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**A STATUS SURVEY OF TWELVE TEACHER TRAINING
INSTITUTIONS PERTAINING TO GRADUATE MAJORS
IN INDUSTRIAL EDUCATION**

By

Duane R. Serlet

**A thesis submitted
in partial fulfillment of the requirements for the
degree Master of Science at South Dakota
State College of Agriculture
and Mechanic Arts**

June, 1956

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SECTION I
INTRODUCTION

Out of a feeling of necessity, a definite problem has arisen, in the field of Industrial Education. Because of the increasing demands for graduate courses in this field, there arises the question as to the nature of the courses to be taught. From the standpoint of the candidate, he seeks out the institution which offers opportunity for study in Industrial Education and examines the various offerings and requirements which will enable him to obtain his master's degree. From the standpoint of the institution, it sets up its general requirements for a master's degree and its more specialized requirements and offerings for graduate courses in Industrial Education.

Either an individual or an institution may proceed along different lines of graduate work and courses in Industrial Education. The choices include: (1) a graduate major, (2) a graduate minor, or (3) graduate supporting courses, less than a minor. Of course an institution may set up enough graduate work in Industrial Education for a major but the candidate may be privileged to take his choice of a graduate major, a graduate minor, or a few graduate supporting courses.

A related problem for the institution and also for the graduate student is that of admission requirements. More

specifically stated, what pattern and scope of undergraduate work must a student have had in order to proceed as a graduate student in Industrial Education? Conceivably these could be somewhat different for students with different objectives as to a major or a minor in Industrial Education. The institution may also wish to set up other requirements, such as teaching experience in Industrial Arts, prior to taking graduate courses or prior to getting his master's degree.

The institution has the problem of determining the nature of, and setting up the graduate courses in Industrial Education. Here we may take a cue from the undergraduate courses which an undergraduate major in Industrial Education usually takes. Roughly, we can classify the Industrial Education courses as to theory and principle courses, practical arts courses, and the professional education courses. Thus in setting up a graduate program, an institution might well consider and think thru their problem in relation to these three categories but need not necessarily include all of these in the graduate program setup. An institution might very well decide, and some of them have so decided, that its graduate program in Industrial Education shall consist entirely of theory and principles in Industrial Education, the other two categories being omitted.

Definition of Industrial Education. The Dictionary of Education¹ gives two definitions for Industrial Education, (1) formal and informal instruction and training for workers in industries, (2) education intended to prepare technicians for employment in industry. It is noted that for this research a more specific definition of this term is needed. Industrial Education means the training of Industrial Arts teachers at college level. In this way it will not be confused with Industrial Arts at the secondary school level. The term Industrial Arts is defined in the following paragraphs.

Industrial Arts in General Education. Industrial Arts as a subject in the public schools has passed through a series of evolutionary changes since its first introduction into the United States during the latter part of the nineteenth century. In early years Industrial Arts was considered as a special subject, but the trend has now changed, making it more a part of general education.

Let us assume that Industrial Arts is not a special subject in our schools, but a part of general education, the aims of which have many recent statements, as the

¹Carter V. Good, Dictionary of Education. (New York, N. Y.: McGraw-Hill Book Company Inc. 1945.)

"Cardinal Objectives of the Elementary School".² Some of these statements have been broad and inclusive, while others have been specific. Careful consideration reveals these statements may be summed up into three basic purposes: to transmit a way of life, to improve and reconstruct that way of life, and to meet the needs of individuals.³ This gives very inclusive purposes for the Industrial Arts program.

In the school, general education should give the student a democratic way of life, a way to improve and reconstruct that way of life. That phase of general education, which gives that way of life, by dealing with the exploration of industry, is Industrial Arts. This phase of a student's education should cover organization, materials, occupations, processes, and products of industry. It should deal also with the problems resulting from the industrial and technological nature of society.

From this short explanation on the theory of Industrial Arts teaching in elementary and high schools across our nation, the reader will be better able to comprehend the scope that

²Cardinal Objectives in Elementary Education. (Second Report) Albany, N. Y.: The University of the State of New York, 1929, p. 13.

³Gordon O. Wilber, Industrial Arts in General Education. (Scranton, Penn.: International Textbook Company, 1949) p. 3.

is involved in the education of a teacher in this field. Not many years ago, the Industrial Arts instructor was known as the manual training teacher in our schools. Industrial Arts, as we know it today in our schools, has grown from an early manual training period.

Early Growth of Industrial Arts. Manual training in our schools in the United States was cut from the hearts of two European systems: one of these was the Swedish Sloyd, a highly organized handwork program, planned essentially for primary and grammar schools, with every completed piece a useful article and the other was the Russian system, based on an analysis of the operations in manipulative work but with little or no regard for having the student build useful objects. Many older men now living still remember the "woodworking joints" that they made in manual training classes. Their educational justification was sought in the psychological theories of formal discipline and transfer of training. The teachers were tradesmen with very limited professional training, who were taught this system by rote and were told to teach as they were taught. Manual training in the American public schools was based on the common crafts of the day.

With the advent of the junior high school in the American Educational System, exploration and life-experience programs were advocated. The general education values of

Industrial Arts were clearly enunciated. The general shop type organization came into being, and no longer was a tradesman considered qualified as an Industrial Arts teacher. It was understood that Industrial Arts could be taught by a professionally trained teacher only, to properly yield these general education values.

