The Development of, and Requirements in, Undergraduate Professional Industrial-Arts Courses

Daniel L. Householder

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The Development of, and Requirements in, Undergraduate Professional Industrial-Arts Courses

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Daniel L. Householder

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Submitted in Fulfillment of the Requirements of Industrial Arts 595 and in Partial Fulfillment of the Requirements for the Degree, Master of Science in Education (Plan A)

Approvals:

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Eastern Illinois State College
Charleston, Illinois
Spring, 1957
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INTRODUCTION

During the last three-fourths of a century, men have been employed to teach some sort of handwork of an industrial nature in a manner which would make the training valuable to the pupil in his adult life without definitely training him for a particular vocation. The type of "training" which the teacher needed as preparation for his work has never been definitely agreed upon, nor is it absolute even today. The ideals of proper preparation have varied through the years. Practice in teacher education has varied widely from time to time and from institution to institution.

This study is an attempt to survey the status, past and present, of the professional education of teachers of manual training, manual arts, and industrial arts. The consideration is limited to those professional courses which are or have been required of prospective industrial-arts teachers, but not necessarily required in other teaching curricula. These courses are termed "professional industrial-arts courses" and defined in a later section of this report.
PROCEDURE

Two major procedures have been used in this attempt to show the status of professional industrial-arts courses throughout their history. In the first part of the study, the library research method has been used to provide an historic overview of the development of these courses. Other studies bearing upon the subject have been investigated, and their pertinent findings presented. These findings have usually been taken from books or from summaries of the studies presented as magazine articles. In addition, an attempt has been made to include published recommendations on the topic in order to compare theory with practice. This latter endeavor has not been entirely satisfactory due to the "time lag" between theory and practice and the difficulties met in trying to divide the relatively short history of the field into distinct periods for separate consideration.

The second part of the study consisted largely of the collection of data from the latest available catalogs of thirty-nine institutions in eight midwestern states. The required professional industrial-arts courses in the respective curricula have been analyzed, both as to requirements and for subject matter content, as these were presented in the catalog descriptions. An attempt has been made to compare the contents of the courses even though the titles varied widely.

It has not been possible to follow the development of offerings of individual institutions throughout the period of time under consideration in this study. However, the survey of midwestern
requirements is offered as a contemporary sampling for comparison with earlier studies as well as with such published educational theory as seems to dwell upon the problem.
DEFINITIONS

The following definitions or explanations of specialized terms are provided to clarify the sense in which they are used in this report.

**Industrial Arts:** The term "industrial arts" is used to identify that manipulative work and subject matter information concerning industrial life which is taught in the secondary schools on a non-vocational basis. The term does not include specialized preparation for a trade or vocation. Industrial arts may be considered a basic subject in general education, and while it may have exploratory values in helping some students choose a vocation, it is primarily concerned with skills and knowledges useful to the adult citizen in his non-vocational life.

**Manual Training:** Industrial arts had its beginning as "manual training" which was primarily a development of skill in handwork, with little attempt to teach technical knowledges. This subject was also somewhat more vocational, since the line between general and vocational education in handwork was most indefinite at that time.

**Manual Arts:** The term "manual arts" appeared after manual training, succeeding the latter as a designation for shop activities, at least to some extent. The emphasis in manual arts shifted somewhat from skill in order to include some instruction in good design and other technical knowledges.

The terms above have been used almost interchangeably at various times. It is still possible to hear the terms "manual
training" and "manual arts." For the purposes of this study investigating several stages in the growth of industrial-arts teacher education, it has seemed desirable to use all three terms. An attempt has been made to use the term which enjoyed most current usage at each of the respective times under consideration in the various parts of the study.

**Professional Industrial-Arts Courses:** The term "professional industrial-arts courses" as used in this report means those courses in the curricula for preparing industrial-arts teachers which are primarily concerned with information and methods which will be useful in imparting the subject matter the students will later be expected to teach. They are courses which are definitely intended for prospective industrial-arts teachers. The term does not include academic courses, laboratory courses, or those education courses of a general nature which appear in several teaching curricula of an institution. Because of this last limitation, no attempt has been made to include such courses as history of education, psychology, or practice teaching in this report.

Throughout the study the primary emphasis has been given to those professional industrial-arts courses which were required in the curricula of the respective institutions. In a few instances it has seemed advisable to include references to elective or semi-required courses in order to present a more accurate picture of the situation.
PART I

THE HISTORICAL BACKGROUND OF UNDERGRADUATE PROFESSIONAL INDUSTRIAL-ARTS COURSES

Beginnings:

After manual training began to appear in the secondary schools of the United States around 1880, a need for professional training for the teachers of this new subject area developed. While some normal schools began to offer courses in manual training during the early 1880's, Bennett says, "But none of these normal schools were training the kind of special teachers of manual training needed in schools of secondary grade."¹ The best sources of manual training teachers at the time were the Worcester Polytechnic Institute, Worcester, Massachusetts (later the School of Mechanic Arts of the Massachusetts Institute of Technology, Boston), and the Manual Training School of Washington University, St. Louis, Missouri. While these schools taught the skills of manual work well, they made no attempt to offer professional courses for teachers.²

These schools could do little to meet the demand for teachers of manual training. In New York City alone there were about five hundred teachers of manual training in 1892, all without any special training for the subject. Of necessity they held weekly meetings for mutual assistance, for their fellow teachers were their only available source of advice for teaching the new subject.

². Ibid.
area introduced in the city in 1888. However, these teachers were all college graduates, indicating a level of preparation which was higher than that possessed by many manual-training teachers in other cities.

Leaders of the Manual Training Movement during this early development were quick to recognize the need for preparation as a professional teacher. C. M. Woodward, head of the Manual Training School of Washington University, St. Louis, pointed out that the teacher of manual training needed to be more than just a master workman. He saw the need for instruction in psychology for teachers, even though his school was turning out young men who taught without having received such instruction. At least a few of the leaders were trying to get the states to begin preparing teachers of manual training in the normal schools of the time. This means of preparing manual-training teachers was desired because it was thought more practical to add manual training to the normal school curriculum than to try to make normal schools out of manual-training schools, since the latter were somewhat vocational in nature. Despite this advocacy for professional preparation and the inauguration of a few programs of teacher preparation.


education beginning in 1891, fewer than five per cent of the practicing manual-training teachers in 1898 had received professional education for teaching.7

A noteworthy development in the East was destined to affect the preparation of manual-training teachers throughout the nation.

The professional preparation of teachers of manual training may be said to have had its beginning in 1891, at the New York College for the Training of Teachers, now Teachers College of Columbia University, with the offering of a special two-year curriculum leading to a diploma.

