major in Metal-working)</td>
<td></td>
</tr>
<tr>
<td>Forging; Bench Metal-work (Manual Training 119)</td>
<td>6</td>
</tr>
<tr>
<td>(Required for Major in Mechanical Drawing)</td>
<td></td>
</tr>
<tr>
<td>Advanced Object Drawing and Sketching (Dr. 116)</td>
<td>2</td>
</tr>
<tr>
<td>Architectural Drawing (Drawing 122a)</td>
<td>3</td>
</tr>
<tr>
<td>Building Construction (Manual Training 116b)</td>
<td>3</td>
</tr>
<tr>
<td>(Elective for all)</td>
<td></td>
</tr>
<tr>
<td>Modern Language recommended</td>
<td>8</td>
</tr>
<tr>
<td>Other electives</td>
<td>8 to 10</td>
</tr>
</tbody>
</table>

Credits required third year: 30
Fourth Year
(Required for all)

Descriptive Geometry (Dr. 119b) ....................... 3
History of Education (Ed. 115) .......................... 4
Organization of Manual Arts (Man. Train. 120) ....... 4
Teaching Manual Arts (Manual Train. 121) .............. 2
School Systems (Sch. Adm. 114) ......................... 4

(Required for Major in Woodworking)
Wood turning; Pattern-making (Man. Train. 115) ....... 6

(Required for Major in Metal-working)
Machine Design (Dr. 119a) .............................. 3
Wood-turning; Pattern-making (Man. Train. 115) ....... 6
Art Metal; Sheet Metal (Man. Train. 118b) ............. 3

(Required for Major in Mechanical Drawing)
Machine Design (Dr. 119a) .............................. 3
Art Metal; Sheet Metal (Manual Train. 118b) ........... 3
Modern Language recommended ............................ 8

Credits required fourth year ........................ 30

1. After the second year, opportunity is offered for some
specialization in wood-working, metal-working, mechanical
drawing, or art and hand-work (course to be arranged.)
2. No student is permitted to take more than one-half of his
course in drawing and manual training.
3. A student desiring to teach after two years' work will
note the statement on page 106.

B. Special Teachers of Agriculture

(Rural Industrial education for township superintendents and
for principals and science teachers of high schools in
agricultural communities.)

First Year

General Botany (Botany I) .............................. 8
Psychology, Child-study, Principles of Teaching and
Methods (Education 111) .............................. 6
Freshman English (English I) .......................... 6
Modern Language (German, French, or Spanish I) ....... 8
Freshman Lecture ...................................... 1
Physical Education ................................. 2

31
### Second Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Propagation and Soil Fertility (Agricultural Education 114a)</td>
<td>3</td>
</tr>
<tr>
<td>Plant and Animal Improvement (Agricultural Education 114b)</td>
<td>3</td>
</tr>
<tr>
<td>Dendrology (Botany 2)</td>
<td>4</td>
</tr>
<tr>
<td>Modern Language (German, French, or Spanish 2)</td>
<td>8</td>
</tr>
<tr>
<td>Wood-working (Manual Training 114a)</td>
<td>3</td>
</tr>
<tr>
<td>Building Construction (Manual Training 116b)</td>
<td>3</td>
</tr>
<tr>
<td>Principles of Sociology (Sociology I)</td>
<td>6</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>32</td>
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</table>

### Third Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Animal Nutrition (Agricultural Education 115a)</td>
<td>3</td>
</tr>
<tr>
<td>Domestic Animals (Agricultural education 115b)</td>
<td>3</td>
</tr>
<tr>
<td>Trigonometry, Analytics, and Shop Work Mathematics (Mathematics 113)</td>
<td>4</td>
</tr>
<tr>
<td>Mycology (Botany 3a)</td>
<td>3</td>
</tr>
<tr>
<td>Plant Pathology (Botany 4b)</td>
<td>4</td>
</tr>
<tr>
<td>Labor Problems (Sociology 3a)</td>
<td>3</td>
</tr>
<tr>
<td>Rural Communities (Sociology 3b)</td>
<td>3</td>
</tr>
<tr>
<td>Mechanical Drawing (Drawing 114a)</td>
<td>3</td>
</tr>
<tr>
<td>Modern Educational Tendencies (Education 115)</td>
<td>2</td>
</tr>
<tr>
<td>Economic History of U.S. (History 113)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>32</td>
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</tbody>
</table>

### Fourth Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems in Rural Education (Agricultural Education 116)</td>
<td>2</td>
</tr>
<tr>
<td>Forging (Manual Training 119a)</td>
<td>3</td>
</tr>
<tr>
<td>Bench Metal Work (Manual Training 119b)</td>
<td>3</td>
</tr>
<tr>
<td>Entomology (Zoology 7)</td>
<td>8</td>
</tr>
<tr>
<td>School System and Administration (School Administration 14)</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>9</td>
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<tr>
<td></td>
<td>29</td>
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</tbody>
</table>
APPENDIX E

THE FIRST COURSE OF STUDY IN INDUSTRIAL EDUCATION-TWO YEAR 1915-1916
B. INDUSTRIAL EDUCATION

First Year
First Semester
Drawing 130, Object Drawing and Design ............... 1
Drawing 150, Mechanical .................................. 2
Education 100, Psychology of Adolescence ............. 3
English 100, Rhetoric and Composition ................ 3
Industrial Arts 110, Woodworking ...................... 3
Mathematics 161, Trigonometry .......................... 3
Physical Education ....................................... 1

Second Semester
Drawing 130, Object Drawing and Design ............... 1
Drawing 150, Mechanical .................................. 2
Education 152, Principles of Teaching ................ 3
English 100, Rhetoric and Composition ................ 3
Industrial Arts 110, Woodworking ...................... 3
Mathematics 162, Shop Mathematics ..................... 3
Physical Education ....................................... 1

Second Year
First Semester
Drawing 230, Constructive Design ..................... 1
Drawing 240, Descriptive Geometry ..................... 2
Education 211, History of Manual Arts and Vocational Education ........................................... 2
Industrial Arts, 210, Cabinet Making ................ 3
Industrial Arts (Elective) .............................. 2
School Administration 401, School Organizations in Secondary Schools .................................. 3
Teaching and Observation 401, Teaching Industrial Arts ...................................................... 2

Second Semester
Drawing 230, Constructive Design ..................... 1
Drawing 240, Descriptive Geometry ..................... 2
Education 212, Modern Educational Tendencies ......... 2
Industrial Arts 210, Cabinet Making ................ 3
Industrial Arts (Elective) .............................. 2
Education 412, Organization and Administration of Vocational Education .............................. 3
Teaching and Observation 402, Teaching Industrial Arts ...................................................... 2

Students are advised to take the four-year course (see page 112) and receive the degree of bachelor of Science in Education, thereby placing themselves in line for the better teaching positions, especially in High Schools.

219
The above course is arranged for those who must teach after two years of study. If possible students should take additional Industrial Education courses during the Summer Term of the University between their Freshman and Sophomore years.

Entrance to the two-year course is limited to students of some maturity or of manifest ability in mechanical work, or to those who have had teaching experience.
APPENDIX F

THE FIRST FOUR YEAR COURSE IN INDUSTRIAL EDUCATION

1915–1916
F. INDUSTRIAL EDUCATION

First Year
First Semester
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Drawing 130, Object Drawing and Design</td>
<td>1</td>
</tr>
<tr>
<td>Drawing 150, Mechanical</td>
<td>2</td>
</tr>
<tr>
<td>Education 100, Psychology</td>
<td>3</td>
</tr>
<tr>
<td>English 100 and Rhetoric Composition</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 110, Woodworking</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 161, Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>1</td>
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</table>

Second Semester
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing 130, Object Drawing and Design</td>
<td>1</td>
</tr>
<tr>
<td>Drawing 150, Mechanical</td>
<td>2</td>
</tr>
<tr>
<td>Education 100, Psychology of Adolescence</td>
<td>3</td>
</tr>
<tr>
<td>English 100, Rhetoric and Composition</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 110, Woodworking</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 162, Shop Mathematics</td>
<td>3</td>
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<tr>
<td>Physical Education</td>
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Second Year
First Semester
<table>
<thead>
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<tbody>
<tr>
<td>Chemistry 100 or 110, General Chemistry</td>
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<tr>
<td>Drawing 230, Constructive Design</td>
<td>1</td>
</tr>
<tr>
<td>Drawing 240, Descriptive Geom.</td>
<td>2</td>
</tr>
<tr>
<td>Education 211, History of Manual Arts and</td>
<td></td>
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<tr>
<td>Vocational Education</td>
<td></td>
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<tr>
<td>Industrial Arts 210, Cabinet Making</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 221, Wood Turning</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education</td>
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Second Semester
<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>Chemistry 100 or 110, General Chemistry</td>
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</tr>
<tr>
<td>Drawing 230, Constructive Design</td>
<td>1</td>
</tr>
<tr>
<td>Drawing 240, Descriptive Geometry</td>
<td>2</td>
</tr>
<tr>
<td>Education 212, Modern Educational Tendencies</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Arts 210, Cabinet Making</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 222, Patern Making</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education</td>
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</table>

Third Year
First Semester
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Drawing 301, Architectural</td>
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<tr>
<td>Education 300, Principles of Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Economics 100, Economic history</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 301, Paper and Cardboard, or</td>
<td></td>
</tr>
<tr>
<td>Industrial Arts 321, Sheet Metalwork</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Arts 311, Concrete Construction</td>
<td>2</td>
</tr>
<tr>
<td>Physics 100, Freshman Physics</td>
<td>4</td>
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</tbody>
</table>
Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Drawing 302, Topographical, etc.</td>
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</tr>
<tr>
<td>Education 300, Principles of Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Economics 100, Economic History</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 302, Bookbinding or</td>
<td></td>
</tr>
<tr>
<td>Industrial Arts 322, Art Metalwork</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Arts 312, Frame Building Construction</td>
<td>2</td>
</tr>
<tr>
<td>Physics 100, Freshman Physics</td>
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Fourth Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Drawing 400, Machine design</td>
<td>2</td>
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<tr>
<td>Industrial Arts 400, Pottery or</td>
<td></td>
</tr>
<tr>
<td>Industrial Arts 420, Printing</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Arts 411, Forging</td>
<td>2</td>
</tr>
<tr>
<td>Teaching and Observation 401, Teaching Industrial Education</td>
<td>2</td>
</tr>
<tr>
<td>Sociology 311, Labor problems</td>
<td>3</td>
</tr>
<tr>
<td>School Administration 401, School Organization in Secondary Schools</td>
<td>3</td>
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<td>Elective</td>
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Second Semester

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<tbody>
<tr>
<td>Drawing 400, Machine Design</td>
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<tr>
<td>Industrial Arts 400, Pottery or</td>
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</tr>
<tr>
<td>Industrial Arts 420, Printing</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Arts 412, Bench Metalwork</td>
<td>2</td>
</tr>
<tr>
<td>School Administration 412, Organizational and Administration of Vocational Education</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 312, Rural Communities</td>
<td>3</td>
</tr>
<tr>
<td>Teaching and Observation 402, Teaching and Industrial Education</td>
<td>2</td>
</tr>
<tr>
<td>Elective</td>
<td>1</td>
</tr>
</tbody>
</table>

Students in Industrial Education are advised to spend one or more summers during their course in practical work in the industries. The demand for teachers who have had industrial work in commercial shops is increasing each year.

The Student may make any one of the following combinations with the course in Industrial Education: --

Industrial Education and (1) Mathematics, (b) Physics, (c) Agriculture, or (d) Physical Education.
### First Year

#### First Semester

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Drawing 130, Objective Drawing and Design</td>
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<td>Drawing 150, Mechanical Drawing</td>
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</tr>
<tr>
<td>Education 100, Psychology of Adolescence</td>
<td>3</td>
</tr>
<tr>
<td>English 100, Rhetoric and Composition</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 110, Woodworking</td>
<td>3</td>
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<tr>
<td>Physical Education</td>
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<tr>
<td>(a), (b) Mathematics 101, Freshman Mathematics</td>
<td>4</td>
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<tr>
<td>(c), (d) Mathematics 161, Trigonometry</td>
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#### Second Semester

<table>
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<tr>
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<tr>
<td>Drawing 150, Mechanical Drawing</td>
<td>2</td>
</tr>
<tr>
<td>Education 100, Psychology of Adolescence</td>
<td>3</td>
</tr>
<tr>
<td>English 100, Rhetoric and Composition</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 110, Woodworking</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>(a), (b) Mathematics 102, Freshman Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>(c), (d) Mathematics 162, Shop Mathematics</td>
<td>3</td>
</tr>
</tbody>
</table>

*As a one-hour elective in his senior year a student may do advanced work, under the direction of the instructor in charge, in an Industrial Arts or Drawing course in which he has shown exceptional ability and interest.*
APPENDIX G

COURSE DESCRIPTIONS 1917-1918
INDUSTRIAL EDUCATION

Fred Campbell Whitcomb, B.S., Professor
Mary Edna Flegal, B.S., Assistant Professor
Forest Tobias Selby, B.S., Assistant Professor
Edith Palmer, Instructor
Gertrude Wallace, Assistant
O.C. Martin, Assistant
Clyde Pierson, Assistant
Wm. Kluber, Assistant
Richard Gubsch, Assistant

Drawing

100. PUBLIC SCHOOL DRAWING. The purpose of this course is to meet the needs of the grade teacher in art work. Elementary drawing and the principles of design with many applications are stressed. One hour credit. Miss Flegal and Miss Wallace.

110. OBJECTIVE DRAWING AND SKETCHING. The emphasis in this course is placed upon the technical expression of art principles. Elementary perspective is also included. One hour credit.

121. HOUSEHOLD DESIGN. Arranged for Home Economics students. The application of principles of design is made to problems related to the house and home. One hour credit. Miss Palmer.

122. COSTUME DESIGN. Arranged for Home Economics students. The principles of design are studied in relation to dress. One hour credit. Miss Palmer.

130. OBJECT DRAWING AND ELEMENTARY DESIGN. A short course arranged for Industrial Arts students. (a) Elementary freehand perspective with the purpose of representing form in the drawing of objects and in out-door sketching. (b) Practical application of the principles of design in problems arising in Industrial Arts courses 110, 221 and 322. One hour credit. Mr. Whitcomb.

150. MECHANICAL DRAWING. (1) Technical freehand sketching, (2) freehand lettering, (3) orthographic projection, (4) simple working drawings, (5) pictorial representation, (6) tracings, (7) blue printing. Text: French's Engineering Drawing. Students may rent instruments. Two hours credit. Mr. Whitcomb and Mr. Pierson.
221. **HOUSE PLANNING.** Arranged for Home Economics students. (a) blue prints of a small house are copied to a different scale; (b) each student designs and makes the plans and specifications for a house; (c) the class studies the various problems which arise in planning and building a house. One hour credit. Mr. Whitcomb.

230. **CONSTRUCTIVE DESIGN AND FREEHAND PERSPECTIVE.** The principles of design are studied and used in making a number of designs for furniture. Perspective drawings are also made from these designs. Text: Crawshaw's Furniture Design. Drawing 130 and 150 and Industrial Arts 110 are prerequisite. One hour credit. Mr. Whitcomb.

240. **DESCRIPTIVE GEOMETRY.** The student, having completed a course in practical mechanical drawing (Drawing 150), now studies the theory of orthographic projection. Problems relating to points, lines, planes, curved lines and surfaces are discussed in class and worked out in the drafting room. Text: Smith's Practical Descriptive Geometry. Two hours credit. Mr. Whitcomb and Mr. Pierson.

301. **ARCHITECTURAL DRAWING.** The drafting of a set of house plans is made the basis for the course. Drawing 130 and 150 are prerequisite. Two hours credit. Mr. Whitcomb and Mr. Gubsch.