Early growth of Industrial Education in teacher training institutions. Schools across our nation, at the turn of the century, were calling for a more highly trained professional teacher for manual training: but only a limited number of institutions were prepared to provide this type of teacher.

By 1900, there were a few institutions such as New York State College for Teachers (1844), Michigan State Normal (1849), Bradley Polytechnic Institute (1897), and the Stout Institute (1903) preparing manual training teachers. These were two-year curriculums, with the largest share of the student's time devoted to manipulative skills. There was little time for professional education courses in these curriculums. In the last half century the Industrial Arts departments in the colleges and universities of this country have grown from this meager beginning to 203 in number.⁴ By 1925 many had organized undergraduate majors

⁴G. Harold Silvius, "Progress at Mid-Century," Industrial Arts and Vocational Education, Vol. 43, No. 1 (January, 1954), p. 14.

in Industrial Arts Education leading to college degrees. A few graduate programs emphasizing research and scholarship were being announced as early as 1920.

By 1930, it was apparent that the master's degree was a requisite for those seeking leadership in this particular field. A few students working for advanced degrees took the first graduate course in the pedagogy of manual training given in an American university. The first graduate course was offered in manual training in this country by terms of an agreement between Teachers College, New York, and Columbia College. This course was offered in the years of 1896-1897.⁵

From this brief history of the growth of Industrial Arts, it is the writer's belief that with the future trends of automation and industrialization, a more highly educated Industrial Arts teacher will be needed. It is also the belief of the writer that this trend for more education will be handled by the graduate schools across the nation. Each year more Industrial Arts teachers will be furthering their training and professional standing at teacher training institutions. These teachers who are seeking more training will be interested in the type of courses that will make

⁵Charles A. Bennett, History of Manual and Industrial Education 1870 to 1917, (Peoria, Illinois: Chas. A. Bennett Co. Inc., 1937) p. 470.

them more effective professional people.

Statement of the Problem. Out of this development of Industrial Arts and training of teachers for such, we can now set up the statement of the problem for this research. The central problem of this study is that of surveying several institutions to note the number of courses and the nature and classification of the graduate Industrial Education work. To be more specific; (1) How are graduate institutions organized for such work? (2) Under what conditions may a person undertake such work? (3) What type of graduate courses are required or available and how much? (4) What relation to teaching is found in the graduate work? (5) What type of research do the institutions require? (6) What type of final examinations are given?

It is the writer's desire to present and interpret his findings in as helpful a way as possible, to reveal the elements that are a part of graduate study in Industrial Education and to offer helpful suggestions to those interested in graduate study in this particular field.

SECTION II

Previous Studies and Opinions on Industrial Education.

The reader will note that no research has been done on determining the graduate Industrial Education curriculum, although, some work has been done on determining a program for undergraduates in this field. The following studies have influenced the general organization of this report.

The following six studies¹ are suggestions for undergraduate curriculums which divided the instruction into three areas; academic, professional, and technical. These studies give us an insight into some of the problems in the field of Industrial Education today. A close parallel will be noted between the following studies and this research paper.

Ronald R. Bauers completed a follow-up study of Industrial Arts graduates receiving the bachelor degree from the Stout Institute during the years 1946-49 and found their five most frequent problems to be: (1) organizing instructional material, (2) selecting suitable projects, (3) repairing school equipment, (4) performing odd jobs for administration and faculty, and (5) setting up facilities to accommodate students. This study noted the under-emphasized

¹John A. Jarvis, "College Industrial-Arts Curriculum," Industrial Arts and Vocational Education, Vol. 43, No. 6 (June 1955), pp. 104-125.

areas in the undergraduate program at this college

Harold G. Silvius identified and arranged in order of importance some 160 teaching activities. These activities, after arrangement, were used to set up a series of Industrial Arts teacher education courses. This study gave us an activities approach to undergraduate units of instruction.

Joseph A. Schad developed a four-year Industrial Arts Education curriculum for the Virginia Polytechnic Institute. His recommendations were grouped in three areas; academic, professional, and technical. This study and the following four will be found on the chart on page 11.

John B. Tate analyzed the Industrial Arts Curriculum of fifty-one selected colleges and universities in the United States. After this analysis, he suggested a curriculum by areas for undergraduates.

George W. Miles, by use of time ratios, reviewed the preparation of Industrial Arts teachers graduating from 129 institutions. His recommendations were grouped into three areas for undergraduates.

S. J. Pawelek made an analysis and an evaluation of certain common functional training characteristics of teacher preparation in Industrial Arts. His recommendations are for undergraduate training.

Gustave S. Wall developed a dual-purpose Industrial Education curriculum at the college level, his recommendations

are shown on the following chart.

These studies indicate that the undergraduate college courses have been divided into three areas of study; academic, professional, and technical, on a required semester credit basis for graduation. The studies which are cited in the chart show only undergraduate college work in Industrial Arts, but they do have an important implication for graduate work, as found in the cases reported in this research.

THREE AREAS OF SEMESTER CREDIT REQUIRED FOR GRADUATION

AUTHOR	ACADEMIC	PROFESSIONAL	TECHNICAL
Schad	46.5%	20%	33.5%
Tate	50.3%	19.1%	30.6%
Pawelek	38.1%	32.3%	29.6%
Miles	37.4%	33%	29.6%
Wall	33.5%	33.5%	33%

In interpreting the chart it will be found that the undergraduate curriculum is divided into three different types of courses; academic, professional education, and technical. These give us a research approach to the undergraduate curriculum for Industrial Education.