"For the first time in a curriculum for the preparation of special teachers of manual training the following 'professional' courses were developed: History and Principles of Manual Training; Economics of the Planning, Equipping, Organization, and Management of Manual-Training Schools; Observation and Practice Teaching."9

These courses appeared in the announcements of Teachers College for the year 1893-1894 as follows:

**History and Principles of Manual Training**

Origin and development of the manual-training idea; some characteristics of manual training in Sweden, Germany, France, England and America; educational principles underlying manual training; a study of equipments and courses of instruction for elementary and secondary schools; the manual-training high school, its distinguishing characteristics and its place in the American system of education.

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Economics of the Planning, Equipping, Organization, and Management of Manual Training Schools
(To be given for the first time in 1894-95)

Planning with reference to site, location, points of compass, rooms required, size of each and location with reference to use, light, ventilation, economy of heating, accessibility and convenience; tools and appliances required for a given range of work; when and how to purchase tools and machinery, arrangement of the same with reference to their use, convenience, and safety of operation; selection of motive power, location of line shafts, kinds of hangers, belting, and other material required; fixing of responsibility, arrangement of recitation and work periods, duties of engineer, janitor, and teachers; management, with reference to efficiency and economy in the instruction of classes and in the use of material in the workshops.

Observation and Practice Teaching

A course affording opportunity for students to observe and to teach, under the eye of a critic teacher, grammar and high-school classes from the Horace Mann School in the various lines of work taught in the department. This course is given only in the senior year. Each student must observe and teach in at least two subjects during the year, and no student will be recommended for a diploma when work in this course is unsatisfactory.10

In addition to the two-year major course in manual training, the above courses were also offered as electives in the program for the bachelor's degree.11 The 1896-97 school year saw the introduction of another professional course, described as follows:

"Manual Training in Elementary and Secondary Schools: History and principles; courses, equipments, and methods of teaching. Lectures,

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essays, reports, and private reading. Two hours weekly first half year. If accompanied with practice, four to six hours weekly the entire year.\textsuperscript{12} This course was acceptable for the A. B., A. M., and Ph. D. degrees in that institution, and was the first graduate course in the pedagogy of manual training in America.\textsuperscript{13} This pioneer program was under the direction of Charles A. Bennett, who served as Professor of Manual Arts at Teachers College from 1891 to 1897.\textsuperscript{14}

After this singular beginning, the idea of professional preparation spread rapidly. Sloyd Training School, Boston; State Normal School, Oswego, New York; and Mechanics Institute, Rochester, New York had curricula for manual-training teachers by 1896.\textsuperscript{15} After the turn of the century, introduction of new curricula became more frequent. Six institutions inaugurated programs for the preparation of manual-training teachers in one year, 1903. By 1911, at least twenty institutions had curricula for professionally prepared teachers of manual training.\textsuperscript{16} It is regrettable that no detailed information regarding these early programs was available, for comparison with later curricula might have proved to be both interesting and informative.

\textsuperscript{12} Bennett, \textit{op. cit.}, p. 470.
\textsuperscript{13} Ibid.
\textsuperscript{14} Bawden, "Bennett," pp. 218-219.
\textsuperscript{15} Bawden, \textit{History}, p. 27.
\textsuperscript{16} Ibid.
Development and Evaluation:

Development during the period from 1891 to 1918 was extremely rapid. Siepert made a pioneer study of the courses of study in the institutions in 1918 and found that there were at least 184 institutions offering curricula intended to prepare manual-arts teachers. He listed 128 public institutions and fifty-six private institutions. Universities and normal schools were prominent in the list of institutions which were offering these curricula.17

As was common at that time, many of the curricula were only two years in length. There were also a number of three and four-year curricula offered. The four-year curricula usually led to bachelor's degrees.18

Table I presents information concerning the number of semester hours required in the various professional manual-arts courses in the two, three, and four-year curricula at several representative institutions cited by Siepert. This table illustrates the wide variation in requirements at that time. The requirements in two-year curricula ranged from three to ten semester hours in professional manual-arts courses. Even the four-year curricula had a range of requirements which began with a low of six semester hours and ranged to a high of twelve semester hours. This would appear to indicate a rather wide variation in the intensity of the professional preparation in the various curricula.

18. Ibid., p. 29.
## TABLE I

### Analysis of Sample Curricula for Professional Manual-Arts Course Content

(semester hours required)

<table>
<thead>
<tr>
<th>Course</th>
<th>2-Year A</th>
<th>2-Year B</th>
<th>2-Year C</th>
<th>3-Yr. D</th>
<th>3-Yr. E</th>
<th>3-Yr. F</th>
<th>4-Year D</th>
<th>4-Year E</th>
<th>4-Year F</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Manual Arts</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Organization of Manual Arts</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration of Manual Arts</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Methods</td>
<td>2</td>
<td>3</td>
<td></td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Semester Hours</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>6</td>
<td>12</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Institutions:

A - University of Missouri
B - Ohio University
C - Oshkosh Normal School
D - Miami University
E - Stout Institute
F - Pennsylvania State College

It will be noted that the course entitled "History of Manual Arts" is most common to the eight curricula above, appearing in each curriculum. The total number of semester hours required in this course in the eight curricula is also the highest, being twenty-four. In contrast, seventeen semester hours were required in the course entitled "Organization of Manual Arts," ten semester hours in "Administration of Manual Arts," and eleven semester hours in "Special Methods." These totals could be indicative of the...

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19. Siepert, op. cit., pp. 13-14; 21-23; and 25. (This table is a compilation in tabular form of data on the above pages.)
relative emphasis placed on the respective courses at the time of this study.

Table II is a presentation of the professional manual-arts requirements of several institutions in terms of actual clock hours of instruction required in the various courses. This is done as a means of showing quarter hour, semester hour, and clock hour requirements in one table to permit efficient comparison.

**TABLE II**

*Clock Hours Devoted to Each Subject*

<table>
<thead>
<tr>
<th>Courses</th>
<th>Institutions</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Manual Arts</td>
<td></td>
<td>100</td>
<td>60</td>
<td>96</td>
<td>60</td>
<td>30</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>60</td>
<td>18</td>
<td>90</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Organization of Manual Arts</td>
<td></td>
<td>100</td>
<td>60</td>
<td>48</td>
<td>120</td>
<td>..</td>
<td>18</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>90</td>
<td>90</td>
<td>60</td>
</tr>
<tr>
<td>Administration of Manual Arts</td>
<td></td>
<td>100</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>54</td>
<td>..</td>
<td>36</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td></td>
</tr>
<tr>
<td>Special Methods</td>
<td></td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>180</td>
<td>60</td>
<td>..</td>
<td>54</td>
<td>..</td>
<td>36</td>
<td>36</td>
<td>..</td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
<td>300</td>
<td>120</td>
<td>144</td>
<td>360</td>
<td>90</td>
<td>54</td>
<td>144</td>
<td>36</td>
<td>96</td>
<td>90</td>
<td>180</td>
<td>180</td>
<td>60</td>
</tr>
</tbody>
</table>

**Institutions:**

A - Oswego Normal School  
B - Indiana State Normal School  
C - Western Tennessee Normal School  
D - Bradley Polytechnic Institute  
E - Illinois State Normal University  
F - Ohio University  
G - Miami University  
H - University of North Dakota  
I - Iowa State Teachers College  
J - University of Missouri  
K - Oshkosh Normal School  
L - Stout Institute  
M - Northern Illinois Normal School

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20. Siepert, *op. cit.*, Table VII, p. 15.
An even greater diversity of requirements is evident in Table II than in Table I. The total requirements in professional manual-arts courses range from a low of thirty-six clock hours to a high of 360 clock hours. If one considers eighteen clock hours equivalent to one semester hour, these requirements range from two to twenty semester hours, in comparison with the range of from three to twelve semester hours in Table I.