302. **MAP, TOPOGRAPHICAL DRAWING, ETC.** (a) Mechanical perspective; (b) Shades and shadows; (c) Map and topographical drawing; (d) Patent office drawings. Drawing 130 and 150 are prerequisite. Texts. French and Smith used in previous courses. Two hours credit. Mr. Whitcomb.

400. **MACHINE DRAWING AND DESIGN.** An elementary course in this subject. Drawing courses 130 and 150 are prerequisite. Text: Reid's Mechanical Drawing and Elementary Machine Design. Two hours credit. Mr. Selby.

**COURSES OFFERED 1916-17:** 100, 121, 122, 130, 150, 230, 240, 301.
INDUSTRIAL ARTS

110. WOODWORKING. From working drawings and blue prints, a number of simple pieces of woodwork are made. The correct use of tools is emphasized. By means of lectures, readings, drawings, and experiments, the following topics are considered: the classification, construction, use, and evolution of tools; forms of fastenings; wood finishings; seasoning of wood; lumbering; saw milling and forestry. Three hours credit. Four hours credit be required of students who do not show superior ability in the work of this course. Mr. Selby and Mr. Pierson.

201. PUBLIC SCHOOL HANDWORK. A study of the different forms of handwork as related to grade work. These forms include paper and cardboard construction, modeling with clay, weaving, woodworking, etc. Either semester. Two hours credit. Miss Palmer and Miss Wallace.

210. CABINET-MAKING. From designs made in Drawing 230 (which should be taken as a parallel course), articles of furniture are constructed. Caning, upholsterying, simply carving, inlaying, veneering and metal trimming are employed in the course. A study of the joints used in a cabinet-making. Woodworking machines are used and studied. Industrial Arts 110 and Drawing 130 and 150 are prerequisite. Three hours credit. Mr. Selvy and Mr. Gubsch.

221. WOOD-TURNING. A study of the lathe, turning tools, methods of turning and methods of finishing. Cabinet turning, including the processes of turning between centers, face place, and chuck work. Two hours credit. Mr. Selby.

222. PATTERN-MAKING. Pattern turning and bench work, including some simple foundry work with soft metals. Two hours credit. Mr. Selby.

301. PAPER AND CARDBOARD WORK. The historic development of the paper industry. Constructive problems based on the use of paper and cardboard in connection with the principles of design. The articles made involve the processes of tearing, cutting, folding, mounting, pasting, weaving, and constructing. Two hours credit.
302. BOOKBINDING. The development of the bookbinding industry, together with a brief study of printing and lettering in connection with bookbinding, repairing of books, and making of pamphlets, tablets, and note-books. Two hours credit.

311. CONCRETE CONSTRUCTION. Practical work with concrete in its various uses is made the basis for the course. A study is made of cement, its properties and manufacture. Two hours credit. Mr. Selby and Mr. Martin.

312. BUILDING CONSTRUCTION. The erection of a small frame building is made the basis for the work of this course. A thorough study is made of building materials, of processes, of methods, and of the mechanics of carpentry. Some knowledge of the use of the common woodworking tools is prerequisite. Two hours credit. Mr. Selby and Mr. Martin.

321. SHEET METALWORK. The work is largely elementary tinsmithing but not confined to this industry. Two hours credit. Mr. Selby.

322. ART METALWORK. Sheet copper and sheet brass are used as the chief materials. Instruction is given in bending, sawing, filing, riveting, soft and hard soldering and hammering. Decoration by means of piercing, etching, chasing, embossing, flame and acid coloring, and enameling. Two hours credit. Mr. Selby.

332. SPECIAL METHOD. Problems arising in teaching the industrial arts in elementary and high schools. The courses in industrial arts as given in the Wm. McGuffey schools are made the basis for this study. Three hours credit. Mr. Whitcomb.

400. CLAY MODELING AND POTTERY. A study of the principles of design, with clay as the medium of expression. The study of form and construction is arranged in a series of progressive lessons, beginning with simple lines and masses, in moulding, repeated borders, and pottery. The course has direct relation to the industrial arts and to pottery, but is also designed to meet the needs of teachers in elementary schools. Two hours credit.
411. FORGING. An elementary course in forging, including the usual processes of drawing, bending twisting, upsetting, welding, and shaping of wrought iron and soft steels, and the annealing, hardening, tempering, and working of high carbon steel. Two hours credit. Mr. Selby.

412. BENCH METALWORKING. A number of processes of bench work with cold metal are considered, such as chipping, filing, fitting, polishing, drilling, riveting, and threading. Two hours credit. Mr. Selby.

420. PRINTING. Practical work: (a) composition, (b) distribution, (c) imposition, (d) proof reading, (e) presswork, (f) job printing, and (g) methods of illustrating. Class work and readings: (a) historic methods of transmitting knowledge, (b) discovery of movable type, (c) invention of the printing press, (d) composition of ink, (e) monotype and linotype machines, (f) methods of illustrating, etc. Two hours credit. Mr. Kluber.

COURSES OFFERED 1916-17: 110, 201, 210, 311, 312, 321, 412.
APPENDIX H

COURSE OF STUDY 1922-1923

231
G. INDUSTRIAL EDUCATION

First Year
First Semester

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Drawing 110, Object and Perspective</td>
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<tr>
<td>Drawing 150, Engineering Drawing</td>
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</tr>
<tr>
<td>English 100, Composition</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 111, Handwork in Wood</td>
<td>3</td>
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<tr>
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<tr>
<td>Mathematics 191, Trigonometry</td>
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<td>Physical Education</td>
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<td><strong>Total</strong></td>
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Second Semester

<table>
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<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Drawing 110, Object and Perspective</td>
<td>2</td>
</tr>
<tr>
<td>Drawing 150, Engineering Drawing</td>
<td>3</td>
</tr>
<tr>
<td>English 100, Composition</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts 112, Woodworking Projects</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts (Selected)</td>
<td>2</td>
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<tr>
<td>Mathematics 192, Shop Mathematics</td>
<td>3</td>
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<tr>
<td>Physical Education</td>
<td>1</td>
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<td><strong>Total</strong></td>
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Second Year
First Semester

<table>
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<tbody>
<tr>
<td>Physics 100, freshman Physics</td>
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<tr>
<td>Drawing 230, Furniture Design</td>
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<tr>
<td>Education 110, Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Public Speaking 100</td>
<td>2</td>
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<td>Industrial Arts 211, Furniture Construction</td>
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<td>Physical Education</td>
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Second Semester

<table>
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<tbody>
<tr>
<td>Physics 100, Freshman Physics</td>
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<tr>
<td>Drawing 230, Furniture Design</td>
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<tr>
<td>Education 110, Psychology</td>
<td>2</td>
</tr>
<tr>
<td>Public Speaking 100</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Arts 212, Furniture Construction</td>
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<td>Physical Education</td>
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Third Year
First Semester

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<tbody>
<tr>
<td>Chemistry 100 or 110</td>
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</tr>
<tr>
<td>Drawing 241, Descriptive Geometry</td>
<td>3</td>
</tr>
<tr>
<td>Education 212, History and Principles of Education</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Arts (Selected Courses)</td>
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<td>Elective</td>
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<tr>
<td><strong>Total</strong></td>
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</table>
Second Semester
Chemistry 100 or 110 ................................... 4
Drawing 301, Architectural Drawing .................... 3
Education 311, Principles of Teaching .................. 3
Industrial Arts (Selected Courses) ..................... 4
Elective ................................................ 2

Fourth Year
First Semester
Drawing 401, Machine Design ............................ 3
Industrial Arts (Selected Courses) ..................... 4
Industrial Arts 330, Special Method .................... 2
Teaching 410, Industrial Arts ........................... 2
Elective (Social Science or Literature) ............... 3

Second Semester
Industrial Arts (Selected Courses) ..................... 4
Industrial Arts 330, Special Method .................... 2
School Administration 412, Practical Arts and
Vocational Education .................................... 3
Teaching 410, Industrial Arts ........................... 2
Elective (Social Science or Literature) ............... 3

NOTES-1. As an elective in his senior year a student may do advanced work, under the instructor in charge, in a Drawing or Industrial Arts course in which he has shown exceptional ability and interest.

2. Modifications of the above curriculum may be made to meet the needs of a student who wishes to specialize in any of the following lines of work:
   I. Special teacher of Industrial Arts in the Elementary School.
   II. Special teacher of Industrial Arts in the Junior High School.
   III. Special teacher of Industrial Arts in the Senior High School.
   IV. Teacher of Industrial Arts in combination with other subjects in centralized and other schools.
   V. Vocational teacher, when accompanied by sufficient trade experience.
APPENDIX I

DESCRIPTION OF UNIVERSITY GROUNDS, BUILDINGS
AND EQUIPMENT AS OF MARCH 1925
GROUNDS

The University owns 170 acres of land, about one-third of which is thickly wooded. Thirty-five acres are now developed or are being developed as playgrounds and athletic fields.

BUILDINGS AND EQUIPMENT

The University has twenty-one buildings completed or under construction. Nine of these buildings are dormitories; three are service buildings—a hospital, a power plant, and a storeroom; and nine are wholly devoted to educational purposes. A recitation building providing twenty classrooms and ample offices for the Arts College, an addition to the McGuffey Building materially enlarging the practice school, and a shop building for industrial education will be ready for occupancy in 1925. Any one desiring further information relative to the buildings should write for an illustrated bulletin.

The residence halls, four for men and five for women, are described under living conditions on page 29.

The educational buildings are as follows:

Main Building is chiefly occupied by classrooms used by the College of Liberal Arts. The University Commons, the industrial education department, and the offices of the various student activities are also in this building.

Brice Hall provides laboratories and classrooms for the departments of physics, zoology, botany, and geology.

Herron Gymnasium is used by both men and women; the main exercise room is 60 x 100 feet.

The Administration Building contains the Auditorium, used as the University Chapel, which seats about 1,100, and all the administrative offices.

The Alumni Library is the gift of Mr. Andrew Carnegie in cooperation with alumni, former students, and friends of Miami. It houses the university library of some 77,000 volumes and provides eight reading and seminar rooms.
McGuffey Hall is devoted entirely to the Teachers College. The McGuffey Training School occupies the south wing. The Auditorium in the central section seats 300. The departments of home economics, geography, biology, and art have laboratories in this building.

The Chemistry Building is wholly devoted to chemistry. It contains a lecture room with elevated seats, a library, offices, and four large laboratories.

A class room building for the Liberal Arts College, a large addition to the McGuffey Building, and a shop building for the industrial education work are under construction.

The class room building is a modern fireproof structure costing $200,000 and will provide twenty class rooms and as many offices.

The McGuffey wing will contain eight large and sixteen small classrooms for the McGuffey School and a gymnasium 60 x 90 feet. The wing will cost $160,000.

The shop building, costing $30,000, provides quarters for wood and metal working.
APPENDIX J

1972 NCATE SELF STUDY REPORT
5. CLASSROOM TEACHER OR SUPERVISOR IN INDUSTRIAL EDUCATION (M.A., M.Ed.)

INTRODUCTION

The Department of Industrial Education offers M.A., and M.Ed., programs with specialization in industrial education for classroom teachers, driver education and safety, aerospace education, and credential programs in administration and supervision. The department currently has an active enrollment of 100 graduate students, and over the past three years has graduated an average of fifteen students per year. In 1969 through 1971, a total of four students were denied admission to this program.

CURRICULUM OUTLINE

A. Program in Industrial Education
1. General Degree requirements for the M.A. or M.Ed.
2. Content of the Specialty (22)
   a. IED 517 Planning Laboratory Facilities (3)
   b. IED 582 History of Industrial Education (3)
   c. IED 601 Curriculum Development (3)
   Plus courses to complete 22 hours chosen from courses listed below
   (1) IED 510 Seminar in Industrial Education (1-3)
   (2) IED 521, 522 Instructional Methods and Materials (3, 3)
   (3) IED 531 Technical Problems (1-6)
   (4) IED 534 Research in Materials & Processes (3-6)
   (5) IED 546 Photographic Techniques (3)
   (6) IED 550 Minor Problems (1-5)
   (7) IED 551 Design Analysis (3)
   (8) IED 564 Research in Visual Communications (3-6)
   (9) IED 593 Organization of Driver Education and Highway Safety (3)
   (10) IED 594 Research in Power and Transportation (3-6)
   (11) IED 595 Practicum in Driver Education Simulators (4)
A requirements for this degree is a minimum of three Professional Education Courses (9-12 hrs.) selected from graduate offerings in EDA, EDC, EDG, and/or EDP.

3. Humanistic and Behavioral Studies (0-11)
   a. IED 582 History of Industrial Education (3)
   b. IED 691 Contemporary Concepts (3)
   c. EDC 501 Philosophy of Education (4)
   d. EDC 502 History of Education (4)

4. Theory into Practice (0-8)
   a. IED 602 Instructional Aids & Materials (3)
   b. EDM 549 Audio Visual Methods & Materials (4-5)
   c. IED 601 Curriculum Development (3)

5. Research (0-11)
   a. IED 534 Research in Materials & Processes (3-6)
   b. IED 564 Research in Visual Communication (3-6)
   c. IED 595 Research in Power & Transportation (3-6)
   d. IED 620 Research Projects (1-5)

6. Selected Courses to meet Graduation Requirements (11-14)
   Generally selected from graduate courses in IED, EDA, EDC, EDG, and/or EDP to include learning areas involved in C, D, and E, above.