Although this research report does not suggest a model graduate curriculum for Industrial Education, it does survey the offerings of several colleges and universities in this

field.

No research was discovered in the area of graduate work in Industrial Education; only opinions have been found. One of the area's leading educators in the field of Industrial Education was Dr. Homer J. Smith of the University of Minnesota, who as early as 1935, at the Chicago Convention of the American Vocational Association, made the following statement about advanced work in Industrial Education.²

Many of us have been awarded degrees. Some of us desire degrees we do not now possess. We wonder about the worth of the effort and about where to enroll for advanced preparation. Some who earned degrees question the good they have done to date in increase of salary, responsibility, or prestige. Some of us control degree programs and are concerned about the requirements. Others question whether their institutions should "step-up" the level of training and as to what plans would be best.

Those among us here tonight, without degrees, need not be uneasy. They could not be identified by any process of observation yet devised. A man does not look as though he had or had not earned a degree or any certain degree. If we were followed to our homes and watched for a week at our work, the observer would find difficulty in making degree distinction among us. Fine and useful as degrees are, their possession is not reflected, with any high measure of certainty, either in personal appearance or in perfection of work.

This opinion contributes little or nothing constructive, but largely evades seeing any need for graduate work in Industrial Education. Dr. Smith, with his doctor's

²Homer J. Smith, "The ~~Three~~ Degrees in Industrial Education", Industrial Arts and Vocational Education, (March, 1936), p. 85.

degree and speaking to a vocational convention may have been referring more to doctor's degrees than to master's degrees, and, of course, this was more than twenty years ago.

SECTION III

THE GATHERING OF DATA

The main problem of this research, as stated in Section I, was to survey the graduate education offerings in Industrial Education in a sampling of teacher-training colleges and universities in the North Central Region of the United States.

The main question for which answers were sought were the lists and types of such graduate courses given, with some attention to the requirements set up by these institutions for graduate students to undertake such work.

Area covered by the research. This section of the study is devoted to the area and the selected graduate schools used in this research. The institutions chosen were from an area known as the North Central Association of Colleges and Secondary Schools. The main purpose of this Association is to produce greater articulation between secondary schools and institutions of higher learning. One of these articulations deals with entrance credit and another deals with technical and professional training of teachers.

The North Central Association of Colleges and Secondary Schools embraces the states of Arizona, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, South

Dakota, West Virginia, Wisconsin, and Wyoming. From the institutional members of this North Central Association, which offer graduate work in Industrial Education, twelve have been selected, because not all of these states have institutions which offer graduate work in Industrial Education.

All institutions from the above states used in this study are publicly controlled, and carry a complete undergraduate program for the training of Industrial Arts teachers. They have been selected from Lovejoy's College Guide¹, which signifies them as senior institutions of first grade, having regional accreditation, which is the highest attainable in this Association at this time.

One school from each state which offers a graduate major in Industrial Education was selected.

1. University of Arkansas.
2. University of Illinois.
3. Purdue University.
4. University of Minnesota.
5. University of Missouri.
6. Ohio State University.
7. University of Oklahoma.
8. University of West Virginia.
9. Kansas State Teachers College.
10. Iowa State Teachers College.
11. Colorado Agricultural and Mechanical College.
12. The Stout Institute.

¹Clarence E. Lovejoy, Lovejoy's College Guide., New York, N. Y. Simon and Schuster, 1953 to 1954.

The twelve institutions selected for study, one from each state, all had graduate majors in Industrial Education. In six other states, of the nineteen comprising the North Central Association, no graduate major in Industrial Education is found. Michigan institutions offer a graduate major in Industrial Education but no catalog could be obtained from them.

The six states that do not have a graduate major in Industrial Education have not forgotten about it entirely. South Dakota State College has some graduate work in Industrial Arts and so has the University of North Dakota. The same is true of most states which do not have an institution which offers a complete graduate major in Industrial Education.

Each school listed will be found in the case studies, Section IV of this report. The case studies are arranged in the same order as they appear in this section.

Methods Used. A "case study", according to Maxfield,² is a complete analysis and report of the status of an individual subject with respect to specific phases of its total program. In this research the case study may be further defined as a case-group investigation using

²F. N Maxfield, "The Case Study", Educational Research Bulletin, p. 117-122, 1930.

descriptive method and involving a status survey. In other words, it may be said that the Industrial Education curriculum of each institution is the case study. When these case studies are all placed together, they become a group. When the group is surveyed and obtainable facts established, it has become a situation for descriptive research. As this paper covers a period of time from 1955 to 1956, it is a status survey. No claim is being made as to determination of any trends.

The documents studied were the recent catalogs (1954-55) listing the graduate curriculums and courses given at the selected colleges and universities. Documentary analysis is an essential technique in curriculum research.

Procedure which was Followed. In order to secure a list of the courses offered in a graduate Industrial Education curriculum, a form letter was sent to the Registrar of the selected institutions requesting their graduate catalogs. The response proved to be very helpful, as they sent their catalog and gave the address of one of the school's officials who could answer other questions which might arise over courses in their particular catalog.

The process of actually abstracting the vital information from the catalogs was then initiated. The information which actually proved necessary in the solution of the problem was then tabulated and written into the individual case

studies which will be found in Section IV of this paper.

After compiling the information on an individual basis, it was then grouped together for a general summary. The charts were then organized for the case studies to facilitate comparison.