From the standpoint of total hours required in a particular course in the curricula represented, the course "Special Methods" received considerably more emphasis in Table II than it did in Table I. A relative increase also occurred in the requirements in "Organization of Manual Arts." In contrast, a marked decrease in requirements occurred in "Administration of Manual Arts."

It is obvious from a study of the two tables and accompanying information that a great deal of progress had been made since the inception of professional manual-arts courses in 1891. In the twenty-seven years, offerings had expanded from one institution offering three professional courses to 184 institutions with offerings so diverse as to make classification difficult.\footnote{Siepert, \textit{op. cit.}, p. 6.} Expansion of professional programs for the preparation of manual-arts teachers was probably more rapid during this period than it has been since 1918.

Despite all this progress, Siepert pointed out some needs made apparent by the findings of his study. He said:

Teacher-training institutions need to make a more
thorough analysis of the work industrial teachers must do and to arrange curricula which directly and specifically fit individuals for their work. Only by such a procedure can an adequate supply of teachers who know their subject and who can teach what they know to others be assured. . . . 22

By 1926, the situation was noticeably improved. Struck commented that better trained teachers were the rule in industrial-arts education, although he was still not satisfied with the situation. He said, "At the present time the greatest handicap to the development of industrial arts . . . is the shortage of properly qualified teachers." 23 His idea of a well qualified teacher was one who met the professional education requirements of all general-education teachers and one who also possessed practical trade training. 24

Publications in the field of industrial arts began revealing a few suggestions for courses of study for specific courses and for overall curricula in industrial-arts teacher preparation about this time. Maclin proposed a course of study for the "Organization of Manual Arts or Industrial Education" in 1927. He divided the course into seventeen units, basing his divisions on an analysis of the things a teacher of industrial subjects must do and know. His main headings for course divisions were these:

- Job analysis;
- Purchase of equipment;
- Installing equipment;
- Repair and maintenance of equipment;
- Purchasing supplies;
- Supply storage;
- Supply checking;
- Department records;
- School records;
- Training co-workers;

24. Ibid.
Delivery of supplies from various centers; Safety devices; Registering students; Making up class roll; Attending and participating in faculty meetings; Preparing specifications; and, Best time of day for different types of classes. 25

He elaborated on the specific items of information he would have included in each of the units. His proposals seemed particularly valuable since they were based on an analysis similar to that suggested by Siepert in 1918.

Writing about three years later, Randel enumerated several areas of proficiency valuable to the general-shop teacher. He said, "His professional training should include many of the following studies: Practice teaching and observation; methods of specific subjects; shop arrangement and equipment; the project method; course planning; job analysis; types of industrial-arts shops; history of manual arts and the significance of manual arts . . . ." 26

These articles are indicative of a new feeling toward the professional curriculum for industrial-arts teachers. Herein lie the roots of an apparent trend toward a more systematic organization within the various professional industrial-arts courses and toward a more unified professional curriculum.

Recent Research:

Numerous studies have been made concerning the professional curricula for industrial-arts teachers since 1930. They have considered many facets of the situation. The following report of research findings is not all-inclusive, but is rather an attempt to show some approaches to the problem of improving the professional industrial-arts courses.

Friese approached the problem from the teacher standpoint in a survey of teacher opinion published in 1933. He made a composite summary of the answers of 154 teachers to a questionnaire evaluating the importance of the various professional subjects and ranked the professional industrial-arts courses in the following order: organization of industrial arts, general methods, theory of industrial arts, shop administration and management, history of industrial arts, equipment, curriculum construction, safety and health, lesson plans, project method, and history of vocational education. He found that the average of the teacher opinions was that the professional subjects (including professional industrial-arts courses) should make up about one-fourth of the curricula for the preparation of industrial-arts teachers. Since some of the subjects named above did not appear very frequently in studies in the field at that time, the assumption might be made that the teachers had indicated certain shortcomings in their preparation. This study probably should have had some effect upon later curricula.

At approximately the same time, McHenry made a study of the offerings of forty-two institutions preparing industrial-arts teachers. The data on institutional requirements in professional industrial-arts courses gathered in this study are summarized in the following table.

**TABLE III**

(Institutional Requirements in 1933)

<table>
<thead>
<tr>
<th>Courses</th>
<th>Number Schools Requiring in Year</th>
<th>Total Schools Sem. Hrs.</th>
<th>Av. Req.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Methods</td>
<td>9, 16, 14</td>
<td>39, 3.8</td>
<td></td>
</tr>
<tr>
<td>History of Industrial Educ.</td>
<td>3, 8, 7</td>
<td>18, 3.5</td>
<td></td>
</tr>
<tr>
<td>Vocational Education</td>
<td>2, 6, 1</td>
<td>9, 3.6</td>
<td></td>
</tr>
<tr>
<td>Trade Analysis</td>
<td>2</td>
<td>2, 3.25</td>
<td></td>
</tr>
<tr>
<td>Principles of Guidance</td>
<td>4, 4</td>
<td>8, 4.0</td>
<td></td>
</tr>
<tr>
<td>Ind. Arts Curriculum Const.</td>
<td>1, 1, 3</td>
<td>5, 4.0</td>
<td></td>
</tr>
<tr>
<td>The General Shop</td>
<td>2, 2</td>
<td>4, 3.25</td>
<td></td>
</tr>
<tr>
<td>Admin. &amp; Supervis. of Gen. Shop</td>
<td>8</td>
<td>8, 3.0</td>
<td></td>
</tr>
<tr>
<td>Organization of Industrial Arts</td>
<td>1, 5, 3</td>
<td>9, 3.6</td>
<td></td>
</tr>
<tr>
<td>Shop Management</td>
<td>4</td>
<td>4, 2.25</td>
<td></td>
</tr>
</tbody>
</table>

One interesting recommendation of this study was summarized in this statement: "It was generally agreed that these (professional) courses should be taught by the industrial-arts staff,

---

the credit to be counted as education."\(^{29}\) No evidence has been
found which would indicate that this suggestion has been followed.