B. Program in Driver Education & Safety
1. General Degree Requirements for the M.Ed.
2. Content of the Specialty (20)
   a. IED 593 Organization of Driver Education and Safety (3)
   b. IED 595 Practicum in Driver Education Simulators (4)
   c. IED 596 Driver Education Range Management and Control (4)
   d. IED 601 Curriculum Development (3)
   e. IED 602 Instructional Aids & Materials (3)
   f. IED 546 Photographic Techniques or IED 564 Research in Visual Communications (3)

A further requirement consists of twelve hours of professional course requirements, as follows:
a. EDP 601 Advanced Educational Psychology (4)
b. EDG 561 Principles of Guidance (4)
c. EDC 612 The High School Curriculum (or)
   EDC 615 Curriculum Development in the Public
   Schools (or)
   EDG 564 Evaluation (or)
   EDG 667 Educational Statistics (4)

3. Humanistic & Behavioral Studies (0-10)
a. EDP 601 Advanced Educational Psychology (4)
b. EDG 561 Principles of Guidance (4)
c. IED 550 Minor Problems (1-5)
d. IED 600 Independent Reading (1-5)

4. Theory into Practice (0-13)
a. EDM 566, 567 Practicum in Educational Television
   (3, 3)
b. EDM 549 Audial Visual Methods & Materials (4-5)
c. EDM 561 Communications Through Film (4)
d. EDM 562 Fundamentals of Motion Picture Production
   (4)
e. EDM 563 Projects in Motion Picture Design (4)

5. Research (0-13)
a. IED 531 Technical Problems (1-6)
b. IED 620 Research Projects (1-5)
c. IED 700 Thesis (1-12)

6. Selected Courses to meet Graduation Requirements (13)
a. Selected from C, D, & E above.

C. Program in Industrial Education and Supervision
1. General Degree Requirements for the M. Ed.
2. Content of the Specialty (12-13)
a. IED 517 Planning Laboratory Facilities (3)
b. IED 582 History of Industrial Education (3)
c. IED 601 Curriculum Development (3)
d. IED 608 Administration & Supervision (3) or
   EDC 613 Supervision of Teaching (4)
3. Humanistic & Behavioral Studies (8)
a. EDA 601 Structure of American Education (or)
   EDC 625 Social Foundations of Education (4)
b. EDP 601 Advanced Educational Psychology (4)
4. Theory into Practice (4)
a. EDC 615 Curriculum Development in the Public
   Schools (4)
5. Research (4)
a. EDP 651 Educational Research (4)
6. Selected Courses to meet Graduation Requirements
   (16-17)
a. Chosen from IED courses listed in I, B, and
   from graduate courses in EDA, EDC, and/or EDP

D. Program in Industrial Education and Secondary Principal
1. General Degree Requirements for M. Ed.
2. Content of the Specialty (22)
a. IED 517 Planning Laboratory Facilities (3)
b. IED 521, 522 Instructional Methods & Materials or
   IED 602 Instructional Aids & Devices, &
   IED 546 Photographic Techniques (6)
c. IED 582 History of Industrial Education (3)
d. IED 601 Curriculum Development (3)
e. IED 691 Contemporary Concepts (3)
f. Advised IED Electives (4)

3. Humanistic & Behavioral Studies (12)
a. EDP 601 Advanced Educational Psychology (4)
b. EDA 601 Structure of American Education (4)
c. EDG Principles of Guidance (4)

4. Theory into Practice (12)
a. EDA 602 The Law and Education (or)
b. EDA 603 School Business Management (or)
c. EDA 604 School Finance (or)
d. EDA 606 Staff Personnel (4)
e. EDA 616 Administration: Middle & Junior High School or
f. EDA 617 Administration: High Schools (4)
g. EDA 613 Supervision of Teaching (4)

5. Research (4)
a. EDP 651 Educational Research (4)

E. M. A. In Industrial Education

1. General Degree Requirements for the M.A.
2. Content of the Specialty (30)
a. Courses to be selected from those listed in I, B.
3. Humanistic & Behavioral Studies (0-5)
4. Theory into Practice (0-5)
5. Research (10-16)
a. EDP 651 Educational Research (4)
b. IED 700 Thesis (6-12)

SPECIFIC OPERATIONAL AND BEHAVIORAL OBJECTIVES

Basically, the specific objectives of the graduate programs are extensions of those listed in Chapter 3, Section 2, pp. 2 & 3 of the Basic Programs Folio. Somewhat less emphasis is placed on the skill aspects of our teaching areas and somewhat more on professional aspects. Upon receiving a master's degree, the individual should be able to demonstrate:

1. The ability to plan completely with all peripheral requirements, a new industrial education laboratory facility or to revise already existing facilities.
2. A thorough comprehension of the historical development of industrial education and its possibly future direction(s).

3. The ability to construct or revise, totally or in part, a functioning, vital, curriculum relevant to our current and future socio-economic environment.

4. A refinement of his own philosophy of industrial education and a more complete understanding of how this affects operational aspects of his teaching and/or supervision or administrative aspects of his school position.

5. The ability to use research techniques to solve concrete problems and apply the solutions to the practical improvement of his own teaching.

6. A more thorough understanding of and skill in the use of multi-media materials and equipment.

7. A more sophisticated skill level in the areas of his teaching.

8. A more thorough understanding of the organizational patterns of the public school systems and of his functioning role within their frameworks.

PROFILE OF FACULTY

Industrial Education (M.A., M.Ed.) Bunten--department chairman and director of program

Planning Laboratory Facilities Ginther, Rueggeberg
Methods and Materials Bunten, Rueggeberg, Foss, Shrader
Photography Kuzma
Design Analysis Land
History of Industrial Education Ginther, Shrader
Driver Education Shrader
Curriculum Development Bunten, Ginther
Administration and Supervision Bunten, Ginther
Visual Communication, Power, and Transportation Staff in various areas
CRITERIA OF ADMISSION

None beyond those of the Graduate School and the School of Education.

VITAL AND SPECIFIC RESOURCES

Laboratory facilities exist in the areas of photography, graphic arts, drafting, woods, general metals, machine tools, automotive and power, electronics, driver education (with a driving range), and arts and crafts—ceramics. These are described in the program folio dealing with basic programs in industrial education.

LABORATORY AND CLINICAL EXPERIENCES

Research courses in the area of concentration (materials and processes, visual communications, and power and transportation) make available to the student the laboratory areas of the department. They are supervised and evaluated by the graduate staff members (usually Level II) of the department. Specifically these experiences enable the teacher to add new or improve existing skills which he can then apply in his own particular teaching situation. They enable him to develop and prepare materials for presentation to his classes in upgrading his current program and to make experiences more meaningful for his students.
Laboratory planning and problems courses enable the individual to carefully examine the facilities in his current teaching laboratory and to develop and plan improvements in consultation with others knowledgable in his area(s) of specialization.

Practicums in driver education acquaint the students in this field with the latest technical developments, equipment, and facilities, and offer "hands on" experiences in this area.

REQUIREMENTS OF LEARNED SOCIETIES OR PROFESSIONAL ORGANIZATIONS

No guidelines or program outlines are available as specific recommendations to departments. A number of professional organizations in the field do, however, publish information concerning the development of programs throughout the country. Every local, regional, state, and national professional meeting has sections devoted to curricular innovation and development. Department members belong to organizations such as the American Industrial Arts Association, the American Council of Industrial Arts Teacher Educators, the American Vocational Association, the Ohio Conference of Industrial Arts Teacher Educators, and the Ohio Industrial Arts Association. They attend and participate in local, regional, state and national meetings and conventions. They provide appropriate input, as part of the community interested in the
input, as part of the community interested in the industrial arts, which is used in program development and revision.

ACADEMIC COMPONENTS

There are no required academic components in this program.
INTRODUCTION

The program in Aerospace Education is intended for persons who are planning careers as education directors in aerospace industries or aid transportation companies; as aerospace educators for the Civil Air Patrol, the Federal Aeronautics Administration, the National Aeronautics and Space Administration, state aerospace boards, and state departments of education; and as teachers and curriculum personnel for local, state, and national school programs. The program is lodged in the Department of Industrial Education. An average of three master's degrees per year have been awarded for the past several years.

CURRICULUM OUTLINE: AEROSPACE EDUCATION

A. Master of Education in Aerospace Education
   1. General degree requirements for the master of education.
   2. Content of the specialty (23-30 quarter hours)
      a. IED 597 Fundamentals of Aerospace Education
      b. IED 598 Fundamentals of Aerospace Education
      c. IED 610 Advanced Seminar in Aerospace Education
   3. Humanistic and behavioral studies (0-9)
      a. EDP 601 Advanced Educational Psychology
      b. EDG 564 Evaluation
      c. EDG 667 Educational Statistics
   4. Theory into practice (0)
   5. Research (9-4)
      a. EDP 651 Educational Research
   6. Elective courses (6-13)
      Electives should be chosen from courses in industrial education, educational administration, or curriculum.
B. Master of Arts in Aerospace Education

1. General degree requirements for the master of arts.
2. Content of the specialty (30-42, including thesis)
   Specific requirements here are the same as for the M.Ed.
3. Humanistic and behavioral studies (0-11)
4. Theory into practice (0-11)
5. Research (10-16)
   a. EDP 651 Educational Research
   b. IED 700 Thesis (6-15)

SPECIAL OPERATIONAL AND BEHAVIORAL OBJECTIVES

In completing the program in Aerospace Education, it is expected that each student will:

1. Develop the ability to plan completely with all peripheral requirements, a new Aerospace Education laboratory facility, or to revise already existing facilities.
2. Develop a thorough comprehension of the historical development of aerospace education, and its possible future direction(s).
3. Develop the ability to construct or revise, totally or in part, a functioning, vital, curriculum relevant to our current and future socio-economic environment.
4. Develop an effective philosophy of aerospace education, and an understanding of how this affects operational aspects of teaching and school planning.
5. Develop the ability to use research techniques to solve concrete problems, and apply the solutions to the practical improvement of his own teaching.
6. Develop skill in teaching competencies applicable to Aerospace Education.
7. Develop a thorough understanding of and skill in the use of multi-media materials and equipment.
8. Develop a thorough understanding of the organizational patterns of the public school system and of his functioning role within that organization.
9. Develop an adequate knowledge of basic, scientific principles underlying the aerospace program.

10. Develop the ability to relate aerospace principles to the various learning ability levels of elementary middle, junior high, and high school students.

PROFILE OF FACULTY

Aerospace Education

<table>
<thead>
<tr>
<th>Planning Laboratory Facilities</th>
<th>Ginther, Rueggeberg</th>
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<tbody>
<tr>
<td>Instructional Methodology</td>
<td>Bunten, Rueggeberg</td>
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<tr>
<td>Photography</td>
<td>Kuzma</td>
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<tr>
<td>Design Analysis</td>
<td>Land</td>
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<td>History of Industrial and</td>
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<tr>
<td>Aerospace Education</td>
<td>Shrader, Ginther</td>
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<td>Aerospace Education</td>
<td>Treadway</td>
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<tr>
<td>Curriculum in Aerospace Education</td>
<td>Bunten, Ginther</td>
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<tr>
<td>Administration and Supervision</td>
<td>Bunten, Ginther</td>
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</tbody>
</table>

CRITERIA OF ADMISSION

Admission to the program requires first meeting the requirements of the graduate school, and second a reasonable intention to enter work in aerospace education. The student's vocational objectives are explored with his advisor, prior to developing a course of study for him, to help ensure that this is an appropriate specialization.

VITAL AND SPECIFIC RESOURCES

Flight experiences and training in small aircraft operation is possible through the use of the University Airport. A pilot's license may be obtained.
LABORATORY AND CLINICAL EXPERIENCES

The seminar course (IED 610) gives an ample amount of time for the construction of teaching aids and materials for use in public school classrooms. Model rockets are constructed and tested, working models of plane controls are made, and airports are planned with scale models developed to show land utilization, traffic patterns, and cost estimates.

REQUIREMENTS OF LEARNED SOCIETIES OR PROFESSIONAL ORGANIZATIONS

The program in Aerospace Education meets the requirements of the State of Ohio and of the regional accrediting associations. Members of the department of industrial education belong to appropriate professional associations and attend appropriate meetings. One staff member belongs to the Civil Air Patrol and the Ohio Aerospace Education Association, and thus keeps abreast of program possibilities.
## Industrial Arts Education

Major Teaching Field, Grades K-12

### Curriculum Outline

**A. GENERAL STUDIES** (See Section 1) (34)

**B. PROFESSIONAL STUDIES** (109)

1. **Content for the Teaching Specialty** (72)
   
   Complete a course of study consisting of at least 72 credit-hours of industrial education courses with a minimum of 20 hours in at least one of the areas of concentration, such as: materials and processes; graphic communication; power and transportation.

   a. IED 151 Drafting and Design (4)
   b. IED 161 Industrial Mathematics (4)
   c. IED 111 Introduction to Woods (4)
   d. IED 121 Introduction to Metals (4)
   e. IED 141 Introduction to Graphic Arts (4)
   f. IED 181 Introduction to Electricity (4)
   g. IED 131 Introduction to Plastics (4)
   h. IED 137 Introduction to Craft Materials (4)
   i. IED 171 Introduction to Power (4)
   j. IED 335 Industrial Arts for Elementary Teachers (4)
   k. Electives in the major field (32 hours) from the following:
      
      1.) MATERIALS AND PROCESSES
      
      IED 138 Industrial Materials (5)
      IED 162 Industrial Mathematics (4)
      IED 211 Machine Wood Processing (4)
      IED 221, 222 Machine Metal Processing (4,4)
      IED 223 Hot Metal Processing (4)
      IED 231 Plastics Processing (4)
      IED 311 Wood Production Laboratory (4)
      IED 312 Light Shelter Construction (4)
      IED 321 Precision Metals Laboratory (4)
      IED 331 Plastics Laboratory (4)
      IED 337 Industrial Ceramics (4)
      IED 338 Lapidary and Jewelry (4)
      IED 432 Materials and Processes Laboratory (4)
      IED 434 Research in Materials and Processes (3-6)

      2.) GRAPHIC COMMUNICATION
      
      IED 152, 153 Drafting and Design (4,4)
      IED 212 Construction Surveying and Estimating (4)
      IED 241 Photography (4)
      IED 247 Architectural Drafting (4)
IED 261 Plane Surveying (4)
IED 341 Advanced B/W Photography (4)
IED 342 Offset Lithography (4)
IED 343 Silkscreen Processes (4)
IED 351 Technical Illustration (4)
IED 352 Descriptive Geometry (4)
IED 357 Architectural Details (4)
IED 417 Planning Laboratory Facilities (4)
IED 441 Color Photography (4)
IED 446 Photographic Techniques (4)
IED 451 Design Analysis (3)

3.) POWER AND TRANSPORTATION
IED 271 Power Systems Automotive (4)
IED 281 Applied Electricity (4)
IED 371 Automotive Systems-Engines (4)
IED 372 Automotive Systems-Chassis (4)
IED 381 Applied Electronics (4)
IED 382 Radio Fundamentals (4)
IED 383 Television Fundamentals (4)
IED 393 Driver Education and Safety (4)
IED 462 Experimental Communications Laboratory (4)
IED 472 Experimental Power Laboratory (4)
IED 493 Organization of Driver Education and Highway Safety (3)
IED 494 Research in Power and Transportation (3-6)
IED 497, 498 Fundamentals of Aerospace Education (5,5)

4.) The following courses are applicable to any or all of the above three areas of concentration:
IED 410 Seminar in Industrial Education (1-3)
IED 431 Technical Problems (1-6)
IED 450 Minor Problems (1-5)

2. Humanistic and Behavioral Studies (See Section 1) (16)
3. Teaching and Learning Theory with Laboratory and Clinical Experience (6)
a. IED 421, 422 Instructional Methods and Materials (3,3)
4. Practicum (15)
a. EDT 419 Supervised Teaching (15)

C. OTHER REQUIREMENTS (49)
1. Electives to complete a total of 192 credit-hours (49).

Scope of the Program

The Department of Industrial Education program is designed to prepare students to teach and supervise
industrial arts in elementary and secondary schools. Over the last five years, an average of fifteen industrial arts teachers per year were graduated and certified through this department. In addition, the department staffs certification programs in aerospace education and driver education and is currently involved in the development of what could be the first undergraduate, certified degree in aerospace education in the country. It also provides four sections per year in elementary industrial arts for elementary majors in the School of Education and four sections of photography per year for the University. The undergraduate laboratory courses offered by the department contain students from all other divisions of the University, sometimes to the extent of 20 per cent or more or the class enrollment.

The department staffs programs on the Hamilton and Middletown campuses, consisting primarily of the first two years of our degree program in industrial education. Graduate evening courses are offered also. The Hamilton staff member also supervises an industrial internship program for the Fisher Body Plant.

Specific Objectives

The primary purpose of the Department of Industrial Education is to prepare certified teachers for grades K-12. Since many of our graduates will, after the span of a summer, step into immediate control of responsibility
for laboratories containing thousands of dollars worth of materials and equipment, it is essential that their technological preparation be thoroughly adequate. In addition to the University and School of Education objectives, the following list indicates primary concerns of the department in the preparation of its students.

Upon graduation, an Industrial Education major should be able to demonstrate:

1. Technical proficiency in the areas of: Materials and Processes; Power and Transportation; and Visual Communication.

2. Adequate knowledge of the basic scientific principles underlying the skills he has developed.

3. The ability to work easily and cooperatively with others, both peers and those in authority.

4. An understanding of current industrial-technical society and its action on and interaction with the individual.

5. The ability to communicate clearly and positively in order to help guide others through the various phases of a particular learning experience.

6. An understanding of the growth and learning processes, applicable to teaching in the various areas of industrial arts.