Conclusions and recommendations were then drawn from the charts and individual case studies, with a view for their practical use to educators in the future. These conclusions will be found in Section V.

SECTION IV

PRESENT STATUS OF TEACHER-TRAINING IN GRADUATE INDUSTRIAL EDUCATION

The following case studies reveal facts which concern the problem of this research paper. These facts have seven sub-divisions; Organization, Admission to Graduate Work in Industrial Education, Course Requirements, Related to Teaching, Thesis and other Research, Final Examinations, and Graduate Courses in Industrial Education. Each of these sub-divisions is so numbered in order to give the reader ease in making any cross references between one institution and another.

At the end of this section will be found the Industrial Education courses listed for each institution. They have been marked with an asterisk to show the three types of courses: practical laboratory courses, theory courses of interest to Industrial Arts teachers, and general professional education courses.

The types of courses, theses and other researches, and final examinations have been placed on charts at the very end of this section for comparison of one institution to another. The charts have been so made out as to follow the data taken from the case studies that follow in this section.

The address of each institution is shown in Appendix

A.

1. Organization

The degree of Master of Education with a major in Industrial Education may be earned through the College of Education. The Industrial Education Curriculum is classified under the field of Vocational Education and is a part of the College of Education.

2. Admission To Graduate Work in Industrial Education

Any applicant from an accredited school may be admitted to full graduate standing if his grades are well above the average required for the bachelor's degree. The candidate for an advanced degree will comply with the specific requirements of the department in which he is pursuing his advanced studies. The graduate Industrial Education student would comply with the requirements of the College of Education and the Department of Vocational Teacher Education.

3. Course Requirements

Students who receive the master's degree with a major in Industrial Education are required to complete eighteen semester hours of this requirement in professional courses in some field or fields of vocational education, or in education. Twelve semester hours of the requirement may be in technical graduate courses related to the teaching field of the student.

4. Related To Teaching

Candidates who receive the master's degree in any one of the fields of Vocational Education must be eligible to receive the high school certificate issued by the Arkansas State Board of Education which qualifies them to teach in any one of the vocational fields.

5. Thesis And Other Research

The candidate is required to complete twenty-four semester hours of graduate courses approved by the adviser and a thesis, or 30 semester hours without a thesis.

6. Final Examination

The candidate must take a comprehensive examination which may be oral or written, as recommended by the major department. The examination is conducted by the major adviser and a committee appointed by the Dean of the Graduate School.

7. Graduate Courses In Industrial Education

In the field of Vocational Teacher Education will be found the courses which deal with Industrial Education offered at this institution. Of this work, all courses are of classroom theory. The list of courses is placed at the end of this section on page 33.

2. UNIVERSITY OF ILLINOIS

1. Organization

The College of Education allows specialization in the area of Industrial Education. A graduate student who majors in education may specialize in Industrial Education.

2. Admission To Graduate Work In Industrial Education

Any applicant who has satisfactorily completed the four-year undergraduate teacher-training program corresponding to that granted by this University will be admitted, providing the undergraduate preparation is approved for advanced study in the major and minor fields.

3. Course Requirements

The candidate must complete a minimum of thirty-two semester hours of credit, including a thesis of no more than eight semester hours. Sixteen semester hours must be earned in the field of education. There may be one or two minors with a maximum of sixteen semester hours. The degrees of Master of Arts and Master of Science in Education are offered along with the Master of Education degree.

4. Related To Teaching

A candidate must hold a valid teaching certificate before completing work on the master's degree in this particular field.

5. Thesis And Other Research

The thesis is required of all candidates pursuing the master's degree.

6. Final Examination

No final examination is stated as necessary for the master's degree at this institution.

7. Graduate Courses In Industrial Education

There are twelve graduate courses, all of classroom theory. No practical laboratory course is offered at the graduate level in Industrial Education. The courses of interest to Industrial Arts teachers number eleven and are all of the classroom theory type. The one professional education course is the thesis which is considered general to all master's degree candidates. The list of courses is placed at the end of this section on page 32, for the readers reference.

3. PURDUE UNIVERSITY

1. Organization

This institution offers a graduate major in Industrial Education through its Division of Education and its Graduate School. The graduate program of study in the Division of Education cooperates closely with other departments and schools of the University.

2. Admission to Graduate Work In Industrial Education

Graduates of approved institutions will be admitted to candidacy for the particular master's degree for which their undergraduate work has provided sufficient preparation. Admission to candidacy for this master's degree is granted after approval of a plan of study by the student's advisory committee and by the Dean of the Graduate School.

3. Course Requirements

The candidate must select a major and two minors, one of which may be in the same field as the major. The number of semester hours of graduate credits required for a master's degree will depend on which of two available options the candidate and his advisers choose for his work. The thesis option requires a minimum of twenty-four semester hours of graduate credit in course work. In addition, assigned research for the thesis is required for which no credit is given. The non-thesis option requires a minimum of thirty-three semester hours of graduate credits in course work, but no thesis.

4. Related To Teaching

A. candidate must qualify for a teacher's license.

5. Thesis And Other Research

The candidate is required to complete twenty-four semester hours of graduate course work and a thesis, or thirty-three semester hours without a thesis.

6. Final Examination

The candidate must take a comprehensive examination which may be oral or written or both as recommended by the major department.