In the summary of his 1936 study of industrial-arts teacher
education at sixty colleges, Ashley said, "Special professional
courses are given in all schools under eleven different titles.
Each school requires at least one, though the average number is
three."\(^{30}\) This statement corresponds quite well with McHenry's
earlier findings which would indicate ten titles for professional
industrial-arts courses and an average of about 2.5 courses re-
quired in the forty-two institutions, according to the data in
Table III.

Ashley pointed out that wide variations appeared in every
phase of the programs of teacher education in the various institu-
tions.\(^{31}\) His statement is substantiated by McHenry's findings as
summarized in Table III. The variety of titles used to identify
the professional industrial-arts courses in Table III, together
with the fact that special methods was the only course required in
a majority of the institutions included would seem to indicate
a lack of uniformity of requirements.

Fryklund made a comprehensive survey of ninety teacher educa-
tion institutions in 1940. Several of his findings which are
pertinent to this study are tabulated in Table IV. He classifies
the professional industrial-arts courses under sixteen titles.
His listing in terms of two two-year periods with no attempt to

30. Lawrence F. Ashley, "Industrial-Arts Education," Indus-
trial Arts and Vocational Education (January, 1937), XXVI, 2.
31. Ibid., p. 3.
### TABLE IV

**Professional Requirements in 1940**

<table>
<thead>
<tr>
<th>Professional Courses</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Organization &amp; Management</td>
<td>3</td>
<td>2.3</td>
<td>21</td>
<td>2.4</td>
<td>1-6</td>
</tr>
<tr>
<td>History of Manual &amp; Indus. Arts</td>
<td>6</td>
<td>2.7</td>
<td>19</td>
<td>2.6</td>
<td>1-4</td>
</tr>
<tr>
<td>Individual Instruction Sheets</td>
<td>2</td>
<td>2.0</td>
<td>11</td>
<td>2.0</td>
<td>1-3</td>
</tr>
<tr>
<td>Philosophy of Industrial Arts</td>
<td>4</td>
<td>3.0</td>
<td>12</td>
<td>2.5</td>
<td>1-4</td>
</tr>
<tr>
<td>Shop Organization &amp; Management</td>
<td>2</td>
<td>2.0</td>
<td>23</td>
<td>2.3</td>
<td>1-6</td>
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<tr>
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<td>Trade or Activity Analysis</td>
<td>2</td>
<td>2.5</td>
<td>11</td>
<td>2.5</td>
<td>2-4</td>
</tr>
<tr>
<td>Course Organization</td>
<td></td>
<td></td>
<td>5</td>
<td>15</td>
<td>2.6</td>
</tr>
<tr>
<td>Methods of Teaching</td>
<td>8</td>
<td>2.7</td>
<td>42</td>
<td>3.0</td>
<td>1-6</td>
</tr>
<tr>
<td>Supervision of Industrial Education</td>
<td>2</td>
<td>2.0</td>
<td>5</td>
<td>2.3</td>
<td>2-3</td>
</tr>
<tr>
<td>Administration of Indus. Education</td>
<td>1</td>
<td>2.0</td>
<td>6</td>
<td>2.3</td>
<td>2-3</td>
</tr>
<tr>
<td>General Shop Theory</td>
<td></td>
<td></td>
<td>0</td>
<td>12</td>
<td>2.6</td>
</tr>
<tr>
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<td>1.0</td>
<td>9</td>
<td>2.0</td>
<td>1-3</td>
</tr>
<tr>
<td>Philosophy of Vocational Education</td>
<td>5</td>
<td>2.0</td>
<td>9</td>
<td>2.3</td>
<td>1-3</td>
</tr>
<tr>
<td>Survey of Industrial Education</td>
<td></td>
<td></td>
<td>0</td>
<td>4</td>
<td>1.8</td>
</tr>
<tr>
<td>Vocational Guidance</td>
<td></td>
<td></td>
<td>0</td>
<td>3</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**Column Headings:**

- **A** - Number of institutions requiring course in first two years.
- **B** - Mean number of semester hours of course required in first two years by institutions in column "A".
- **C** - Number of institutions requiring course in last two years.
- **D** - Mean number of semester hours of course required in last two years by institutions in column "C".
- **E** - Range of required semester hours in four-year curricula in institutions in columns "A" and "C".

---

total or average the amount of work required in a subject for four years makes accurate comparison with previous studies difficult. Nevertheless, his study provides the best available picture of the national situation just preceding World War II.

Fryklund provided some information on the character of the institutions in his study. He said, "According to the schools that reported, it appears that teacher education in industrial arts is confined almost entirely to some publically supported institution, usually, state or municipal. . . . . Privately endowed teacher education schools, with few exceptions, confine their offerings to the academic field." 33

Concerning geographic location, he said, "The 90 institutions responding to this inquiry represent every section of the country, with the largest number in the central, or Mississippi Valley, section . . . . Thirty-four states have schools represented in the survey . . . ." 34

Theory and practice in the placement of the professional courses were studied by Pawelek. He wrote, "Seventy-four per cent of the departments offer strictly professional industrial-arts education courses for the first time in the junior year." 35 The "jury" he utilized (heads of industrial-arts education departments) considered this practice desirable on the grounds that some shop and drawing experience was a necessary background for professional

33. Fryklund, op. cit., p. 15.
34. Ibid., p. 17.
courses. \textsuperscript{36} The general acceptance of the general shop program led Pawelek to write, "Professional courses entitled \textit{The General Shop} should be conducted, or some portion of various methods courses should be devoted to a study of the general shop plan." \textsuperscript{37}

Landis made a similar study in Illinois, surveying the preparation of 297 industrial education teachers. His compilation of their preparation in professional industrial-arts courses and their opinions of the values of those courses appears in Table V.

In reading Table V, one should remember that the judgments of the teachers received primary emphasis in this table. The numbers in the column headed "1" represent the numbers of teachers who had taken the respective courses and who considered them the most valuable professional industrial-education courses they had taken. The column headed "2" indicates second most valuable courses and the column headed "3" indicates third most valuable courses. On the other hand, the teachers considered the courses in column "a" the least valuable professional industrial-education courses they had taken. Column "b" indicates second lowest in value and column "c", third lowest in value. The courses are arranged in the table in the order of their relative value in terms of the teacher opinions.

One comment in the summary of the table stands out: "Fewer teachers reported having taken professional courses in industrial education \textsuperscript{(than reported having taken general professional courses)}."