7. A desire for further and continuous professional growth.

8. An ability to develop and use pertinent curricula, including media materials.

9. An understanding of the organizational patterns of public school systems and of his functioning role within the framework.
Special Faculty Resources

Faculty Members Responsible for Specific Aspects of the Industrial Education Program

<table>
<thead>
<tr>
<th>Areas of Study</th>
<th>Faculty</th>
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<tbody>
<tr>
<td><strong>Industrial Education Theory and Practice</strong></td>
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<tr>
<td>Instructional Methods and Materials</td>
<td>Bunten, Rueggeberg</td>
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<tr>
<td>Industrial Arts for Elementary Teachers</td>
<td>Ginther</td>
</tr>
<tr>
<td>Student Teaching Supervision</td>
<td>Bunten</td>
</tr>
<tr>
<td>History of Industrial Education</td>
<td>Ginther, Shrader</td>
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<tr>
<td>Planning Laboratory Facilities</td>
<td>Ginther, Rueggeberg</td>
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<tr>
<td>Industrial Mathematics</td>
<td>Buerkle, Rueggeberg</td>
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<tr>
<td>Surveying</td>
<td>Shrader</td>
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<tr>
<td>Minor and Technical Problems</td>
<td>Bunten and Staff</td>
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<tr>
<td>Seminars and Special Topics</td>
<td>Bunten and Staff</td>
</tr>
<tr>
<td>Research in: Materials and Processes, Visual Communi-</td>
<td>Bunten and Staff</td>
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<tr>
<td>cations, and Power and Transportation</td>
<td>Treadway</td>
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<tr>
<td>Aerospace Education</td>
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<tr>
<td><strong>Industrial Education Laboratory Areas</strong></td>
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<tr>
<td>Woods</td>
<td>Buerkle, Foss</td>
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<tr>
<td>Metals</td>
<td>Buerkle, Rueggeberg</td>
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<td>Plastics</td>
<td>Bunten, Ginther and Treadway</td>
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<td>Ceramics</td>
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<tr>
<td>Craft and Recreational Materials</td>
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<td>Industrial Materials</td>
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<td>Motor Vehicles</td>
<td>Deevers, Treadway</td>
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<td>Electricity and Electronics</td>
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<td>Driver Education and Safety</td>
<td>Buerkle, Shrader</td>
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<tr>
<td>Drafting and Design</td>
<td>Buerkle, Hall, Land</td>
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<tr>
<td>Graphic Arts and Photography</td>
<td>Kuzma</td>
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</table>
Buerkle and Hall teach at the branch campuses of Middletown and Hamilton, respectively. The remainder of the staff teaches on the Oxford campus with some extension class responsibilities on the branch campuses.

All of the staff members have had industrial experience. Members of the Oxford campus have been and/or are involved professionally in state and national committee work, publishing papers at regional and national meetings, developing state curriculum guides in their areas of competency and helping to write the state "Guide to Industrial Arts in Ohio Schools."

Special Instructional Resources

The Department of Industrial Education provides special laboratory facilities and equipment in the following areas:

**Machine Tool Lab:** milling (horizontal and vertical,) turning, shaping, drilling, grinding (cylindrical, tool and cutter, and surface,) and measuring and guaging.

**Woods Lab:** sawing (table and band,) turning, jointing, planing, mortising, drilling, sanding, shaping, and finishing (separate room.)

**General Metals Lab:** welding (AC, DC, TIG, carbon arc, spot, and oxy-acetylene,) brazing, soldering, forging, sheet metal work, foundry (aluminum, brass, grey iron,) electro-plating (copper, nickel, chrome,) powder metal forming, explosive forming, spinning, buffing and
polishing, drilling, sawing (band and abrasive,) grinding.

**Plastics, Ceramics, Crafts:** vacuum forming, casting, extruding, injection molding, forming, shaping, turning, fastening, dyeing, throwing, shaping, mixing, glazing, firing, chasing, engraving, etching, enamelling, stone cutting, (shaping, polishing, and mounting,) jewelry design and execution, leather working.

**Automotives and Power Systems Lab:** analyzing and adjusting engine and chassis components, valve grinding, brake drum turning, small engine and mounted large engine analysis, turning, drilling, welding (arc and gas,) rocket, air, and electrical propulsion and power systems.

**Electronics and Electronics Lab:** analysis of production, use and distribution of electrical power, AC and DC fundamentals and circuits, heating, lighting, communicating, appliance repairing, tubes, semi-conductors, testing, measuring and evaluating circuits, solid state components, radio and video theory and their application.

**Driver Education and Safety Lab:** cut-aways, charts, diagrams, dual-control training cars, driving range, and driver education simulators (Hamilton campus.)

**Drafting and Design Lab:** draing tables and machines, print making (ozalid,) air brush equipment, pantographs, model construction.

**Graphic Arts and Photography Lab:** letter press printing, screen printing (photo and electrostatic,) offset lithography
(copy preparation, camera operation, stripping, plate making and press operation,) intaglio printing, paper and ink making, book binding design adn composition, black and white color photographic processes.

Specific Laboratory or Clinical Experiences

Two clinical experiences are provided as a part of the methods courses, IED 421, 422.

As a requirement of 421, each student must visit and observe three separate industrial classes and write reports concerning his observations. Copies of the reports are given to the classroom teacher upon request. Questions arising from observations are discussed during class meeting.

The department staffs, a 7-8 grade industrial arts course for boys and girls of the Mcguffey Laboratory School and one course each in metals and automotives as service courses for senior boys in the Talawanda School District.

Each student enrolled in IED 422 will give a lecture-demonstration in one of these classes. In addition, each student will spend two laboratory periods acting as a teacher aide, giving individual help to students. These activities will be preplanned by the University student and the teacher involved in order to achieve maximum results. These activities are planned as a pre-student
teaching practicum, although in some cases, due to extreme scheduling difficulties, this is not always possible.

Characteristics of the Practicum

The department is concerned primarily with selecting schools with an environment conducive to learning in which adequate programs of industrial arts are functioning well. These schools and cooperating teachers are selected by the department chairman with staff consultation and approval of the director of student teaching. Before selection, the cooperating teachers are observed and interviewed so that a mutual and satisfactory understanding is reached concerning the experiences to which the student teacher is to be exposed. The student teacher is thoroughly briefed before starting, concerning forms, procedures, and responsibilities. Each week the student and cooperating teacher discuss the week's progress and file a report summarizing it and one outlining the plans for the coming week. At the end of the term, the student teacher is evaluated in a conference involving the student, the cooperating teacher, and if it seems necessary, the departmental supervisor.

Special Competencies in the Content for the Teaching Specialty

The industrial arts teacher must be widely knowledgeable in the areas of industrial materials and processes in order
to acquaint his students with today's interrelated technological world. The specific knowledges and skills involved are attained primarily through the core program. (See Curriculum Outline, B.1 (a-j.) In addition, the student must develop expertise in depth in an area in order to be able to develop initial vocational skills in those of his students who will enter industry directly from high school. The 20-hour minimum requirement in at least one area of concentration assures the attainment of this objective. (See Curriculum Outline B.1.k. (1), (2), (3).) Each course in the department is taught from the point of view
APPENDIX K

COURSE DESCRIPTIONS 1941-1942
INDUSTRIAL ARTS EDUCATION

101, 102. ORIENTATION UNITS IN INDUSTRIAL ARTS. Based upon the interests and needs of pupils in the earlier years of secondary education. Each unit 3 r. 3 l. (6)

Unit I. EQUIPMENT FOR PLAY AND SPORTS. Camp, sports, toys and models (2) Mr. Foss.

Unit II. FARM AND GARDEN EQUIPMENT. Workshop, tool repair and maintenance, making and buying tools, safety devices. (2) Mr. Yaekle.

Unit III. RECORDING EXPERIENCES. Relief printing, planography, intagliography, photography, silk screen printing, mimeographing and other methods of duplicatin. (2) Mr. Whitesel.

Unit IV. SIMPLE HOME FURNISHINGS. Characteristics of commonly used cabinet woods, manufacture of lumber, wood finishing. (2) Mr. Foss.

Unit V. PRACTICAL ELECTRICITY. Production and distribution, lighting and heating, power, sound transmission. Developed chiefly through adjusting, repairing and making simple apparatus and appliances. (2) Mr. Yaekle.

Unit VI. PRESERVING RECORDS. Paper making, ink composition and the binding of pamphlets, magazines and books. (2) Mr. Whitesel.

150. INDUSTRIAL DRAWING. Pre-engineering. Pictorial and orthographic sketching, working drawings, tracing, blue printing. 1 4. 2 l. (3) Mr. Grinnell.

159. DESCRIPTIVE GEOMETRY. Architecture. Orthographic projections, use of instruments, working drawings, problems involved in architecture. 2 r 2 l. (4) Mr. Grinnell.

211. MACHINE WOODWORKING. Care, maintenance and operation of woodworking machinery. Group projects using factory methods. Prereq., Indus. Arts Ed. 101-102. 1 4. 2 l. (3) Mr. Foss.


227. ARTS AND CRAFTS. Orientation experiences in ceramics, leather, plastics, and art metals. 1 4. 2 l. (3)
228. PLASTICS. A study of plastic materials used in industry. Problems of design and construction involving typical processes. Prereq., Indus. Arts Ed. 227. 1 4. 2 l. (3)

253. INDUSTRIAL DRAWING AND HOME PLANNING. For students in Art Education. 1. 4. 2 l. (3) Mr. Grinnell.

257. HOME PLANNING. Problems of planning, building, and equipping a home. Tracing and blue printing. 1 r. 2 l. (3) Mr. Grinnell.

258. MACHINE DRAWING. Machine fastenings, shaftings, jigs and fixtures. Problems of design. Prereq., Indus. Arts Ed. 150 or equivalent. 2 4. 2 l. (4) Mr. Grinnell.

259. DESCRIPTIVE GEOMETRY. Pre-engineering. Fundamental problems with practical applications for the engineer. Prereq., Indus. Arts Ed. 150. 2 4. 2 l. (4) Mr. Grinnell.

261, 262. GENERAL METALWORKING. Experiences in forging, bench metalwork, machine shop, art metal, sheet metal. Prereq., Indus. Arts Ed. 101-102. 1 4. 2 l. (3) Mr. Yaekle.


292. INTAGLIO AND PLANOGRAPHIC PRINTING. A study of etching, dry point and other intaglio methods. Also lithography and offset printing. Prereq., Indus. Arts Ed. 101-102. 1 r. 2 l. (3) Mr. Whitesel.

311. HOUSING. A study of housing problems; construction, evaluation, and repair. Drawings, specifications, and materials. Prereq., Indus. Arts Ed. 101-102. 1 4. 2 l. (3) Mr. Foss.

312. HOUSING. A study and application of house services; air conditioning, lighting, and plumbing. Code regulations, materials, minor adjustments and repairs. Prereq., Indus. Arts Ed. 101-102. 1 r. 2 l. (3) Mr. Foss.

327. INDUSTRIAL CERAMICS. A study of ceramic materials and the principles of structural design. Laboratory experiences in the most characteristic methods of fabricating and decorating ceramic wares. Prereq., Indus. Arts Ed. 227 1 r. 2 l. (3)

328. METALCRAFT. A study of materials and representative processing involved in the shaping, forming and polishing of precious and semiprecious metals. Prereq., Indus. Arts Ed. 227. 1 r. 2 l. (3)

350. ADVANCED INDUSTRIAL DRAWING. Application of rules of design to shop drawings. Especially planned to develop procedures and abilities in the designing and preparation of working drawings for the Industrial Arts Laboratory. 1 r. 2 l. (3) Mr. Grinnell.
357. INDUSTRIAL DRAWING AND BLUE-PRINT READING. For students of business. Basic principles, typical industrial drawings, production of charts, graphs, and diagrams. 1 r. 2 l. (3) Mr. Grinnell.

358. ARCHITECTURAL DETAILS. Structural details of frame and masonry buildings, mechanical perspective, shades and shadows, architectural styles. Prereq., Indus. Arts Ed. 251 or equivalent. 1 r. 2 l. (3) Mr. Grinnell.

367. AUTOMOTIVE THEORY AND PRACTICE. Operation, care, and repair of the automobile. Testing and servicing. 1 r. 2 l. (3) Mr. Yaekle.

368. DRIVER EDUCATION AND SAFETY. Traffic rules and regulations. Mechanical inspection and tune-up services. Driving techniques and corrective measures. 1 r. 2 l. (3) Mr. Yaekle.

369. EVERYDAY SCIENCE AND MECHANICS. A study and evaluation of mechanical devices and services, including refrigerators, electric stoves, radios, heat and light, automobile. 1 r. 1 l. (2) Mr. Yaekle.


398. PHOTOGRAPHY AND SILK SCREEN PRINTING. Experiences in the different photographic processes and the techniques of silk screen printing. Prereq., 101-102. 1 r. 2 l. (3) Mr. Whitesel.

*407. INDUSTRIAL ARTS LABORATORY PLANNING AND EQUIPMENT. Application of principles involved in the planning and equipping of Industrial Arts laboratories. Prereq., senior standing in the School of Education. (2) Mr. Stoner and staff.

*520. TECHNICAL PROBLEMS. Advanced technical and economic problems in the field of Industrial Arts. Prereq., senior standing in the School of Education. (2-4) Mr. Stoner and staff.

*550. PROBLEMS OF INDUSTRIAL ARTS DESIGN. A study of historic design and present day applications. Prereq., 12 hours of approved college drawing. (2) Mr. Grinnell.

*590. RESEARCH IN GRAPHIC ARTS. Studies in Graphic Arts content: scope, analysis and evaluation. Principles and techniques in the selection of equipment and supplies. The projection of a graphic arts program in a specific community. Prereq., Indus. Arts Ed. 290 and 390 or their equivalent. (2-4) Mr. Whitesel.

DEGREE COURSES GIVEN 1941-42: 101-102, 150, 159 (formerly 181), 257 (formerly 251), 258 (formerly 281), 291, 292, 311, 312, 357 (formerly 162), 358 (formerly 302), 367 (formerly 371), 368 (formerly 372), 369 (formerly 342), 397-398 (formerly 391-392). 407 (formerly 410), 500, 520, 550 (formerly 530), 590; NON DEGREE (See Production Industries page 197): 10, 20, 15-16, 26, 30, 35, 40, 46, 50.
APPENDIX L

PROF. WHITCOMB Writes a Letter,
The Miami Student, Thursday,
October 14, 1915
Interesting Descriptions Received
by Pres. Hughes from Faculty
Member on Sabbatical
Leave.

Los Angeles, California,
Sept. 22, 1915.

President R. M. Hughes,
Miami University,
Oxford, O.

My Dear Mr. Hughes:

It also seems that I am shirking my duty in not being
at Miami registering students. But from reports from the
East, it must be quite warm in Ohio now, and to be perfectly
frank I cannot say that I am especially sorry not to be
engaged in this necessary but rather tiresome task even in
cooler weather.

Just at the time the doors of Miami were opening for
another year we were enjoying the cool breezes from the
Pacific. This is the first September in my remembrance that
I have not started in school work either as teacher or
student. So I am thoroughly enjoying the change. Our trip
has been throughout a pleasant one, and I believe a profitable
one also.

To start on a ten to twelve thousand mile trip in a Ford
(a Ford is called a "tin Lizzie" out here) across plain,
mountain and desert startled some of our friends in southern
Ohio not a little, I fear. But we are eight thousand miles
on our way and are still alive; the Ford continues to rattle
on, giving little trouble. We have had lots of company--the
majority in Fords, too--and are finding it not such a
Herculean task after all to make a transcontinental trip.

To San Francisco or Los Angeles from Oxford is but 2,700
miles by shortest automobile road. But our route has not been
a straight line, but rather a zig-zag one. We have crossed
the continental divide about six times and whenever we heard
of a point of interest have visited it regardless of distance
or condition of roads.