7. Graduate Courses in Industrial Education

There are ten graduate courses, all of classroom theory. No practical laboratory course is offered at a graduate level in Industrial Education. The list of courses is placed at the end of this section on page 32.

4. UNIVERSITY OF MINNESOTA

1. Organization

All Industrial Education courses offered at the University of Minnesota are found under the College of Education.

2. Admission To Graduate Work In Industrial Education

Following the completion of nine to fifteen graduate credits, at least three of which must be in the major, the student who expects to obtain a master's degree should apply for admission to candidacy for that degree. This application should be submitted as soon as the student has earned sufficient credits to be eligible for candidacy.

3. Course Requirements

Forty-five quarter credits in graduate courses are required. At least twenty-one of the forty-five credit hours should be in a single field of concentration. Eighteen of the forty-five credits should be offered in at least two related fields. The University of Minnesota is the only state supported school that offers a graduate course in this field.

4. Related To Teaching

No information on this point was found in the graduate catalog of this institution.

5. Thesis And Other Research

The Graduate School offers the master's degree under two plans: Plan A, requires a thesis, and Plan B, which substitutes additional course work for the thesis. The student may choose the plan he proposes to follow.

6. Final Examination

A written or oral examination or both, may be specified at the completion of the course work. The examination completes the requirements for graduation with a master's degree.

7. Graduate Courses in Industrial Education

This school offers nineteen courses in this field. Of the nineteen courses, seventeen are of classroom theory with thirteen of direct interest to the Industrial Arts teacher. Two courses offered are of practical laboratory type. The list of courses is placed at the end of this section on page 33.

5. UNIVERSITY OF MISSOURI

1. Organization

This institution offers a graduate major in Industrial Education through its Division of Education and the faculty of the Graduate School has charge of all graduate work in the University.

2. Admission To Graduate Work In Industrial Education

Graduates of the colleges and universities comprising the Missouri College Union and of other reputable colleges and universities are admitted to the Graduate School. A student applying for admission is required to submit a transcript of his undergraduate record including a statement of his baccalaureate degree, and of any graduate work completed. Admission to the Graduate School is not to be understood as implying admission to candidacy for advanced degrees.

3. Course Requirements

The candidate should select the particular area of school work for which he wishes to prepare. He should then consult the faculty adviser in the field of his major interest and with the adviser, make out a complete program of studies for the desired advanced degree.

4. Related To Teaching

The degree is designed to fit the needs of a particular student in his own teaching.

5. Thesis And Other Research

The thesis is not required of a candidate, but is available for those who do not follow the other two plans.

6. Final Examination

The candidate must take a comprehensive examination which may be oral or written or both, as recommended by the major department.

7. Graduate Courses In Industrial Education

There are fifteen courses offered in this field and fourteen of these are of classroom theory and one of the practical laboratory type. The list of courses is placed at the end of this section on page 33.

6. OHIO STATE UNIVERSITY

1. Organization

The graduate Industrial Education major may be received in Industrial Arts Education through the College of Education.

2. Admission To Graduate Work In Industrial Education

An applicant to the Graduate School must present credentials indicating the possession of a baccalaureate degree from a college of approved standing, and pre-requisite undergraduate training that will enable the applicant to pursue effectively the graduate courses in which he is interested.

3. Course Requirements

A minimum of fifty-two quarter hours of graduate work is required. At least twenty-five must be in the Department of Education and not more than thirty hours may be in the student's specific area. Not more than fifteen hours may be in minor problems such as field service projects or research study.

4. Related To Teaching

The candidate must present course credits for student teaching or provide evidence of one or more years of successful teaching experience.

5. Thesis And Other Research

A thesis is not required of the candidate.

6. Final Examination

A final examination is required of all candidates for the master's degree. This examination must consist of a two-hour written examination followed by an oral examination.

7. Graduate Courses In Industrial Education

This school offers nine courses in this field. Of the nine courses offered in this field, it will be found that eight are of classroom theory and of interest to the Industrial Arts teacher in his field. The graduate catalog of this institution lists only one course of the laboratory type. No courses were found listed in the area of general professional education in the program set up by this institution. The list of courses is found at the end of this section on page 34.

7. UNIVERSITY OF OKLAHOMA

1. Organization

This institution offers a Master of Industrial Education Degree through the Graduate College.

2. Admission To Graduate Work In Industrial Education

Candidates working toward the degree of Master of Industrial Education must present the degree of Bachelor of Science in Industrial Education from the University of Oklahoma or an equivalent degree. In addition to this, the State Laws of Oklahoma require that, "before any student matriculated in an institution of higher education in the State of Oklahoma after September 1, 1945, is entitled to receive a degree, he shall have... not less than six semester hours... in college American History and Government.

3. Course Requirements

To qualify for the degree, the candidate must complete from twenty to twenty-six hours in Industrial Education, the remaining courses to be in Education, or subjects commonly taught in high school.

4. Related To Teaching

The work in Industrial Education is intended primarily for teachers of Industrial Arts who wish to improve their professional standing.

5. Thesis And Other Research

The candidate is required to complete thirty semester hours of graduate courses if a thesis is written or thirty-two semester hours if no thesis is written.

6. Final Examination

The candidate is required to take a comprehensive examination. This may be either oral or written, and if written, a supplementary oral examination may be included.

7. Graduate Courses In Industrial Education

This school offers twelve graduate courses in Industrial Education, all of which are of the classroom theory type. Ten of these courses are of interest to the Industrial Arts teacher and two are of general professional education. The list of courses is found at the end of this section, on page 34.