\textsuperscript{36} Pawelek, \textit{loc. cit.}
\textsuperscript{37} Ibid., p. 149.
TABLE V*38

Number of Teachers Taking Professional Industrial Education Courses, Their Judgments and the Percentage of Teachers Expressing Judgments

<table>
<thead>
<tr>
<th>General Title of Course</th>
<th>Number Taking Course</th>
<th>Number Judging Course</th>
<th>Percentage Judging Course</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1  2  3  c  b  a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methods of Teaching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Subjects</td>
<td>52 26 10 5 5 0</td>
<td>166</td>
<td>59.0</td>
</tr>
<tr>
<td>Preparation of Instructional Materials</td>
<td>15 21 9 1 0 3</td>
<td>87</td>
<td>56.3</td>
</tr>
<tr>
<td>Tests and Measurements in Industrial Education</td>
<td>5 11 18 3 3 3</td>
<td>96</td>
<td>46.9</td>
</tr>
<tr>
<td>Organization and Administra-</td>
<td>13 16 8 3 5 4</td>
<td>121</td>
<td>40.5</td>
</tr>
<tr>
<td>tion of Industrial Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum Construction</td>
<td>17 11 10 6 3 5</td>
<td>107</td>
<td>48.6</td>
</tr>
<tr>
<td>Shop Planning</td>
<td>5 11 13 3 2 3</td>
<td>90</td>
<td>41.1</td>
</tr>
<tr>
<td>Problems in Industrial Education</td>
<td>10 15 8 6 4 5</td>
<td>104</td>
<td>51.0</td>
</tr>
<tr>
<td>Safety</td>
<td>2 2 4 1 1 1</td>
<td>34</td>
<td>32.4</td>
</tr>
<tr>
<td>Principles of Vocational Education</td>
<td>4 14 9 7 8 10</td>
<td>112</td>
<td>46.4</td>
</tr>
<tr>
<td>Occupations</td>
<td>1 7 4 3 6 2</td>
<td>59</td>
<td>38.9</td>
</tr>
<tr>
<td>Principles of the General Shop</td>
<td>5 2 3 5 3 2</td>
<td>53</td>
<td>37.7</td>
</tr>
<tr>
<td>Administration of Vocational Education</td>
<td>3 1 9 8 7 5</td>
<td>86</td>
<td>37.2</td>
</tr>
<tr>
<td>Part-time and Evening Schools</td>
<td>8 0 2 3 1 17</td>
<td>73</td>
<td>42.5</td>
</tr>
<tr>
<td>History of Industrial Education</td>
<td>8 8 17 6 18 22</td>
<td>164</td>
<td>48.2</td>
</tr>
</tbody>
</table>

---

Those who did so took fewer courses in this field than in any other field. 39 Landis goes on to say, "Most of the courses in this field received favorable judgments. The factor influencing the judgments of the teachers to the greatest extent was that of practicability of use in the teaching of industrial education subjects." 40 This might be taken as an indication of the value of such courses, and could also provide a criteria for selecting the content of professional industrial-arts courses.

By 1952, there were 190 institutions for industrial-arts teacher education. Only 64.8 per cent of them (127 institutions) were offering professional industrial-arts courses. The requirements of these 127 institutions ranged from two to forty-five semester hours, with a mean of 10.7 semester hours required in the professional industrial-arts courses. 41 Certainly this left much to be desired when sixty-three institutions were failing to require any professional industrial-arts courses. The average requirements are slightly higher than those noted by Ashley, but the percentage of institutions requiring professional industrial-arts courses dropped sharply when the overall situation was surveyed in comparison with the limited sampling used by Ashley.

The comparison of group opinions of industrial-arts teacher educators and actual professional curricula provided material for considerable research in the early 1950's. Wall surveyed the

39. Landis, op. cit., p. 117.
40. Ibid.
opinions of sixty industrial-arts teacher educators with doctor's degrees and compared the synthesis of their opinions with actual practice in 109 institutions in forty-one states. He found a rather wide discrepancy between theory and practice in the professional industrial-arts portion of the curricula. The group opinion recommended that 14.35 per cent of the curriculum be professional industrial-arts courses. However, the survey of practice disclosed that this category of courses occupied only 9.58 per cent of the curricula in operation at that time. This indicates that actual requirements lag significantly behind the consensus of opinion as to what constitutes good practice.

Jarvis provided an interesting comparison of five studies in the field of industrial-arts teacher preparation in 1955. He compared studies completed from 1941 to 1951; made by Schad, Tate, Pawelek, Miles, and Wall. These studies recommended that professional courses (general education and professional industrial-arts courses) should make up from 25 to 44 semester hours toward graduation. Jarvis synthesized these studies and made several recommendations, including the following: "In the professional

42. Gustave S. Wall, "Over-all Requirements for Industrial-Arts Teacher Education," *Industrial Arts and Vocational Education* (December, 1952), XLI, 330.

area, each industrial-arts major; (a) Should complete 26 semester hours, this total to include student teaching. (b) Should receive direction on how to 'Develop Instructional Material.' This preparation is recommended because such training was suggested in all studies reviewed.44

Another quotation from another summary of Miles' study is worthy of note because of its consideration of content. . . ."The problem of evaluation is probably the weakest part of industrial arts instruction today . . . ."45 Surely this carries with it the need for instruction in evaluation in professional industrial-arts courses.

A study of 150 activities by Kjos showed the following findings from the results of a checklist completed by 110 teachers. "Activities deemed of most importance were connected with aims, projects, methods, instructional units, records, testing, guidance, safety, discipline, student interest, tools, individual differences, professional growth and public relations."46 Here again one notes that the major problems of the industrial-arts teacher may be at least partially solved through instruction in one or more professional industrial-arts courses.

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44. Jarvis, op. cit., p. 185.
In a magazine article in 1955, Pederson contended that beginning industrial-arts teachers should be competent in several areas of their profession. The following competencies mentioned in the article are included here, since it seems that the primary opportunity for developing them would be in the professional industrial-arts courses. "Ability to select and organize subject matter for a particular situation ... to teach ... to plan new shops and remodel old ones ... to manage shops ... to promote industrial arts ... "47 In addition to the above abilities, Pederson considered the following knowledges and understandings important: "Knowledge of professional literature ... of 'literature' from business and industry ... about leaders ... of the history and philosophy of industrial education ... Understanding of the place of industrial arts in elementary education ... of the name, purpose and make-up of the professional organizations in our field ... of how to create and maintain a safe shop ... "48

Tinkham and Lockette proposed a somewhat different procedure for teaching professional competencies. It was their contention that special professional courses designed to develop the professional competencies should be supplemented by the professionalization of the undergraduate shop courses.49 They proposed a series of professional assignments to be performed in addition to

47. Harry A. Pederson, "Industrial Arts Teacher Competencies," Industrial Arts and Vocational Education (December, 1955), XLIV, 318.
48. Ibid., pp. 318-319.
the regular shopwork to help students see the instructional aspects of their learning experiences. Some of the activities they mentioned as suitable for developing professional competencies were these: "Co-operative planning of objectives . . . . Performing demonstrations . . . . Making teaching aids . . . . Designing projects . . . . Requesting free and inexpensive commercial booklets and materials . . . . Writing instruction sheets . . . . Planning and carrying out public relations programs . . . . Evaluation . . . ."50 They concluded that many of the functions of the professional industrial-arts courses would be more satisfactorily achieved if the students had gone through a series of professionalized shop courses previously.