Leaving Oxford June 3rd, we went to Chicago, where
several schools and colleges were visited before they closed
for the summer vacation. From here the Lincoln Highway was
followed for the most part to Cheyenne. Because of the great amount of rain which the plains had had, detours from this road on to higher ground were necessary a number of times. We gradually gained a higher altitude until at Cheyenne we were more than a mile higher than Oxford.

From here until we reached Seattle, six weeks later, we were in high altitudes. Over 14,000 feet elevation was reached by cog railroad on Pike's Peak, and 11,000 feet by auto at Cripple Creek. During this season of hottest weather in Ohio we were enjoying delightfully cool and pleasant weather. Crossing the high plains in Nebraska we were in several hail and light snow storms.

From Cheyenne, our route turned southward through Colorado, were we spent three weeks. We found Miss Woodley, of the McGuffey school, living in an artistic little cottage on the side of a mountain in Estes Park, just north of Denver. We spent the Fourth here and saw a genuine Western celebration, with cowboys, bucking broncos, etc. In Nebraska, we had seen Buffalo Bill in a Wild West show, with natural setting in this cowboy state.

Denver and Colorado Springs were visited. One day we were 14,000 feet above sea level on Pike's Peak. The next we were 500 feet underground at Cripple Creek, in a gold mine. Cannon City (with the Royal Gorge and Skyline Drive), Salida, Glenwood Springs and Grand Junction, all in Colorado, each offered its attractions.

The trip from Grand Junction to Salt Lake City, some 300 miles, a part of its over what is called the "Washboard Desert," was rather interesting from the standpoint of the machine. Had the innumerable washes, or arroyos as they are called out here, been at right angles to the direction of travel, the effect on the springs of the car would not have been so disastrous; as it was, however, new springs were necessary as a result of this section of our trip.

The foresight of the Mormons in planting Salt Lake City and in selecting the site for their future development was remarkable. The city, situated in a valley of wonderful fertility of soil and beauty of surroundings, is laid out with wide streets and has much architectural beauty. The new Utah state house almost equals the Capitol at Washington in size and elegance. The buildings of the Mormon church, those of the schools and others of importance are beautiful and well arranged in the city plan.

As planned, we entered the Yellowstone National Park on August 1st, the date when the park was opened for the first time in its history to touring automobiles. Before entering
the park, we camped for a week, fishing on the Snake River, near the park. Our machine was the first one through the park. The wonderful coloring of the canon of the Yellowstone and the majesty of the geysers are beyond description and must be seen to be appreciated.

Northward to the new national park, Glacier, called the Switzerland of America, took us through some remarkably fertile valleys of Montana and through Butte and Anaconda, of copper fame.

Nestled in the wilds of Glacier Park is beautiful Lake MacDonald, and corwning the peaks are the glaciers, many in number, and rivalling those of the Alps in size and grandeur. A snow slide down one of the largest of these glaciers in the middle of August was rather a novel experience.

West to Spokane by a new road took us for a 98-mile unbroken stretch through an almost virgin pine forest. Eastern Washington is a vast wheat field, where the golden grain was being headed, threshed and sacked, all operations being done by one immense machine.

We had a delightful little visit at the hustling city of Spokane, where three of the McClintock brothers are prosperous business men.

Seattle impressed us, in many ways, as the most delightful city in which to live of those we visited on our trip. Its climate, when we visited it, was ideal. It has such beautiful parks and homes. About each lamp post in the city is a large box of flowers.

The quaint English town of Victoria was visited by steamer up the sound from Seattle.

The people of the West are hustlers and they have been heavy bidders for automobile travel this summer. The unusual condition of having two international expositions at the same time furnished the occasion for remarkable feats of road building. A number of transcontinental lines have been put in reasonably good condition, but the Pacific Highway, along the coast from Vancouver to San Diego, shows more improvement than any of these lines. Especially is this true in southern California, where one can travel almost the entire distance from San Francisco to San Diego, 700 miles, on a concrete or asphalt roadway.

We saw Mt. Lassen—unfortunately it was not in eruption when we passed it—and beautiful snowcapped Mt. Shasts. The numerous forest fires in the northwest obscured our view of many of the peaks.
A side trip was made to Crater Lake, Oregon. No more beautiful lake can be found anywhere. It was formed by the sinking of a volcanic peak into the hollow of the interior of the mountain. The top of the peak, in which the crater still remains, forms an island in the lake.

Yosemite National Park was next visited. The Rocky and Cascade ranges of mountains, up to the timber line, are covered in large part with coniferous forests, but the peaks of the Sierra Nevada mountains are almost entirely bare. Great domes and pinnacles, often of solid rock, rise to great heights. These are seen to the best advantage in Yosemite. Another attraction in this park which appealed to us as much as anything on our whole trip was the gigantic sequoias. The "Grizzly Giant," the oldest living thing in the world—8,000 years old, so Dr. Jordan says—together with its hundreds of neighbors scarcely less majestic, render one speechless. He just stands and gazes upward trying to comprehend these living sentinels of the ages.

Beautiful Lake Tahoe, and, not to miss any of the far western states, Reno and Carson City, Nevada, were visited. This too was past queer Mona Lake in which no animal life except some strange insects if found, but when craters have such cleansing properties that they are qual to strong soap suds.

We enjoyed the Expositions. The architectural beauty and artistic coloring of the buildings at the San Francisco fair, together with the good arrangement of their semi-tropical plant surroundings and the quaint mission style of the buildings at the San Diego fair, give these two expositions a character not enjoyed by previous ones and bespeak a growing attention on the part of Americans to the good and beautiful in their architecture. This is also seen in the many attractive homes of southern California.

The way San Francisco has recovered from the earthquake and fire is phenomenal. In the beauty and substantial nature of her new buildings, she has gained vastly over the older city. However, both Oakland across the bay and Los Angeles to south threaten soon to outclass her as the metropolis of the west. Even now, Los Angeles claims to be "the largest city west of St. Louis."

Southern California is truly the "garden spot" of America. The wonderful fertility of soil, delightful climate and natural beauty of landscape all tend to make this not only one of the most desirable places in the country in which to live, but also to make it in the future one of the most densely populated sections of the country.
Our return trip will be from San Diego through Arizona and New Mexico, via the Grand Canyon, North to Topeka and Kansas City, then east.

Wishing for you, my colleagues in the faculties and the university in general a most happy and successful year, I am

Yours sincerely,
Fred C. Whitcomb.
APPENDIX M

GRADUATE DEGREE RECIPIENTS BY YEAR OF GRADUATION, INCLUSIVE OF THESIS TITLE
DATES 1931-1967

270
INDUSTRIAL EDUCATION

1931

Burbank, Nelson L.
Instruction sheets in frame house construction and in related trade English

Harris, Douglas W.
A study treating some phases of curriculum and method in the field of printing and the related graphic arts divisions

1932

Shumake, Forrest O.
Is there a place for girls in the industrial arts phase of practical arts education?

Tanner, George Theodore
The general shop as a means of developing the junior high school boy to perform "unspecialized practical activities"

Wineland, Lisle Garber
A study to determine teaching content for an architectural drawing course in senior high school

1933

Albaugh, Eugene M.
What are my responsibilities as an operator of an automobile?

1934

Pierson, Glenn Alfred
A study of the outside mechanical activities and interests of boys of the seventh, eighth, and ninth grades

271
Pitsinger, Arthur Robert
Planning a general shop for the small high school

Stephenson, Charles
What practical activities are needed for special classes in industrial education in the Tiffin public schools?

1935

Kerns, Kenneth M. and Parrott, Edmund D.
A survey of the professional status of industrial arts teachers in Ohio during the school year 1933-34

1937

Weber, J. Marshall
The construction of a score card that may be used in evaluating, improving, and constructing industrial arts programs in small rural and village junior high schools

1938

Mills, Ralph R.
Industrial arts opportunities in fifty rural and village schools in southwestern Ohio as shown by the Weber score card

1940

Buechner, John J.
Industrial arts finance

Flint, Earl Edwin
An industrial arts unit in electricity for the senior high school
M.A. (William D. Stoner) 84 p.
Stark, Menzo Herman
  Industrial arts opportunities in the county schools of Ohio

Yaekle, William A.
  An analysis of the functional unit plan as the basis for determining equipment needed in the industrial arts shop

1941

Foss, Maurice F.
  Functional house planning experiences on the senior high school level
  M.A. (William D. Stoner) 137 p.

Gross, Alfred Floyd
  Developing and using ceramic glazes in the arts laboratory

Hawkins, Norman Robert
  What experiences involving metals may be profitably provided in the industrial arts laboratory at the junior high school level?

Orsary, Valentine Frank
  Adaptation of offset lithography for use in the industrial arts laboratory

Smith, Raymond A.
  Power machines that boys can design and build

1942

Seeman, John E.
  An industrial arts unit in photography on the senior high school level
1944

Nemastil, James Frank
Opportunities in industrial arts to supplement the teaching of mathematics at the junior high school level

1946

Josif, Bernard R.
An industrial arts program for Pfeiffer Junior College
M.A. (John A. Whitesel) 60 p.

Medlar, Daniel Milton
An orientation course in industrial drawing based on individual needs

Rust, Glenn C.
The construction and evaluation of a score card for selecting library materials for the general industrial arts program in the junior high school

1947

Daum, Joy
An analysis of industrial arts teacher education in Ohio in terms of certification and high school standards

Donahue, Matthew Charles
A study of state laws and regulations for industrial arts certification at the high school level

Hosack, Paul E.
A study of the industrial arts program of thirty selected cities with recommendation for the Lima public schools

Kornman, Edward J., Jr.
Functional radio experiences in a teacher education program
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Degree (Advisor)</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuzma, Michael M.</td>
<td>A graphic arts unit in offset lithography for secondary schools</td>
<td>M.A. (William D. Stoner)</td>
<td>52</td>
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<tr>
<td>McDade, Robert James</td>
<td>Development of an industrial arts course for girls</td>
<td>M.A. (William D. Stoner)</td>
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<tr>
<td>Stefanik, Henry Rion</td>
<td>A guide for organizing and conducting school trips in industrial arts</td>
<td>M.A. (William D. Stoner)</td>
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<tr>
<td>Holman, William Byron</td>
<td>An evaluated list of experiences in air transportation at the secondary school level</td>
<td>M.A. (William D. Stoner)</td>
<td>49</td>
</tr>
<tr>
<td>Krebs, Paul Harris</td>
<td>A survey of the industrial arts laboratories in the schools of Butler County, Ohio, with recommendations regarding the physical facilities</td>
<td>M.A. (William D. Stoner)</td>
<td>144</td>
</tr>
<tr>
<td>McArthur, Emerson O.</td>
<td>What services do the industrial arts teachers of Ohio desire from their state supervisor?</td>
<td>M.A. (Maurice F. Foss)</td>
<td>80</td>
</tr>
<tr>
<td>Rueggeberg, Robert Ernest</td>
<td>Major faults of first-year industrial arts instructors in Ohio</td>
<td>M.A. (William D. Stoner)</td>
<td>31</td>
</tr>
<tr>
<td>Shaw, Carl E.</td>
<td>Current principles and practices of vocational guidance in secondary schools of Indiana</td>
<td>M.A. (William D. Stoner)</td>
<td>73</td>
</tr>
<tr>
<td>Morris, Roland George</td>
<td>The preparation of an evaluated list of industrial arts books particularly adapted to the needs of pupils in the junior high school</td>
<td>M.A. (William D. Stoner)</td>
<td>58</td>
</tr>
</tbody>
</table>
Turnbaugh, Jack R.
Survey techniques in curriculum construction as applied to vocational trades and industry in Richmond, Indiana

1950

Allen, Avery Hughes
An example of industrial arts content selection applied to elementary electrical communications

Cato, Leonard
A study of aptitude tests applicable for vocational counseling for industrial careers

Harrow, Owen C.
The utilization of facilities of public schools of Allen County, Ohio, by non-school groups during the school year with recommendations

Jenkins, Lawrence Daniel
Criteria for selecting woodworking projects in the senior high school

Lindsey, Robert Emery
Survey of general metalworking facilities in industrial arts programs of the larger Indiana high schools with recommendations for improving the Richmond, Indiana, general metalworking shop

Reynolds, James O.
How many industrial arts help promote good public relations?

Ridenour, Dale George
The status, organization, and administration of driver education in Ohio
1951

Henderson, Edmund Russell
A comparative study of industrial arts objectives as revealed through publications 1930-35 and 1946-51

Smith, Lawrence A.
Development of the flannelgraph for the kindergarten

Trickel, Porter J.
A national survey of the nature and scope of industrial arts in Catholic Parochial schools

1952

Fisher, Harold E.
A survey of the value of industrial arts in Clinton County

1956

Koppenhafer, Christian A.
A status study of the needs and educational opportunities of industrial arts teachers in 1950

1958

Christel, Robert Irvin
A correlation study of general mental ability, mechanical aptitude, and clerical aptitude as measured by the Detroit General Aptitudes Examination, Form A, with teachers' marks in sophomore exploratory and junior-senior industrial arts subjects in the Springfield, Ohio Senior High School
M.A. (William D. Stoner) 64 p.

Kipp, John Valentine
A college program for training pilots with special reference to Miami University
1959

Kaye-Smith, Elizabeth  
A study of the qualifications and characteristics of selected teachers in the Civil Air Patrol aviation education cadet training program  

Laska, Lelia Pearl Bragg  
History of civilian aviation in Alaska  

Noecker, Sylvester Jack  
A survey of aviation education workshops in the United States  
M.A. (John A. Whitesel) 52 p.

Zaharevitz, Walter  
Curricular experiences for a summer aviation education workshop  

1960

Miquelon, Margaret Anne  
Curriculum experiences for a college flight instruction program for commercial pilots  

1961

Easton, Robert Lavern  
A study of some aspects of tastes in art at the college level  

1962

Ryder, Robert H.  
Selected units in aerospace education for a high school social studies course  

Younts, Robert Chester  
The determination of units to be presented in a one year course of aerospace education for a senior high school  
1963

Wilkerson, William Frank
An analysis of the requirements for a college-level flight training program

1964

Tekesky, Steve Edward
Development of an outline for a high school course in photography
M.A. (Maurice F. Foss) 87 p.

1966

Butala, John Jr.
Problems in the adaptation of an 8mm microfilming system for a teaching methodology

Findlay, Larry Lee
The status and validity of receiving experience in drafting before entering engineering school: a study of the Cincinnati Public School situation

Stallsmith, Douglas D.
The development and implementation of a new industrial arts program
M.A. (W.M. Ramsey) 41 p.

1967

Breyer, Frederick Arnold, Jr.
Comparative effectiveness of various teaching methods for use with the foundation level students in industrial arts
M.A. (Maurice Foss) 60 p.

Kistler, Dale Elton
The effect of separating a generalization and its verbalization by varying time intervals
1969

Ennis, Andrew Allen, Jr.
Availability and use of audio-visual aids in industrial arts classrooms in public secondary schools in Ohio

Fidler, James Clayton
The test of an experimental unit in elementary meteorology for junior high school levels
M.A. (John A. Whitesel) 52 p.

Kimball, Wesley Robert
A study of selected flight training programs and their relationship to the larger field of aerospace education

Peters, Terrance Lynn
The determination of audio-visual aids to be used in presenting the concept of aircraft performance and attitude control
APPENDIX N

REPORT OF THE FUTURE PLANNING TASK FORCE
SCHOOL OF EDUCATION AND
ALLIED PROFESSIONS
REPORT OF THE
FUTURES PLANNING TASK FORCE
SCHOOL OF EDUCATION AND ALLIED PROFESSIONS

The Charge

On December 3, 1981 the Task Force was given the following charge:

1. Develop recommendations as to the future directions for EAP commensurate with an anticipated reduction in resources.

2. Formulate recommendations as to how the divisional budget can be reduced by $300,000 - $400,000 for the 1983-84 academic year.