8. UNIVERSITY OF WEST VIRGINIA

1. Organization

The Master's of Arts degree with a major in Industrial Education may be earned through the University Graduate School's College of Education.

2. Admission To Graduate Work In Industrial Education

Requirements for admission to candidacy for a Master of Arts degree with a major in Industrial Arts are; a first-class teaching certificate or at least seventeen semester hours of approved undergraduate credits in Education, a maximum of fourteen semester hours of graduate credit, and a satisfactory score on preliminary examination in general ability and written English.

3. Course Requirements

The College of Education offers three optional routes towards a master's degree. (1) Requires thirty semester hours, including a maximum of four to six semester hours of research in approved course work. (2) Requires thirty semester hours, including three semester hours of research and twenty-seven semester hours of approved course work. (3) Requires thirty-six hours, including a minimum of ten semester hours of approved course work outside the field of Education.

4. Related To Teaching

The candidate must have a first-class teaching certificate or at least seventeen semester hours of approved undergraduate credit in Education.

5. Thesis And Other Research

A thesis or research paper may be written, or course work may be taken in place of a paper.

6. Final Examination

The candidate must take a final examination which may be oral or written or both depending on the discretion of the individual members of the committee.

7. Graduate Courses In Industrial Education

The curriculum for Industrial Arts teachers in the College of Education is organized into three groups. From the three groups, the graduate student selects ten semester hours from each. Group one covers administration, organization and method courses. Group two has courses which are of interest to the Industrial Arts teacher. Group three is practical or laboratory courses involving skills.

9. KANSAS STATE TEACHERS COLLEGE (Pittsburg)

1. Organization

The degree of Master of Science in Industrial Education is conferred on those who complete a major in the department of Industrial Education and professional work in the department of Education and Psychology.

2. Admission To Graduate Work In Industrial Education

The applicant who meets the following requirements will be admitted unconditionally to the graduate division: (1) A baccalaureate degree from an accredited college (2) An official transcript of all college work done (3) A satisfactory background of undergraduate work. The student must pass satisfactorily an examination over the essentials of his undergraduate study in the field of his major subject.

3. Course Requirements

This college offers two optional routes towards a master's degree. (1) Requires a minimum of thirty semester hours completed satisfactorily. The thesis, which ordinarily earns four semester hours credit, is included. Of the thirty hours, no fewer than fifteen should be in courses numbered 300 to 390 and twenty-four must be in courses numbered 200 to 390. (2) Requires a minimum of thirty-two semester hours to be completed. Of these, thirty-two hours, no fewer than twenty-six must be in courses numbered 200 to 390.

4. Related To Teaching

Graduate study at Kansas State Teachers College is primarily professional, and aims toward the preparation of a master teacher or administrator.

5. Thesis And Other Research

This institution offers two options under which the master's degree can be pursued: one with a thesis and the other substituting term papers and themes.

6. Final Examination

The candidate must take a comprehensive examination which may be oral or written or both.

7. Graduate Courses In Industrial Education

There are twenty-five courses offered and all are of class room theory. No practical laboratory courses are offered at a graduate level. The list of courses is found at the end of this section on page 35.

10. IOWA STATE TEACHERS COLLEGE (Cedar Falls)

1. Organization

The Master of Arts in Education degree with a major in Industrial Education may be earned through the Graduate School's College of Education.

2. Admission To Graduate Work In Industrial Education

Anyone possessing the bachelor's degree from this college or any recognized college will be considered a graduate student. Whether the student expects to earn graduate credit or undergraduate credit, he must make application for admission to graduate study. If the student expects to be a candidate for a master's degree in this college, he must file a transcript from the institution from which he obtained his bachelor's degree. He must also file transcripts from each school in which he has taken graduate work in the past ten years.

3. Course Requirements

The candidate must have a minimum of twenty-five quarter hours of credit in Industrial Arts courses.

4. Related To Teaching

Completion of the Industrial Education graduate curriculum and four years of successful teaching will make one eligible for the Iowa Permanent Professional Certificate.

5. Thesis And Other Research

A thesis is required of all candidates for the master's degree.

6. Final Examination

The candidate must take a comprehensive examination which may be oral or written or both.

7. Graduate Courses In Industrial Education

This institution has twenty-one courses for graduate students in Industrial Education. Of these, thirteen courses are the practical laboratory type. Of the remaining eight theory courses, six are of interest to an Industrial Arts teacher and two are of general professional education type. The list of courses is found at the end of this section on page 36.

11. COLORADO AGRICULTURAL AND MECHANICAL COLLEGE
(Fort Collins)

1. Organization

The Master of Education degree is offered by the Graduate School, with a major in Industrial Arts Education through the School of Engineering.

2. Admission To Graduate Work In Industrial Education

Any applicant with a satisfactory undergraduate scholastic standing may be considered for admission to graduate work.

3. Course Requirements

Three options are available for the Master of Education degree: (1) Requires forty-eight credits with twenty-six weeks of residence, thirty-nine of these credits must be received on the campus, and twenty-four credits must be received in the 200 series courses with research courses of Ed., IE., or VE. 225. (2) Requires forty-five credits with twenty-four weeks of residence, thirty-six of these credits must be received on the campus, and twenty-three credits must be received in the 200 series with research courses in Ed., IE., or VE. 225. Also, two professional papers are required. (3) Requires the same as option (2) except in place of the professional papers, The Master's report is substituted.