PART II

AN ANALYSIS OF THE PRESENT POSITION
OF UNDERGRADUATE PROFESSIONAL INDUSTRIAL-ARTS
COURSES IN THE MIDDLE WEST

Procedure:

In an effort to clarify the present status of professional
industrial-arts courses, it was deemed necessary to do some origi-
nal research. Several possible methods were considered before
undertaking the research. Since a survey of all institutions
offering a major in industrial arts did not appear to be feasible,
the first efforts were directed toward the selection of a sampling
of institutions to be included in the survey. The first step was
to compile a chart of institutions offering an undergraduate major
in industrial arts; dividing the institutions according to the
states in which they were located, and also according to the type
of support, whether public or private. The results of this compi-
lation are presented in a later section.

While it may have been possible to sample representative
institutions on a nationwide basis, it seemed more practical to
limit the consideration to a specific geographic area and strive
for as thorough an investigation of the smaller area as was pos-
sible in view of the limited time available. For this reason,
the following states were selected for inclusion in the study:
Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri,
and Wisconsin. They were selected because of their central loca-
tion in the United States, and also because these eight contiguous
states embraced nearly one-fourth of the institutions offering an
undergraduate major in industrial arts. However, it is quite possible that other groupings of institutions might well have been chosen, and might have provided a more valid sampling than the group which was included.

The questionnaire method of inquiry might have yielded more accurate results in this study, but its use was ruled out on the grounds that the necessary questionnaire would be too unwieldy, and the percentage of returned questionnaires would probably be rather low. As a result, the research was limited to an investigation of the current catalogs of the institutions included in the survey. A total of thirty-nine institutions were investigated. This figure represents ninety-five per cent of the forty-one institutions offering an undergraduate major in industrial arts within the eight-state area, and twenty-three per cent of the 169 such institutions within the United States.

The investigation of college catalogs was limited to the requirements listed in the respective curricula for prospective teachers of industrial arts in the secondary schools. The professional industrial-arts courses (professional courses required in the above curricula, but not required of all prospective teachers in the respective institutions) were the only courses considered. The requirements in these courses, and the respective course descriptions were noted for further analysis.

The courses required in the respective institutions were then arranged into homogenous groups. These findings are presented and compared with studies cited in Part I of this report. The content of the courses was subjected to an analysis in an attempt to
ascertain the placement of the various instructional units in the various groups of courses, and also in an attempt to ascertain the relative emphases accorded the respective units of instruction in the curricula included in this study. These findings are also tabulated and compared with previously cited recommendations.
Overview:

The findings of the preliminary survey are summarized in Table VI. This phase of the investigation was rather general in nature, since the primary purpose was to ascertain the distribution of institutions preparing industrial-arts teachers. Institutions offering only minors in industrial arts were excluded from the tabulation.

An examination of the data in Table VI reveals that education for prospective industrial-arts teachers is available in at least forty-three of the states, in a total of at least 169 institutions. The number of institutions in a state ranged from one to ten. The percentage of the total number of institutions ranged from 0.6 per cent to 5.9 per cent per state. From the data in the table, it appears that no one state is outstanding in terms of the number of institutions offering a major in industrial arts. Certain areas, however, may assume importance from this standpoint. For instance, Texas and Oklahoma together made up 11.8 per cent of the total, and the eight-state area studied in detail accounted for about twenty-four per cent of the total number of institutions.

At least 143, or 84.6 per cent, of the institutions in Table VI are publicly supported. It has not been possible to ascertain the classification of thirteen institutions, and they have been listed in the table with the thirteen institutions known to be privately supported under the heading, "Other Institutions." These findings correspond closely with those reported by Fryklund in 1940.51

51. Fryklund, op. cit., p. 15.
TABLE VI

Institutions Offering an Undergraduate Major in Industrial Arts in the United States

<table>
<thead>
<tr>
<th>State</th>
<th>No. Public Institutions</th>
<th>Other Institutions</th>
<th>State Total</th>
<th>Percentage of U.S. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>2</td>
<td></td>
<td>2</td>
<td>1.2%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>3</td>
<td></td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>California</td>
<td>9</td>
<td>1</td>
<td>10</td>
<td>5.9</td>
</tr>
<tr>
<td>Colorado</td>
<td>3</td>
<td></td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Connecticut</td>
<td>1</td>
<td></td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Florida</td>
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<td>2</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>Georgia</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Idaho</td>
<td>1</td>
<td></td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Illinois</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td>4.7</td>
</tr>
<tr>
<td>Indiana</td>
<td>3</td>
<td></td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Iowa</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Kansas</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>4.1</td>
</tr>
<tr>
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<td></td>
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<td>3.0</td>
</tr>
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<td>3</td>
<td>1</td>
<td>4</td>
<td>2.4</td>
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<td>0.6</td>
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<td>Maryland</td>
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<td></td>
<td>1</td>
<td>0.6</td>
</tr>
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<td>1.2</td>
</tr>
<tr>
<td>Michigan</td>
<td>7</td>
<td></td>
<td>7</td>
<td>4.1</td>
</tr>
<tr>
<td>Minnesota</td>
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<td></td>
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<td>4.1</td>
</tr>
<tr>
<td>Mississippi</td>
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<td>2.4</td>
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<td>Missouri</td>
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<td>6</td>
<td>3.6</td>
</tr>
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<td>3</td>
<td>4</td>
<td>2.4</td>
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<td>Nebraska</td>
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<td>2.4</td>
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<td>New Mexico</td>
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<td>Ohio</td>
<td>7</td>
<td>1</td>
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<td>4.7</td>
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<td>2</td>
<td>10</td>
<td>5.9</td>
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<td>Oregon</td>
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<td></td>
<td>1</td>
<td>0.6</td>
</tr>
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<td>Pennsylvania</td>
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<td>1</td>
<td>4</td>
<td>2.4</td>
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<tr>
<td>South Carolina</td>
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<td>South Dakota</td>
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<td></td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Tennessee</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>4.7</td>
</tr>
<tr>
<td>Texas</td>
<td>9</td>
<td>1</td>
<td>10</td>
<td>5.9</td>
</tr>
<tr>
<td>Utah</td>
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<td></td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Virginia</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>Washington</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>3.6</td>
</tr>
<tr>
<td>West Virginia</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>2</td>
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</tr>
<tr>
<td>Wyoming</td>
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<td></td>
<td>1</td>
<td>0.6</td>
</tr>
</tbody>
</table>

52. G. S. Wall, Industrial Teacher Education Directory of Institutions and Personnel, 1956-57 (American Council on Industrial Arts Teacher Education, and National Association of Industrial Teacher Educators, 1956). (Data from throughout the publication.)
Professional Industrial-Arts Course Requirements:

As has been previously explained, thirty-nine institutions located in eight contiguous Midwestern states were included in a rather intensive study of professional industrial-arts course requirements. The listing of the states and the names of the institutions may be found in Appendix A.