3. Formulate recommendations as to how budgets in some departments/units within the Division may be increased through reallocation of resources.

The reporting date was to be April 1, 1982.

Because of an unpredicted shortfall in income, the State of Ohio in January 1982 announced significant reductions for colleges and universities for the present academic year and even greater reductions for 1982-83. These events forced a change in the amount of the reductions for EAP from $300,000 - $400,000 to $500,000 and forced the reductions to be moved forward; $300,000 would be cut from the 1982-83 budget and $200,000 from the 1983-84 budget. The Dean would reduce $100,000 by 1982-83 and the Task Force would reduce $400,000.

The Task Force reporting date was also moved forward to March 1, 1982.

Enrollment Patterns in EAP

It is important to remember that budget reductions for EAP were known in advance of the financial crisis in Ohio. Table 1 represents the number of EAP student credit hours, both undergraduate and graduate, from 1974 through 1981. The graph of student credit hours for the same period shown in Chart 1 dramatically illustrates the decline in student enrollment in the Division.

Instructional Staffing

A report to the Executive Vice President for Academic Affairs and Provost concerning the Oxford Campus instructional staffing, November 19, 1981 shows the School of Education and Allied Professions with a budgeted full-time equivalent staff of 144.50. By contrast the modeled FTE staff called for 123.08 (graduate award holders budgeted to the instructional departments were counted as part of the staff when Teaching Fellows equals 1/3 FTE and a Graduate Assistant equals 1/4 FTE. Instructors hired with Teacher Education Redesign funds were also counted as part of the budget staff).
Another set of data compares the six academic divisions with budgeted faculty and their use of the instructional and departmental research budget dollars, enrollment, and student credit hours. EAP accounts for 17.6 percent of instruction and departmental budget, but contributes 15.3 percent of the enrollment and 13.95 percent of the student credit hours.

Data Collection Procedures

The Task Force gathered a variety of data from many sources and the number of people responding is shown in parenthesis: questionnaire responses from faculty (37), chairs (8), and administrators (3); interviews with chairs (8), assistant deans (3), service unit directors (4), selected faculty (17), faculty who requested interviews (25), the provost and the associate dean of the Graduate School; an open meeting for faculty and staff, the quantitative indicators of faculty ratios, student credit hour productivity, income expenditure index, cost per student credit hour, number of majors, number of degrees awarded, and employment demand.

The Task Force read the division Mission Statement, the Consensus Statement of Priority Divisional Concerns and Priority Issues for the University and the February, 1982 report of the Mission Three Task Force, the Association for School, College and University staffing annual report for 1982, "A Job Search Handbook for Educators", and "Career Opportunities for Home Economics Professionals". Table 2 presents relative demand data by teaching area and year.

Separate questionnaires were sent to faculty and staff, department chairs, service unit leaders and the Dean, who responded for the administrative areas. The questions presented to all faculty were:

1. Setting aside formal mission statements for the moment, list what you consider to be the most essential purposes of this division.
2. Some have suggested that higher education needs to change in order to be responsible to changes in society. List the most important decisions this division will need to make in the next ten years.
3. Specify what this division can do to make better use of its allotted instructional dollars.
4. List the organizational changes in the division which would improve efficiency while maintaining or improving quality.
5. a) List the unique contributions which your program is making or could make to the division.
   b) Specify how the cost-effectiveness of your program could be improved.
   c) Specify how the quality of your program could be improved.
6. Other comments:
The questions for administrative and service units were:

1. Identify the services rendered in your unit from lowest to highest priority according to the following criteria:
   a. essential service
   b. important but not essential
   c. not essential to our missions.
2. What will the future (five to ten years) demands be like in your service unit?
3. What services could be reduced, reorganized, or eliminated?

Each department chair was given a list of degree granting programs and service courses and was asked to respond in writing to the following four questions:

1. Describe each program and the service courses in terms of the following five criteria:
   a. Faculty strength in terms of teaching, research, service, and advising.
   b. Present and future (next ten years) demands for graduates.
   c. Curriculum
   d. Facilities
   e. Unique characteristics, i.e. faculty recognition and reputation, program reputation, job success of graduates, and other pertinent characteristics.
2. Using the information and answers you gave in Question 1, list from highest to lowest priority the programs and service courses in the department you chair.
3. Identify any program in the department you chair that you think is very promising in terms of future development within the next ten years. Please explain.
4. Identify any new programs that you think should be developed. Please explain.

After reading the responses from unit leaders and chairs, interviews were also conducted in an attempt to clear up any misunderstanding arising from written responses from service and administrative leaders.

A large number of letters also added to the information the Task Force considered.

Methods of Analysis

The Task Force examined each service and administrative unit using the following criteria:

1. Was it an essential service?
2. Was it important but not essential?
3. Not important to our mission?
4. What will the demands on the unit be like in the next five to ten years?
5. Could there be reductions, reorganization or expansion?
Listed below is the procedure the Task Force used to analyze each academic program.

Data Treatment-Decision Reaching Procedure on a Program by Program Basis

I. Identify low statistical indicators:
   A. FTE faculty (actual vs. modeled)
   B. SCH production (actual vs. expected)
   C. University income index
   D. Costs per SCH
   E. Number of majors from 1977 to 1981
   F. Degrees by program from 1977 to 1981
   G. Relative demand (employment opportunities)

II. Identify chairs low ranking (or verbal identification of dispensable programs).

III. Identify convergence of \( 1 + 2 = \text{Elimination Targets} \).

IV. Identify programs rated low by either statistical indicators or chair ranking = Reduction Targets.
   i.e.: A. High chair/low statistics
         B. Low chair/high statistics

V. Can unique value of Elimination Targets be established now or for future:
   A. Evidence of national, regional or state reputation of program/faculty as leading in profession.
   B. Evidence of program fulfilling an important social need.
   C. Evidence of program meeting an important SEAP need or value (divisional significance).
   D. Evidence for probable turn around in near future of low status (definite foreseeable change in employment market, student demand, etc.)

Evidence to be taken from chair reports and interviews, faculty survey, interviews and open session.

VI. Can unique value of Reduction Targets be established now or for future:
   A. High chair/low statistics (same as V, A.B.C.D.)
   B. Low chair/high statistics (opposite evidence to V, A.B.C.D.).

VII. For non-unique Elimination Targets and Reduction Targets programs, identify number of visiting and non-tenured faculty and determine savings through non-renewal of contracts and elimination of support services and resources.

VIII. Determine transfer possibilities (or retraining needed) for tenured faculty in Elimination Targets and Reduction Targets based upon identification of programs with high statistical and high chair convergent ratings needing additional support (Development Targets).
Decision Making

Proposals were brought before the Task Force by individual members. After considerable discussion, deliberations and data analysis, a vote was taken on each proposal. Only those proposals receiving more affirmative than negative votes appear (affirmative-negative-abstain) with each recommendation.

RECOMMENDATIONS

The Futures Planning Task Force recommends that:

Recommendation 1 - That the Personnel and Guidance Department be dissolved effective 1982-83. This would include elimination of one secretarial position, the Department's operating expenses and the chair's position. The Personnel Services and Counseling Program should be transferred to the Department of Educational Leadership. The Guidance and Counseling Program should be eliminated. Other courses in the EDG Department should be transferred to the Department of Educational Psychology. EDG faculty associated with the Guidance and Counseling Program should be temporarily assigned to the Educational Psychology Department. Retirements in the Personnel and Guidance Department should not be replaced and the tenure track position should be eliminated effective 1983-84.

It is the judgement of the Task Force that the EDG Department is too small to maintain single unit efficiency. The demand for public school counselors is declining and will decline further in the future. The Personnel Services and Counseling Program has a future but needs funds and resources to strengthen it. Such funds and resources must come (in part) from programs with less potential and less demand, i.e. guidance counseling and others. (6-0-0)

Recommendation 2 - In Educational Leadership eliminate the part-time position for 1982-83 and not replace the retiring faculty member in 1983-84. (6-0-0)

The Department should also reduce the courses listed in the M.Ed. core requirement. It is the judgment of the Task Force that there are too many courses listed and regularly offered to permit efficient use of faculty. (6-0-0)

Eliminate Foundations Master's and two Specialist programs. (4-2-0)

Recommendation 3 - The Educational Psychology Department should eliminate the offering of undergraduate elective services courses (EDP 310, 354, 355, 404, 435, 453, 462 and 464) and focus faculty assignments on undergraduate core courses (EDP 111 and 112) for improved departmental efficiency. (6-0-0)

It is recommended that Educational Psychology reduce the courses listed in the M.Ed. core requirement. It is the judgement of the Task Force that there are too many courses listed and regularly offered to permit efficient use of faculty. (6-0-0)
Recommendation 4 - In the Department of Teacher Education, the immediate (1982-83) elimination of graduate secondary programs in business, foreign language, communications, speech and environmental education.

It is the judgment of the Task Force that the Department of Teacher Education is attempting to serve too many of the specialities within the education enterprise and that additional cutbacks in program should be considered by the department so that it may serve adequately, efficiently, and with better quality a reduced number of fields. (6-0-0)

The retirement vacancy in 1982-83 not be filled. (6-0-0)

The department eliminate one additional faculty position for 1983-84. (6-0-0)

The department eliminate its undergraduate program in business education and the one part-time staff assigned (1983-84). (6-0-0)

Recommendation 5 - The department of Home Economics and Consumer Sciences eliminate the equivalent of one full-time position. (5-1-0)

Recommendation 6 - The Department of Health, Physical Education, and Recreation eliminate the Master's degree program in Health Education for Nursing. (6-0-0)

Recommendation 7 - The Department of Industrial Education be dissolved effective 1982-83. This would include elimination of one secretarial position, the department chair position, and operating expenses. Retirements should not be replaced and the tenure track position should be eliminated in 1982-83. The redesign funds supporting the two visiting faculty revert to the Dean's Office.

The Driver Education Program should be transferred to the Department of Teacher Education; all other programs are eliminated.

Tenured faculty are to be temporarily assigned to the Department of Teacher Education.

It is the judgment of the Task Force that there will never be sufficient resources to update and maintain the laboratories and there has been a consistently low number of graduates over the past twenty years. Further, it is the judgment of the Task Force that Industrial Education is not a high priority program in the School of Education and Allied Professions. (3-2-1)

Recommendation 8 - That the Dean immediately institute procedures for the orderly and effective transfer of Educational Planning and Career Services to the University Career Planning and Placement Office. The transfer would involve a clerical position, graduate student staff, and operating funds. (6-0-0)
Recommendation 9 - The position of Program Consultant be dissolved and that the functions of the Office of Educational Records be assumed by other, and specified, administrative units. (6-0-0)

Recommendation 10 - The Task Force affirms the importance of a centrally coordinated Office of Clinical and Field Experience as an efficient means of handling field experience, student teaching placement and as representatives of the SEAP in the teaching field. As some inefficiencies may exist, the Dean should closely examine the structure of the Office of Clinical and Field Experience with the possibility of reducing the number of personnel on redesign funds and replacing the remaining personnel with tenured faculty (a possible reduction of $40,000 to $70,000 of redesign funds). In addition, the team leaders or any department should not be directly involved in field or student teacher placement. (6-0-0)

Recommendation 11 - The teacher assistant position (half-time) in the Nursery School be eliminated. (4-2-0)

Recommendation 12 - The Nursery School increase fees to earn an additional $8,000 per year. (6-0-0)

Recommendation 13 - The EAP Futures Task Force reaffirmed the essential role of McGuffey School as:

a. the laboratory for the Division, especially as it relates to the teacher preparation effort;
b. a research center for faculty;
c. a center for development and testing of educational materials. (4-2-0)

Further, the Task Force recommends the following tuition fees (from current $150 per child):

1982-83  $300 for each 1st child per family
         $150 for each additional child per family (6-0-0)

1983-84  $350 for each 1st child per family
         $200 for each additional child (6-0-0)

The Lab School summer session be discontinued. (6-0-0)

Recommendation 14 - The Dean should attempt to consolidate and streamline divisional administrative services, especially with respect to clerical staff and paper usage. This should serve as a model for the entire school. (6-0-0)

Recommendation 15 - It is recommended that the Dean examine the functions of the following units to determine possibilities for coordinated and efficient operation:

The Child Development Center
The Child Study and Research Center (EDP)
The Early Childhood Education Program
The Center for Individual and Child Studies

(5-1-0)
Recommendation 16 - The Futures Planning Task Force recommends that the following areas be considered for immediate augmentation and development (not in priority order):

- educational media should be encouraged to revise its Master's Degree program to focus on educational technology. (5-1-0)

- the Division should examine the possibility of developing strong programs in child studies either through existing avenues or through new programs. (4-2-0)

- the Doctoral program in educational administration should be strengthened. (4-2-0)

We recommend strongly that the Dean support such efforts with development money, as possible and appropriate.

Recommendation 17 - We urge the Dean, the Provost and the President to develop a plan of inducements for early retirement for faculty, perhaps similar to the Michigan State plan. Because the School of Education and Allied Professions faculty is highly tenured, it is the Task Force judgment that we have exhausted virtually all financial flexibility in the school. (6-0-0)


Respectfully submitted,

James T. Ziegler
Denise Guerin
William Farling
Johnny Hill
Gary Wooddell
Charles Skipper, Chair
Jan Branch, Ex-officio
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<tr>
<th>YEAR</th>
<th>UNDERGRADUATE</th>
<th>GRADUATE</th>
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<th>% CHANGE FROM LAST YEAR</th>
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TABLE 2

 Relative Demand by Teaching Area and Year
 Continental United States

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Key 5 = Greater Demand, 1 = Least Demand
Based upon a survey of teacher placement offices

SOURCE: Association of School College and University Supervisors—James N. Akin
APPENDIX O

GRANTS RECEIVED BY THE DEPARTMENT OF
INDUSTRIAL EDUCATION
DATES 1972-1982

293
Grants Received by the Department of Industrial Education (continued)

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<th>Year</th>
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<th>Organization</th>
<th>Project Title</th>
<th>Amount</th>
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<td>Ming H. Land</td>
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GRANTS RECEIVED BY THE DEPARTMENT OF INDUSTRIAL EDUCATION

1972-1973
Gordon E. Martin          Ohio Dept. of Ed.  Industrial Career Orientation Workshop
Robert L. Shearer

1974-1975
Robert F. Shrader          Ohio Dept. of Ed.  Special Education Instructional Unit
Robert F. Shrader

1975-1976
Charles Bunten             Fisher Body    Employees Instructional Training Workshop
Robert F. Shrader          Ohio Dept. of Ed.  One-day In-Service Workshop in Pedestrian and Bicycle Safety
Robert F. Shrader          Ohio Dept. of Ed.  Summer Workshop in Motorcycle Safety

1976-1977
Charles A. Bunten          Fisher Body    Employees' Instructional Training Workshop
Robert F. Shrader          Ohio Dept. of Ed.  Workshop on Motorcycle Safety
Robert F. Shrader          Ohio Dept. of Ed.  Workshop on Motorcycle Safety
Robert F. Shrader          Ohio Dept. of Ed.  Workshop on Motorcycle Safety

1977-1978
Charles A. Bunten          Mosler Safe Co.  Employees' Instructional Training Program
Robert F. Shrader          Warren County Board of Education  Commercial Driver Training

APPENDIX P

CONTRIBUTIONS AND IMPACT OF THE INDUSTRIAL EDUCATION DEPARTMENT
CONTRIBUTIONS AND IMPACT OF THE
INDUSTRIAL EDUCATION DEPARTMENT

The Industrial Education Department of Miami University, formally dissolved by an act of the University Senate in 1982, has left behind a legacy of contributions in many diverse areas. Many of these contributions, while seemingly insignificant in passing, will continue to affect our world far into the future.