4. Related To Teaching

No information was found in the catalog.

5. Thesis And Other Research

In all of the options, research courses and professional papers are required.

6. Final Examination

In all of the options the final comprehensive examination is required. This final examination may be written or oral, or both, and is left to the Dean of the Graduate School to decide.

7. Graduate Courses in Industrial Education

Of the twenty-five courses taught at this institution, it was found that seventeen were of classroom theory and eight were of a practical laboratory type. The list of courses is found at the end of this section on page 36.

12. THE STOUT INSTITUTE (Menomonie, Wis.)

1. Organization

The Master of Science degree with a major in Industrial Education, Home Economics, and Vocational Education is offered at this institution.

2. Admission To Graduate Work In Industrial Education

Any student may enroll for graduate courses who holds a Bachelor's Degree from an accredited college and graduated with a 1.5 point average.

3. Course Requirements

Thirty semester hours of credit, with twenty semester hours selected from Industrial Education courses, are required. The remaining ten semester hours may be selected from courses in a minor field.

4. Related To Teaching

No information could be obtained from the catalog pertaining to this subject.

5. Thesis And Other Research

Two plans are available to the graduate student. Plan A. has a thesis in the major field which requires original research. Plan B. has a written report in addition to, or in conjunction with, the regular course work in one of the 500 series graduate courses.

6. Final Examination

At the time of completion of either Plan A or Plan B an oral examination is given the candidate for a master's degree.

7. Graduate Courses In Industrial Education

Of the twenty-six courses offered, all are of class room theory. No practical laboratory courses are given at graduate level. The list of courses is found at the end of this section, on page 37.

The following pages give a list of graduate courses found in the catalogs of the selected institutions. They have been classified by the writer's knowledge of their type.

LIST OF GRADUATE COURSES IN INDUSTRIAL EDUCATION FROM
THE TWELVE SELECTED INSTITUTIONS.

General professional education courses

*Practical laboratory courses

**Theory courses of interest to Industrial Arts teachers

University of Arkansas

443 Development, Organization, and Use of Instructional
Materials

**503 Community Occupational Surveys

**413 Occupational Analysis

**423 Industrial Arts For Public School Teachers

**453 Materials and Methods In Industrial Education

**582 Shop Organization and Management

University of Illinois

491 Thesis

**391 Principles of Vocational Education

**382 Organization and Administration of Diversified Occupa-
tion Programs

**388 Special Techniques of Teaching Vocational Subjects

**481 History and Fundamental Concepts of Voc. Ed.

**383 Development, Organization, and Principles of
Industrial Education

**384 The General Shop Program

**387 Training Programs in Industry

**482 Research Studies in Industrial Education

**487 Seminar in Industrial Education

**488 Curriculum Problems and Trends in Industrial Education

**489 Administration and Supervision of Industrial Education

Purdue University

698 Research

590 Individual Research Problems

**568 Instruction Materials for Trades and Industries

**574 Principles and Practices of Training in Industry

**576 Cooperative Education Programs

**566 Educational and Industrial Coordination

**668 Seminar in Vocational Trade and Industrial Education

**560 Curriculum Development in Industrial Arts

**564 Tests and Measurements in Industrial Education

**572 Part-time and Evening-school Programs in Industrial
Education

University of Minnesota

- 103 Instructional Aids
- 109 Conference Leading for Industry
- 110 Vocational Guidance
- 200 Research Problems

- *111 Instructional Materials Laboratory for non-majors
- *136 Instructional Materials Laboratory

- **100 Industrial Instruction
- **101 Test in Industrial Subjects
- **107 Coordination
- **135 Industrial Course Construction
- **150 Vocational Education Surveys
- **172 Part-time Education
- **102 The General Shop
- **105 Administration of Industrial Education
- **106 Industrial Education Workshop
- **115 Supervision of Industrial Education
- **125 Philosophy and Practice of Industrial Education
- **205 Seminar in Industrial Arts
- **250-251 Literature of Industrial Education

University of Missouri

- 321 Vocational Guidance
- 375 Selection and Organization of Subject Matter
- 401 Problems

- **365 Occupational Analysis
- **390 Principles of Trade and Industrial Teaching
- **392 Problems of the Coordinator
- **406 Problems of Adult Education
- **411 Philosophy of the Practical Arts and Vocational Ed.
- **415 Occupational Surveys
- **471 In-Service Courses in Industrial Education
- **301 Problems in Industrial Education
- **396 Organization and Administration of Industrial Education
- **404 History of Industrial Education
- **412 Seminar in Industrial Education
- **491 Research in Industrial Education

Ohio State University

- *866 Research in the Laboratory of Industries

- **641 History of Vocational Education and the Practical Arts
- **695 Problems in Teaching and Supervising Trade and Industrial Education for Out-of-School Youth and Adults

- **717 Survey of Vocational Education
- **655 Industrial Arts in Elementary Schools
- **714 Selection and Organization of Subject Matter in Industrial Education
- **715 Laboratory Planning and Equipment Selection in Industrial Arts
- **716 Organization and Administration of Industrial Education
- **856 Practicum in Industrial Arts Education