For the purposes of this study, the required professional industrial-arts courses were divided into these fourteen categories:

Methods of Teaching the Industrial Subjects
Organization and Administration of Industrial Arts
Vocational Education
Subject Matter Organization
Shop Planning
Vocational Guidance
General Shop Organization
Testing in Industrial Education
Activity Analysis
Industrial Safety
Industrial Education Curriculum
Shop Maintenance
History of Industrial Education
Philosophy of Industrial Arts

It should be recognized that any division of the professional industrial-arts courses is somewhat arbitrary, since many of the courses cover several areas of instruction, while others are quite specialized. An attempt has been made to place courses in the categories which seemed to correspond with the major emphases in those courses as they were described in the latest available catalogs of the respective institutions.

Appendix B is a listing of several representative titles from each of the above categories. The titles of the categories were
chosen either by using a representative title in toto or by synthesizing a title from several similar titles, in an attempt to emphasize the common aspects of the respective courses in the various categories.

Table VII presents findings concerning the requirements in the various professional industrial-arts categories in the institutions included in this study. A total of 118 professional industrial-arts courses were required by the thirty-nine institutions. This number represents an average requirement of 3.03 courses.

The total number of quarter hours required in professional industrial-arts courses was 399.5, or an average of 10.2 quarter hours per institution. This is significantly lower than the 10.7 semester hour average requirement in 1952 in the 127 institutions which were offering professional industrial-arts courses at that time. 53

No single category of courses was included in the requirements of all thirty-nine institutions. Only two categories of courses, "Methods" and "Organization," were required in a majority of the institutions in this study. The requirements in these two categories exceeded the requirements in all other categories collectively, both in terms of the number of required courses and in the number of quarter hours required. Four institutions required two or more courses in one category.

# TABLE VII

**Requirements in Professional Industrial-Arts Categories**

<table>
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<tr>
<th>Categories (Abbreviated)</th>
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<th>B</th>
<th>C</th>
<th>D</th>
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</table>

**Column Headings:**

A - Number of institutions requiring one or more courses in the respective categories.
B - Total number of courses required by institutions in column "A".
C - Total quarter hours required in courses in column "B" by institutions in column "A".
D - Number of institutions requiring no courses in the respective categories.
E - Number of institutions requiring two or more courses in the respective categories.
Table VIII is a rather detailed presentation of the total requirements of the respective institutions, broken down by the categories into which the requirements fell. Both the numbers or required professional industrial-arts courses and the required number of quarter hours in those courses are listed for each institution.

All institutions included in the present study required at least one professional industrial-arts course. However, Williams and Meyer,\textsuperscript{54} in their comprehensive survey in 1952, found that only 64.8 per cent of the institutions for industrial-arts teacher education in the United States were offering professional industrial-arts courses. This might indicate that the professional industrial-arts courses are receiving more emphasis in the eight-state area under consideration than in the total national picture, since it seems unlikely that requirements would have changed so much in only five years.

Eight schools required only one professional industrial-arts course, while the requirements of the other institutions ranged up to a high of nine courses required by one institution. These findings are quite similar to those reported by Ashley\textsuperscript{55} and McHenry.\textsuperscript{56}

Quarter hour requirements in the professional industrial-arts courses ranged from a low of one quarter hour in one institution to a high of twenty-eight quarter hours.

\textsuperscript{54} Williams and Meyer, \textit{op. cit.}, p. 6.
\textsuperscript{55} Ashley, \textit{op. cit.}, p. 2.
\textsuperscript{56} McHenry, \textit{op. cit.}, pp. 176-178.
TABLE VIII

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**Legend**

E = Testing in Industrial Education
F = Activity Analysis
G = Industrial Safety
H = Industrial Education Curriculum
I = Shop Maintenance
J = History of Industrial Education
K = Philosophy of Industrial Arts
Professional Industrial-Arts Course Content:

The content of the professional industrial-arts courses was subjected to an analysis in an attempt to ascertain the subject matter covered in those courses. The catalog descriptions of the courses were broken down into instructional units and the totals of the respective units in each of the respective categories of courses compiled. These data are presented in Table IX.

The instructional units tended to be found in courses with titles similar to the names of the instructional units; however, few of the instructional units were found only in one category of professional industrial-arts courses.

The instructional unit on "Equipment and Supplies" was the most frequently found, occurring a total of forty-eight times in the catalog descriptions. "Methods of Instruction" was second in rank with a total of forty-two appearances, and "Objectives and Philosophies" was third with forty appearances.

Categories entitled "Vocational Guidance," "Testing in Industrial Education," "Industrial Safety" and "Shop Maintenance" seemed to be largely limited to the areas indicated by their titles. Other categories of courses seemed to include instructional units not necessarily expressed or indicated by their titles.

In general, the instructional units included in the professional industrial-arts courses seemed to cover most of the content suggested by Miles, Kjos and Pederson. However, it seems

57. Miles, op. cit., p. 84.
### TABLE IX

#### Professional Industrial-Arts Course Content

| Instructional Units | A | B | C | D | E | F | G | H | I | J | K | L | M | N | Total | Ranking |
|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|       |         |
| Analysis            |   | 7 | 1 |   |   | 6 |   |   |   |   |   |   |   |   | 721    | 9       |
| Selection Techniques|   |   |   |   |   |   |    | 7 |   |   |   |   |   |   | 118    | 17      |
| Curriculum Construction |   | 1 | 3 | 6 | 2 |   |   |   |   |   |   |   |   |   | 110    | 14      |
| Course Construction |   | 3 | 7 | 8 |   |   |   |   |   |   |   |   |   |   | 134    | 13      |
| Evaluation of Instruction |   | 16 | 1 | 1 |   |   |   |   |   |   |   |   |   |   | 110    | 14      |
| Instructional Devices |   | 22 | 8 |   | 3 | 1 |   |   |   |   |   |   |   |   | 328    | 5.5     |
| Lesson Planning     |   | 19 | 3 | 3 |   |   |   |   |   |   |   |   |   |   | 287    | 7       |
| Guidance Concepts and Practices |   | 3 |   | 2 |   |   |   |   | 14 |   |   |   |   |   | 149    | 11      |
| Counseling          |   |   | 1 |   | 1 |   |   |   |   |   |   |   |   |   | 726    | 20      |
| Occupational Information |   |   | 2 | 2 |   |   |   |   |   |   |   |   |   |   | 722    | 20      |
| History of Handwork |   |   | 2 | 5 | 5 |   |   |   |   |   |   |   |   |   | 216    | 13      |
| Legislation         |   |   |   |   |   | 7 |   |   |   |   |   |   |   |   | 728    | 20      |
| Methods of Instruction |   | 33 | 4 | 1 | 1 |   |   |   |   |   |   |   |   |   | 422    | 2       |
| Objectives and Philosophies |   | 11 | 10 | 12 | 2 |   |   |   |   | 1 |   |   | 2 | 1 | 400    | 3       |
| Observation         |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   | 342    | 3       |
| Professional Activities |   | 5 | 1 | 2 |   |   |   |   |   |   |   |   |   |   | 818    | 18      |
| School Shop Management |   | 5 | 4 |   |   | 1 |   |   |   | 2 |   |   |   |   | 126    | 15       |
| Class Organization  |   | 11 | 12 | 4 |   | 1 |   |   | 3 |   |   |   |   | 131    | 7       |
| Equipment and Supplies |   | 9 | 20 | 4 | 18 | 4 |   |   |   |   |   |   |   | 792    | 10      |
| Maintenance         |   |   | 3 |   | 4 |   |   | 1 |   |   |   |   |   |   | 548    | 8       |
| Records             |   | 5 | 13 |   |   |   |   | 4 |   |   |   |   |   |   | 125    | 15.5    |
| Safety              |   | 3 | 5 |   |   |   |   | 12 |   |   |   |   |   |   | 180    | 12      |
| Shop Arrangements   |   | 3 | 13 | 14 |   |   |   |   | 1 |   |   |   |   |   | 116    | 10      |