The measure of the impact of any particular event, article, action or person may, at face value, be relative in nature. For, who is to judge the significance or residual effect of a teacher upon the thousands of individuals with whom he or she may have personal or professional contact during a lifetime? Who can adequately measure the effect of an article published in a journal or an address before a gathering of fellow professionals?

This chapter addressed the following question: What measurable or notable contributions were made by the faculty, staff, and students of the Industrial Education Department other than those already detailed? Most notable among the contributions and achievements were:

Curricular innovations or developments
Excellence in teaching
Service to the community and the university
Additions to the existing body of knowledge in any
given area through research
Personal and/or professional advancement or standing
Interpersonal relationships pertaining to program
continuity

Noted achievements and contributions were ascertained
primarily through interviews and correspondence with the
principals involved in this study. This study is by no
means a comprehensive listing due to diversity of the
information, yet can serve to highlight the nature of
contributions and impact.

The American Heritage Dictionary (1978) offered the
following definition of contribution:

To act as a determining factor; share responsibility
for something.

It further defines impact as:

The effect of one thing on another.

A combination of the two would then involve a person, act
or possibly program affecting someone or something. This
effect would be the principal responsibility of the
effector, or perpetrator of the action. It would also
follow that contributions are born of action and not of
inaction, complacency, or lethargy.

This study has detailed many of the individuals and
acts, which by the nature of their efforts have had an
impact upon a particular segment of our society. While
it is true that department members such as Martin
and Land moved to other schools for professional
advancement, it is equally true that it was the stability of the department which contributed to its teaching excellence through the years. The sense of family, the loyalty to Miami, the lure of living in a town such as Oxford, and working for men such as Whitcomb, Stoner, Ramsey, and Bunten caused the faculty to be more permanent than most. A side, but not significant factor for men with families, was the Miami policy (now extinct) which permitted the staff member, spouse, and children to attend Miami tuition free. Since all family members could live at home if they chose, the benefit meant a significant increase in income.

Professor Albert Grinnell was a beloved long-time member of the Industrial Education Department. He was in the first Epsilon Pi Tau Chapter at Miami. He stayed in the department and taught Drafting until his retirement.

Dr. Maurice Foss, loved by his students because of his humane philosophy as well as his skill as a teacher was brought to Miami by Dr. Stoner. Homesick students and new faculty were frequent visitors to the Foss home. The Shraders recall that the Fosses "adopted" their entire family when they came to Oxford. Dr. Foss entertained with ping-pong and tales, and Mrs. Foss always had a batch of fresh baked cookies and milk ready.

Dr. Foss taught courses in all areas of Woods Technology and Materials of Industry. Several homes,
numerous additions, garages, staircases (including the porch on the Whitcomb house on Church Street) in Oxford were built by his students. The custom home on Contreras Road where Mr. and Mrs. Ramsey lived for years was a "Foss students built home." One of his very successful students is Robert Wagner, of Homer, Indiana. His skill as a craftsman making cherry furniture brings buyers from all over the United States.

Professor Robert Rueggeberg and his wife June are both Miami graduates. Both he and June are retired after having spent their professional years teaching in Oxford. Neither would have considered going any place else. Professor Rueggeberg taught Metals and Engineering Laboratory courses. His students were always his teaching priority and they responded by electing his courses and praising his teaching ability (Bunten, 1986). His courses were heavily used by the Technical students, and by the Physics students who needed the practical applications of metallurgy. He was also instrumental in advising students who were seeking patents in areas that required knowledge of metals (Rueggeburg, 1985).

Mr. Grinnell and Mr. Rueggeberg hold the distinction of having the most years as tenured faculty of any Industrial Education Department members at Miami. It is interesting to note that neither completed a terminal degree course of study.
Professor Arthur Bauer, a 1928 graduate of the department, taught the Arts and Crafts courses for years, and then taught the drafting courses until his retirement. He was an exacting craftsman. He constructed and assembled jigs and fixtures before they were readily available through commercial sources. One of his co-workers recalled that as they were helping build a home in Oxford, Mr. Bauer was building the steps to the basement. "Art was so careful and so precise in his work that an entire Pease home went up next door before Art finished the steps." His and his wife were popular at departmental gatherings, especially when sharing their trip to India to visit their son Bill, (Dr. Wm. Bauer) a longtime missionary teacher at Lucknow University.

When Dr. Whitesel left Industrial Education, Mr. Michael Kuzma was hired to teach photography and other graphic courses. Professor Kuzma, also a Miami grad had taught in the Dayton schools for a number of years and his work in photography was well known (Whitesel, 1986). Enrollment in his courses at Miami grew rapidly. Art majors came to learn other aspects of this area while many students wanted to learn more about their hobby. Professors across campus came to audit the courses taught by Professor Kuzma. The photography courses and the laboratories were consistently quick to be labeled closed due to enrollment. He (Kuzma) had an excellent knowledge of the printing industry which was nurtured by his
years in Dayton - then a center of the printing industry, with several magazines such as McCalls printed there, as well as other major publishers doing business in Dayton.

These men, along with Whitesel, Shrader, Albaugh, and the department chairmen, were the "Old Timers" who became the memories of "Old Miami" to many graduates of the Department.

To those students and faculty who "crossed over" to take their (Industrial Education Department) courses as electives for the practical knowledge they might add to their philosophical courses elsewhere, these gentlemen exemplified the convergence of theory and practice. (Shrader, 1986).

Coming later were professors Ginther, Shearer, Ziegler and others. All three maintained status at Miami after the Department was dissolved, and all have continued to make Miami contributions as of this writing. This group, those still living and able, still get together for their annual Departmental Christmas Party.

Three former teachers within the department should be mentioned for three reasons. 1) They made significant contributions to the department, and to the field, 2) They were excellent teacher-educators. 3) They were released under peculiar Miami policy procedures.

William Treadway was hired as an instructor to teach the original courses on the Middletown and Hamilton
Branch Campuses. He supervised the purchase of equipment, set up the laboratories, and taught the introductory courses. He was especially instrumental in the building of the Industrial Education courses on the Middletown Campus (Bunten, 1986).

Mr. Treadway was held in high regard by his peers, both as a teacher and as an individual. It was anticipated that he would become an established valuable member of the department (Shrader, 1986). However, in spite of extensive efforts of Dr. Buntern and others to retain Mr. Treadway, he was released by the University because he did not finish his doctoral work within the allotted time frame. (Perhaps the pay scale at the time plus his family of six daughters forced some moonlighting and limited his time to write a dissertation.) The University policy at the time stated that to be given tenure, a teacher must have a terminal degree. (This ruling was not followed by all disciplines of the university, as determined by a review of the Annual Reports.) Industrial Education requested that the position of Senior Instructor for hardship cases in pursuing a degree be granted Mr. Treadway. The request was denied and Mr. Treadway had to be released. The following year the University passed a ruling which permitted the rank of Senior Instructor to be granted in hardship cases where degrees were being pursued (Shrader,
1986). Mr. Treadway now (as of 3/1/86) owns and operates a successful heavy equipment and well drilling operation in Butler County, Ohio.

Dr. David Bowling was hired in 1968 by Miami on a Post Doctoral Fellowship into the Industrial Education Department. He successfully rebuilt the Power Mechanics program which had waned in the 3 years after Doc Shrader became involved in the Driver and Traffic Safety area. Dr. Bowling taught the power mechanics' Courses for three years. His teaching was excellent, the program was solid (Shrader, 1986). However, the department was informed that University policy dictated that after three years, a teacher must be granted tenure or released. Further, there were no tenure track positions open within the department at that time. The university was inflexible and Dr. Bowling was released.

The following year Mr. Bauer retired, and one tenure-track position became available. Dr. Bowling currently is the Director of the Licking County, Ohio, Vocational Schools.

Dr. James LaPorte moved his family, which included four school age children, from Bozeman, Montana, to Oxford in 1980. They bought a home and prepared to settle down in Oxford. Dr. LaPorte was to teach the Wood Technology courses previously taught by Dr. Martin. He was given one of the available tenured-track positions.
His teaching ability was evident as he was quickly accepted by department members and students. Therefore, it was particularly shocking when, in late spring of 1982 - past the time that written university policy stated - Dr. LaPorte was released because of the imminent dissolution of the department. In spite of his tenured position, no other placement was offered him. (Court rulings in various states, beginning in Colorado in 1983, have ruled that when a teaching field is eliminated, schools are not bound to retain tenured teachers in that field.) Dr. LaPorte is now a professor at the Virginia Polytechnic Institute in Blacksburg, Virginia.

No history of the Industrial Education Department would be complete without mention of one individual who made everyone's job easier. Mr. Virgil Dickerson retired after forty years as custodian for Miami University. He spent years at the old Withrow Court and knew all the athletic greats who came through Miami.

In his years at Gaskill Hall, he watched the young teachers become the old teachers - and watched with intense interest as the teachers kids grew up - some to come through the department.

He was more than "just a custodian". He was (and is) part of the Industrial Education family. He was a custodian "super par excellent" (Shrader, 1986). The building was always spotless and ready for inspection.
As one professor stated, "Why, he even dusted the lamps and light bulbs."

After retirement, he and his wife bought an acreage just out of Oxford, and built a new home. Virgil, at 82, still enjoys his garden and can still "break a pony." He is also a source of valuable Miami history information.

The diversity of the graduates and their successes spoke well for the training which they received as Industrial Education majors. Although they may have been trained as teachers, many had shown the ability to "shift gears" to adapt and become successful in other areas.

A further sampling of graduates not mentioned elsewhere, as provided from memory from the primary sources interviewed, and their careers proved informative and enlightening. The following is a list and brief accounting some of those graduates who were still in the field of teaching as of March 1, 1986:

Dr. Thomas Miller, a professor at the University of Arkansas in Little Rock

Professor Steve Rupp, Director the Traffic Safety program at the University of Hawaii

Mr. Wiley Graham, Director of the Kettering Schools (Ohio) Driver Education program

Mr. Henry Borchers, teacher of Driver Education to special students (handicapped) at the Grace Green Technical School in Dayton, Ohio
Mr. Shawn Gallagher, teacher of Industrial Arts, Talawanda High School, Oxford, Ohio

Mrs. Susan Snell Abing, professor of Traffic Safety University of Wisconsin, Plattesville, Wisconsin

Dr. Allan Stern, professor of Traffic Safety at Marshall University, Huntington, West Virginia

Mr. Malcolm Mackey, Director of Driver Education, Sandusky, Ohio.

The field of professional sports has been ably represented by Miami graduates who were Industrial Education majors. Most notable, perhaps, was Walter (Smokey) Alston who coached the old Brooklyn Dodgers and moved to Los Angeles (L.A.) as the L.A. Dodgers coach. To say he was successful is a huge understatement. To say that he credited his industrial education background to his success would be speculation. Baseball was also an area of professional success for Buddy Schultz and Denny Smith.

Football has seen the prowess of Industrial Education graduates Sherm Smith, Ernie Kellerman, Tom Nomina, Terrell Burton, Rob Carpenter, and Randy Walker. Tom Stegman was a champion swimmer and now teaches swimming to aspiring athletes.

Other vocations were also represented by Miami Industrial Education graduates. Virgil Otto was a successful builder and master carpenter in Oxford, Ohio. Jim Beaton ran his own Insurance Company in Oxford. Douglas Noxsel worked for the Fernald Uranium Processing Plant in Harrison, Ohio,
teaching plant safety, also working in public relations for the plant. Barry Caruso is Vice President (president elect) of the Safety Division of Ohio, Physical and Health Education, Recreation and Dance. He has been instrumental in developing successful programs pertaining to alcohol use and abuse.

Mr. Tony Hilgefort owned several appliance and electronic equipment stores across the State of Ohio. According to one former professor, he credits his diverse Industrial Education with enabling him to advance rapidly.

Miss Cheryl Gast was the director of the Middletown, Ohio, Safety Council. Her father, Robert Gast, had taught in the Monroe-Middletown Schools for many years, both were Miami graduates of Industrial Education.

Mr. William R. Stone was Division Director for the Ohio State Department of Education.

Mr. Robert Triick was Safety Director for Armco Steel in Middletown, Ohio.

Mr. Dave Roberts was, as of March 1, 1986, Mayor of Oxford, Ohio. He was also Superintendent of Building Services, Miami University.

Mr. Homer Hage was the previous Superintendent of Building Services for Miami University. He gave credit to his Industrial Education background for a portion of his success.

Dr. William Keister was the retired Associate Director of Student Counseling Services, Miami University.
Mr. Harvey McClesky was one of several graduates who became members of the Ohio Highway Patrol.

Mr. Tom Hoxie was the Personnel Relations Manager for the Chevrolet West Coast Division of the General Motors Corporation with headquarters in Encino, California. His two sons were both Miami graduates. Mr. John M. Hoxie, Tom's brother, was in administration of Chevrolet Division of The General Motors Corporation in Detroit, Michigan.

Dr. Eldon Wiley was Professor of Educational Leadership, Miami. Dr. Dean Wiley, his son, was a medical doctor in the United States Armed Services.

Dr. Ralph Dirksen was Professor, Western Illinois University.

Dr. Dean Hauenstein was a professor at Florida International University, Miami, Florida.

Glenn Hollingsworth was the Director of Great Oaks Vocational School, Cincinnati, Ohio.

While the preceding list may not be complete by any definition, it provides a sampling of the diversity of accomplishments and achievements of the graduates of the Industrial Education Department at Miami University. Many, many names were left from the listing due to either incomplete data available or laws governing the confidential nature of personal data.

The Industrial Education Department left behind a legacy of individuals who would make contributions to
both educational and non-educational fields far into the twentyfirst century. This legacy may indeed be the single greatest measure of the success, or failure, of the department at Miami University known as Industrial Education.

SUMMARY

The legacy left by the Industrial Education Department at Miami University was a legacy of the achievements of the individuals who graduated from the program, or somehow contributed to the nurturing of it's faculty and students. Included are former personnel who have excelled in teaching, sports, business and industry.

Not to be forgotten were the contributions of individuals such as the wives of faculty members. These ladies, such as Mrs. Foss and Mrs. Shrader provided support network which nurtured the "family spirit" of the Department.

The noted individuals are examples of the high level of personal achievement encouraged within the Department. The diversity of those achievements speaks well of the diverse nature of the program.
APPENDIX Q

COURSE DESCRIPTIONS 1981-1982
105 INTRODUCTION TO ORGANIZED LABOR IN AMERICA (2) An overview of labor studies designed for understanding the essence of the American labor movement: growth of the working class, unionization as a political force, collective bargaining, and the changing role of government relative to private industry. (Offered only at Hamilton campus.)

106 INTRODUCTION TO INDUSTRIAL EDUCATION (1) A planned discussion and observation course to acquaint students with departmental activities and the role of the department in teacher education. To identify the responsibilities of industrial arts teachers in the public schools and observe the techniques used to handle these responsibilities.

111 INTRODUCTION TO WOODS (4) A beginning course in wood technology. Primary thrust is on the development of both cognitive and manipulative learning related to tools, machines, materials, and processes found in modern wood related industries. Laboratory experiences afford an opportunity to solve problems related to the wood industries. 2 Lec. 2 Lab.

121 INTRODUCTION TO METALS (4) Metal characteristics and industrial practices with hand and machine tools. Laboratory experiences with fabrication, finishing, processing, and maintenance. 2 Lec. 2 Lab.

125 STRUCTURE AND ADMINISTRATION OF UNIONS (2) A framework to understand how unions are organized and how they operate. Includes jurisdictional lines, constitutions/by-laws, dues allocation, democratic procedures, and functions of members. (Offered only at the Hamilton campus.)

131 INTRODUCTION TO CRAFT MATERIALS (4) Laboratory experiences and study in designing and fabricating industrial materials used for craft and recreational purposes, such as leathers, plastics, woods, ceramics, and art metals. 1 Lec. 2 Lab.

141 INTRODUCTION TO GRAPHIC ARTS (4) Basic experience with offset, relief, screen and intaglio printing. Laboratory experiences will include a variety of techniques and procedures utilizing these processes. 2 Lec. 2 Lab.
144 UNDERSTANDING PHOTOGRAPHY (2) A general familiarization with the technology, equipment, and materials of photography, for use in other disciplines or for personal use. A lecture demonstration course dealing with the optical, mechanical, and chemical processes of photography. No laboratory or darkroom requirement.

151 DRAFTING AND DESIGN (4) A study of drafting as the graphic language of industry. Techniques of graphic representation, conventions, projection theory, basic and limit dimensioning, and graphic reproduction and communication. 2 Lec. 2 Lab.

161 INDUSTRIAL MATHEMATICS (4) Mathematics fundamental to industry and the industrial-technical laboratory.

171 INTRODUCTION TO POWER AND ENERGY (4) A study of energy sources, energy conversion, power systems, mechanisms, and utilization. 2 Lec. 2 Lab.

174 INTRODUCTION TO THE AUTOMOBILE (2) A beginning course in automotive technology. Major thrust is to develop an understanding of how the passenger vehicle is constructed and operates. A lecture-demonstration course dealing with major systems and successful operation and maintenance of the modern passenger vehicle. No laboratory required.

178 basic automotive systems (4) Study of the construction, function, and maintenance of automotive systems with particular emphasis on the internal combustion engine and the various support systems of the automobile. Application of principles through laboratory experiences. 1 Lec. 2 Lab.

181 INTRODUCTION TO ELECTRICITY (4) A study of electrical systems with emphasis on the principles and applications of the controls and uses of electricity. 1 Lec. 2 Lab.

201 NEGOTIATING LABOR-MANAGEMENT AGREEMENTS (3) Collective bargaining defined; review of its history and accomplish­ment. Union/management goals in bargaining. Typical contract coverage. Legal basis and controls for bargaining. Economic/political pressures on bargaining parties. Strict procedures in bargaining. Responsibilities of parties in the bargaining process; union leadership. Local members, management, public. Analysis of typical labor contracts. "Mock" bargaining/role-playing. (Offered only at the Hamilton campus.)
211 MACHINE WOOD PROCESSING (4) An intermediate course in wood technology. The primary thrust is on the acquisition of knowledge and the development of performance skills in the machine processing of woods. Basic machine tools are utilized in problem-centered laboratory experiences as they relate to wood industries. Prerequisite: IED 111.1 Lec. 2 Lab.

221 MACHINE METAL PROCESSING (4) Theory and application of basic machine tool practices. Laboratory experiences will include machine set-up, operation and maintenance. Prerequisite: IED 121.1 Lec. 2 Lab.

223 HOT METAL PROCESSING (4) Experiences with industrial practices in foundry, welding, electroplating, and power metallurgy. Casting, fabrication, safety, and maintenance will be emphasized. Prerequisite: IED 121.1 Lec. 2 Lab.

231 PLASTICS PROCESSING (4) Study of plastics characteristics and manufacturing methods. Application of tooling and production techniques through laboratory experiences. Prerequisite: IED 111.1 Lec. 2 Lab.

241 PHOTOGRAPHY (4) Basic theory and application of photography and photographic equipment. Experiences in darkroom processes. A modern 35mm or 2½ x 2½ camera is needed. 2 Lec. 2 Lab.

251 ADVANCED DRAFTING AND DESIGN (4) A study of industrial drafting practices, standard machine elements, surface development and intersections, precision dimensioning for production, detail, assembly, and working drawings. Prerequisite: IED 151.1 Lec. 2 Lab.

257 ARCHITECTURAL DRAFTING (4) Techniques of contemporary presentation applicable to architectural planning and design with emphasis on floor plans, elevations, working drawings, building construction, and perspective. 2 Lec. 2 Lab.

261 PLANE SURVEYING (3) A study of the concepts and principles of plane surveying and their relationship to land masses. Prerequisite: IED 161 or equipment mathematics course. 1 Lec. 2 Lab.
278 AUTOMOTIVE ENGINE ANALYSIS (4) A study of the analysis of servicing practices and techniques used in recondition passenger car engines. Several electric tests are used through experimentation to and engine conditions. Rebuilding experiences are required in the laboratory. Prerequisite: IED 178 or permission of the instructor. 2 Lec. 2 Lab.

281 APPLIED ELECTRONICS (4) A study of the characteristics of electronic systems and their component parts. Emphasis on systems which provide data, process sound, and provide communication. Prerequisite: IED 181. 1 Lec. 2 Lab.

282 RADIO ELECTRONICS (4) Functional sections of AM-FM radio reception are studied and analysis. Troubleshooting techniques and servicing procedures are stressed. Prerequisite: IED 181. 1 Lab.

293 DRIVER, TRAFFIC, AND PUBLIC SAFETY EDUCATION (4) Introductory course to give perspective to the education teachers and others interested in and public safety programs.

312 CONSTRUCTION PRACTICES (4) An examination of the construction technology and its effect on contemporary society. Laboratory activities afford opportunities to develop basic construction skills. 1 Lec. 2 Lab.

321 PRECISION METALS (4) An advanced problem, complete study of process planning for limited production parts, the location of parts for precision machine processes, and the principles and applications for precision machining of holes and contoured faces. Prerequisite: IED 221. 1 Lec. 2 Lab.

334 MANUFACTURING PRACTICES (4) An examination of manufacturing technology and its effect on contemporary society. Laboratory activities afford opportunities to develop skills in basic manufacturing techniques. Prerequisite: IED 111 or 121. 1 Lec. 2 Lab.

335 INDUSTRIAL ARTS FOR ELEMENTARY SCHOOLS (3) Design of insights and explores methods and techniques will help children learn through construction and abilities. Emphasis on developing an awareness of this in a technological society. 1 Lec. 2 Lab.

338 LAPIDARY, JEWELRY AND ART METALS (4) Laboratory experience and study of industrial and hand processes in the fabrication of art metal products in the cutting and polishing of rocks and minerals, also in designing and construction of contemporary jewelry. 1 Lec. 2 Lab.
340 INTERNSHIP (1-8) Supervised work experience and area experience in veterans' hospitals, state and hospitals, or sheltered workshops. Junior and senior industrial therapy majors only. Prerequisite: Permission or approval of the department chair.

341 ADVANCED PHOTOGRAPHY (4) A study of color schemes with laboratory experiences relating to the presenting of color negative and positive materials and the study of black and white abstract techniques in high contrast, tone separate, and design. Prerequisite: IED 241, or permission of instructor. Lec. 2 Lab.

292 OFFSET LITHOGRAPHY (2) A study of offset lithographic processes of printing. Laboratory experience will include image generation, copy preparation, photo conversion, image carriers, image transfer and other techniques and procedures. Prerequisite: IED 141, or permission of instructor. 1 Lee. 1 Lab.

297 PHOTOSCREEN PRINTING (2) A study of photoscreen processes of printing. Direct, indirect and direct/indirect methods are included. Laboratory experience will include exposing, processing, and printing on various media. Prerequisite: IED 141 or permission of instructor. 1 Lee. 1 Lab.

298 TECHNICAL ILLUSTRATION (4) A study of the methods and media used by the technical illustrator to produce pictorial illustration. Airbrush and other mechanical aids will be used. Prerequisite: IED 151. 1 Lec. 2 Lab.

467 ORGANIZATION AND ADMINISTRATION OF DRIVER EDUCATION AND HIGHWAY SAFETY (3) A course to study and develop instructional methods and techniques for traffic and public safety programs in school and industry. Organization and administration of these programs will be emphasized. Prerequisite: IED 293. 2 Lec. 1 Lab.

310 SEMINAR IN INDUSTRIAL EDUCATION (1-4) Individual and group study of selected problems and issues in the field of industrial education. Prerequisite, senior or graduate standing.

317 PLANNING LABORATORY FACILITIES (3) Philosophy and techniques for planning, organizing, and administering industrial education facilities, with special concern for safety, maintenance, and instruction. Prerequisite: senior or graduate standing.
321 INSTRUCTION PROCEDURES-SECONDARY (2) Organization of course content, lesson plans, equipment and supplies, and instructional techniques for secondary schools. Prerequisites: EDP 112, junior standing.

322 INSTRUCTIONAL PROCEDURES-ELEMENTARY (2) Organization of course content, lesson plans, equipment and supplies, and instructional techniques for elementary and middle school industrial arts programs. Prerequisites: EDP 112, junior standing.

324 RESEARCH AND EXPERIMENTATION (3) A study of major research problems relating to industrial materials and processes, power and energy, and graphic communication. Research problems center on new techniques and developments in industry and methods of translating them into appropriate teaching plans. Prerequisite: senior or graduate standing.

346 PHOTOGRAPHIC TECHNIQUES FOR TEACHING (3) A study of photographic films, cameras, and reproduction devices and processes. Laboratory experiences in producing negatives, positives, reversals, and prints. Organization and presentation of single visuals and combinations of visuals (multimedia). Prerequisite: senior or graduate standing.

350 SPECIAL PROBLEMS (1-4) Conference course in a special area of industrial education. Prerequisites: senior or graduate standing, approval of instructor.

464/564 CAREER EDUCATION IN INDUSTRIAL AND TECHNICAL EDUCATION (3) A study of the activities and practices used for career education in industrial and technical education. Emphasis is placed on implementation techniques. Prerequisites: senior or graduate standing.

495/595 PRACTICUM IN DRIVING SIMULATORS (3) Organization, management, and operation of driving simulators as they relate to classroom instruction and the total scope of highway safety education. Prerequisite: IED 393.

497/597 AEROSPACE EDUCATION: AVIATION TECHNICS (2-4) A study of powered flight; the economic, environmental, and social implications of flight, and the integration of the content into classroom practices. Prerequisite: senior or graduate standing.

498/598 AEROSPACE EDUCATION: SPACE TECHNICS (2-4) A study of technics and purposes of space exploration, the implications of the technology of space flight, and the problems encountered. Prerequisite: senior or graduate standing.
600 INDEPENDENT READING (1-4) Planned reading in an approved field of study under the guidance of a member of the department. Prerequisites: graduate standing, approval of department chair.

601 CURRICULUM DEVELOPMENT (3) A review of the philosophical bases for industrial education programs. A study of techniques and procedures used for curriculum planning, and the analysis, selection, and organization of instructional materials.

608 ADMINISTRATION AND SUPERVISION OF INDUSTRIAL EDUCATION (3) Principles, procedures, functions, and relationships of managing and supervising programs of industrial education. Regulatory policies at the local, state, and national levels are examined.

610 ADVANCED SEMINAR IN AEROSPACE EDUCATION (2-8) Selected topics in aerospace education. Prerequisites: IED 597, 598.

620 RESEARCH METHODS AND PROJECTS (3) A critical study of research techniques used in industrial education, as well as a comprehensive review of the status of research.

682 HISTORY OF INDUSTRIAL EDUCATION (3) Historical developments of manual and industrial education from the early leaders to the present. Emphasis is given to the influence that various leaders and movements have had upon present day concepts and objectives of industrial education.

691 CURRENT ISSUES IN INDUSTRIAL EDUCATION (3) An examination of current issues in industrial education that affect classroom teachers and students. Topics of discussion will focus on philosophies, concepts, programs, professional literature, and federal legislation.

694 RESEARCH IN DRIVER EDUCATION (3) Identification, analysis, and implementation of research projects related to driver, traffic, and public safety education.

700 THESIS (1-12; 4 required, maximum 12 toward any degree) Prerequisite: plan of work approved by adviser and department chair.
APPENDIX R

PRIMARY SOURCES CONTACTED AND
NOT FORMALLY CITED
PRIMARY SOURCES CONTACTED AND
NOT FORMALLY CITED

Helen Ball
George Bowers
Richard E. Ginther
Robert Howard
Russell Huston
Jan Branch Kettlewell
Ming H. Land
James E. LaPorte
Gordon E. Martin
Alan D. Mills
John D. Millett
Paul Pearson
John Pont
Robert E. Rueggeberg
Phillip Shriver
Charles Vaugh
Joe Waggener
APPENDIX S

FACULTY MEMBERS, INCLUSIVE OF YEARS OF SERVICE
FACULTY MEMBERS, INCLUSIVE OF YEARS OF SERVICE

Eugene M. Albaugh 1926-1966
Arthur W. Bauer 1962-1971
Gertrude Beers 1919-1923
Edward A. Belinski 1977-1981
Mayme Botts 1913-1916
David L. Bowling 1973-1976
Walter Brunsman 1920-1921
Robert L. Buerkle 1969-1974
Charles Bunten 1967-1982
Jessie Clark 1918-1919
Ms. Davidson 1910-1914
B.O. Davis 1904-1906
Chris P. Deevers 1969-1971
Edward B. Doan 1973-1976
Edna Flegal 1914-1918
Maurice F. Foss 1940-1974
Asa E. Geeting 1912-1916
Richard E. Ginther 1968-1982
Albert A. Grinnell 1923-1959
John W. Hall 1969-1971
Leslie Hall 1915-1916
Thomas K. Harden 1979-1982
Douglas Harris 1929-1940
Norbert C. Hartmann 1973-1975
Dean Halienstein 1961-1965
Alfred Hobbs 1924-1926
Robert Keller 1966-1968
Michael M. Kuzma 1964-1982
Ming H. Land 1971-1982
James E. LaPorte 1981-1982
Gordon E. Martin 1972-1981
Ms. Miller 1910-1912
Marianne Mitchell 1916-1921
Alan D. Mills 1981-1982
Mr. Mobberly 1908-1915
Edith Palmer 1916-1920
Edmond Parrott 1921-1923
Mr. Pettry 1907-1910
Clyde Pierson 1917-1918
William M. Ramsey 1943-1967
Anna Robinson 1907-1921
Robert E. Rueggeberg 1947-1982
Georgia Saylor 1913-1916
Joseph M. Schueger 1979-1982
John D. Seeman 1942-1945
Forest T. Selby 1915-1919
Robert L. Shearer 1972-1982
Robert F. Shrader 1975-1982
J. Warren Smith 1914-1919
William D. Stoner 1924-1960
Amy Swisher 1917-1920
William C. Treadway 1966-1972
John G. Vair 1968-1970
Gertrude Wallace 1916-1921
Frederick C. Whitcomb 1906-1941
Oliver Wiard 1918-1919
James Wineland 1911-1912
Howard D. Wren 1963-1966
William Yaekle 1940-1954
James T. Ziegler 1972-1982
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Butler, Nicholas M. The Argument As Of 1888. Epsilon Pi Tau Inc., University Station, Columbus, Ohio, Reprint-No Date.


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Whitesel, John to Isaacs, David. February 1985
Yaecke1, William to Isaacs, David. March 1986
Ziegler, James to Isaacs, David. February 1985
Shrader, Robert to Isaacs, David. March 1986

Letters
Bunten, Charles to Isaacs, David. March 1985
Foss, Mrs. Maurice to Isaacs, David. February 1985
Land, M.H. to Isaacs, David. February 1985
Martin, G.E. to Isaacs, David. February 1985
Ramsey, William to Isaacs, David. February 1985
Shrader, Bernice to Isaacs, David. April, 1986
Shrader, Robert to Isaacs, David. March 1986
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