**Categories:**

- **A** = Methods of Teaching Industrial Arts
- **B** = Organization and Administration of Industrial Arts
- **C** = Vocational Education
- **D** = Subject Matter Organization
- **E** = Shop Planning
- **F** = Vocational Guidance
- **G** = General Shop Organization
- **H** = Testing in Industrial Education
- **I** = Activity Analysis
- **J** = Industrial Safety
- **K** = Industrial Education Curriculum
- **L** = Shop Maintenance
- **M** = History of Industrial Education
- **N** = Philosophy of Industrial Arts
unlikely that any one institution requires work in all the areas suggested by these three men, since the listings in Table IX represent a composite compilation, and few of the institutions require courses in all the categories.
SUMMARY

Professional industrial-arts courses assume a much more important role in the preparation of industrial-arts teachers today than they did fifty years ago. They have increased greatly in number, but the content of the courses of today seems to be quite similar to the content of the pioneer courses at Teachers College of Columbia University.

Requirements in the professional industrial-arts courses increased markedly until about 1930, and do not appear to have changed significantly since that time. Many of the recommendations of previous studies have been incorporated into the respective courses, although there still appears to be important weaknesses in most curricular requirements.

It would seem important to have some measure of the value of the various instructional units to teachers in the profession. If value to the teacher is to be considered a valid criterion for choosing course content, such research should prove to be a valuable aid for curriculum improvement.

It would also be helpful to have information concerning the relative emphasis placed upon the various instructional units in the respective courses. This seems to be related to the reliability of the catalog descriptions. No attempt has been made in this study to ascertain that reliability.

It appears that many of the curricula are quite narrow in scope, that is, they do not seem to include many of the instructional units which would tend to develop professional competencies.
which are generally thought desirable. Research such as that mentioned above should be helpful in correcting such deficiencies. Certainly there is much to recommend a continuous program of re-evaluation of the requirements in the professional industrial-arts courses, both on an institutional level and on the national level.
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Ashley, Lawrence F., "Industrial-Arts Education," Industrial Arts and Vocational Education. (January, 1937), XXVI, 1-3.


McHenry, Paul T., "Industrial Arts in Teachers Colleges," Industrial Arts and Vocational Education. (June, 1936), XXV, 176-178.


Pawelek, Stanley J., "Some Aspects of Industrial-Arts Teacher Preparation," Industrial Arts and Vocational Education. (April, 1942), XXXI, 147-149.

Federson, Harry A., "Industrial Arts Teacher Competencies," Industrial Arts and Vocational Education. (December, 1955), XLIV, 318.


Wall, Gustave S., "Over-all Requirements for Industrial-Arts Teacher Education," Industrial Arts and Vocational Education. (December, 1952), XLI, 329-331.


ADDENDA

Appendix A
Institutions Included in This Survey

Illinois

1. Bradley University
2. Chicago Teachers College
3. Eastern Illinois State College
4. Illinois State Normal University
5. Northern Illinois State College
6. Southern Illinois University
7. University of Illinois
8. Western Illinois State College

Indiana

9. Ball State Teachers College
10. Indiana State Teachers College
11. Purdue University

Iowa

12. Iowa State College
13. Iowa State Teachers College

Kentucky

14. Eastern Kentucky State College
15. Morehead State College
16. Murray State College
17. Western Kentucky State College

Michigan

18. Central Michigan College of Education
19. Michigan State College
20. Michigan State Normal College
21. Northern Michigan College
22. University of Michigan
23. Wayne University
24. Western Michigan College of Education
Minnesota

25. Bemidji State Teachers College
26. Mankato State Teachers College
27. St. Cloud State Teachers College
28. State Teachers College, Moorhead
29. University of Minnesota
30. University of Minnesota, Duluth Branch
31. Winona State Teachers College

Missouri

32. Central Missouri State College
33. Northeast Missouri State College
34. Northwest Missouri State College
35. Southeast Missouri State College
36. Southwest Missouri State College
37. University of Missouri

Wisconsin

38. Stout State College
39. Wisconsin State College, Platteville
Appendix B

Categories of Professional Industrial-Arts Courses and Representative Titles

Methods of Teaching Industrial Arts

Methods of Teaching the Industrial Subjects
Methods of Teaching Industrial Arts
Principles of Teaching Industrial Education
Teaching Shop Subjects
The Teaching of Industrial Arts
Special Methods
Teaching the Industrial Subjects

Organization and Administration of Industrial Arts

Problems in Industrial Arts
Organization and Administration of Industrial Arts
Shop Organization and Management
Equipment and Management
Organization of Industrial Arts

Vocational Education

Principles of Vocational Education
Introduction to Vocational Education
Vocational Education
Philosophy of Vocational Education

Subject Matter Organization

Selection and Organization of Subject Matter
Course Making in Industrial Education
Course Organization

Shop Planning

Shop Planning, Equipment, and Maintenance
School Shop Planning and Equipment
Planning and Organization of a School Shop
Laboratory Planning

Vocational Guidance

Vocational and Educational Guidance
Vocational Guidance
Introduction to Guidance Services
General Shop Organization

Teaching the General Shop
The General Shop Program
General Shop Organization
Organization of the General Shop

Testing in Industrial Education

Tests in Vocational Subjects
Tests in Industrial Subjects

Activity Analysis

Trade, Job, or Activity Analysis
Analysis
Activity Analysis

Industrial Safety

Industrial Safety
School Shop Safety Education

Industrial Education Curriculum

Curriculum Problems in Industrial Arts
Curriculum Construction for Vocational Education

Shop Maintenance

Plant and Shop Maintenance
Shop Maintenance

History of Industrial Education

Foundations of Industrial Education
History of Industrial Arts

Philosophy of Industrial Arts

Philosophy of Industrial Arts