University of Oklahoma

- 405 Special Research Problems
- 499 Research for Master's Thesis

- **200 Foundations of Industrial Arts and Vocational Education
- **235 Principles of Trade and Industrial Teaching
- **310 History of Industrial and Vocational Education
- **222 Test Development in Industrial Education
- **250 Organization and Administration of Industrial Education
- **305 Problems in Industrial Education
- **323 Curriculum Construction in Industrial Arts
- **401 Research Techniques in Industrial Education
- **410 Shop Organization and Management
- **450 Seminar in Industrial Education

University of West Virginia

- 339 Public-school Organization and Administration
- 346 Principles of Supervision
- 373 Basic Course in Principles and Practices of Guidance
- 221 Audio-Visual Resources for Instruction
- 222 Current Practices in Secondary Schools
- 251 Production of Audio-Visual Resources
- 258 Education for Special Groups
- 284 Pupil-Personnel Administration
- 285 The Junior High School
- 322 Organizing Problems of Audio-Visual Education
- 326 Practice in Supervision of Elementary-School Instruction
- 327 Demonstration and Practice in Supervision of Secondary-School Instruction
- 336 The Secondary-School Curriculum
- 341 School Buildings and Equipment
- 344 Staff-Personnel Administration
- 360 Problems of Education
- 376 Occupational Information Techniques
- 385 History of Education in the United States
- 395 Practicum
- 266 Needs of Adolescents

- *238 Industrial Arts Design
- *351 Coal Mining
- *204 Recreation Hobbies
- *252 Advanced Farm Mechanics
- *253 Advanced Farm Machinery
- *270 Electricity in Agriculture
- *260 Ceramics
- *204 Advanced Woodworking
- *206 Industrial Experience
- *207 Maintenance of Equipment in Industrial Arts
- *208 Wood Finishing
- *240-*250 Advanced Crafts
- *320-*321 Special Topics in Industrial Arts
- **357 Organization of Programs in Vocational Education
- **203 Adult Education
- **259 Functional Requirements of Farm Buildings
- **364 Advanced Methods in Teaching Industrial Arts
- **365 Curriculum Construction in Industrial Arts
- **319 Special Problems in Teaching General Shop

Kansas State Teachers College

- 201 Course Construction
- 291 Advanced Audio-Visual Problems
- 292 Production of Audio-Visual Material
- **203 Occupational Analysis
- **225 Organization and Methods of Instruction for Vocational Education
- **225b Job Relations
- **225c Job Instructions
- **225d Evaluation Methods and Techniques in Vocational Education
- **226 Philosophy of Vocational Education
- **227 School Shop Building, Planning, and Shop Management
- **296 Development of Modern Industry
- **205 Problems of the General Shop in High School
- **255e Objectives of Industrial Education
- **232 Test and Measurements in Industrial Education
- **235 Technics and Methods of the General Shop
- **303 Research Methods in Industrial Education
- **307 Organization and Administration of Industrial Education
- **321 Philosophy of Industrial Education
- **351 Instructional Methods in Industrial Education
- **360 Seminar in Industrial Education
- **375 Practicum in Industrial Arts Education
- **381 History of Industrial Education
- **385 The Adult Program in Industrial Education
- **390 Research and Thesis in Industrial Education
- **390b Research Problems in Industrial Education

Iowa State Teachers College

610 Field Study

620 Research

*670 Projects in Industrial Arts (each is a course)

*1. Automobile Mechanic

*5. Machine Shop

*2. Drawing

*6. Metalwork

*3. Electrical Work

*7. Woodwork

*4. Industrial Arts Design

*8. Plastics

*515 Architectural Drawing

*532 Advanced Machine Tools

*552 General Electronics

*558 Advanced Graphic Arts

*563 Auto Repairing

**580 School Shop Planning

**603 Foundations of Industrial Education

**614 Problems in Teaching Industrial Arts

**623 Administration and Supervision of Industrial Arts

**626 Industrial Arts Curriculum

**682 Industrial Arts Seminar

Colorado Agricultural and Mechanical College

226 Seminar in Research

*144 Workshop in Arts and Crafts

*175 Methods in Industrial Arts Design

*176 Methods in Industrial Arts Design B

*271 Advanced Bench Woodwork

*272 Advanced Machine Woodwork

*273 Advanced Cabinet Making and Wood Finishing

*274 Advanced General Metals

*275 Advanced Art Metal Work

**177 Job and Educational Analysis

**280 School Shop Planning and Equipment Selection

**153 Methods in Teaching Industrial Arts

**169 Problems of the Industrial Arts Teacher

**170 History of Industrial Arts Education

**171 Problems of the Industrial Arts Teacher II

**172 History of Industrial Arts Education II

**173 Organization of the Industrial Arts Laboratory

**174 Philosophy of Industrial Arts Education

**179 Methods of Teaching Industrial Arts Subjects

**225 Methods of Research in Industrial Arts Education

**227 Research in Industrial Arts Education

**276 Recent Developments in Industrial Arts Education

**277 Objectives in Industrial Arts Education

**278 Administration and Supervision of Industrial Arts Education

**279 Seminar in Industrial Arts Education

The Stout Institute

- 401 Guidance
- 432 Heredity and Eugenics
- 439 Production of Audio-Visual Materials
- 441 Education Evaluation
- 470 Conference Leading
- 475 Interviewing Technique
- 500 Philosophy of Modern Education
- 501 Research Procedures
- 502 Principles of Supervision
- 506 Problems of Supervision
- 524 Social Maladjustment
- 526 Administration
- 531 Problems in Guidance
- 533 Survey Procedures
- 537 Curriculum Procedures III
- 560 Problems in Audio-Visual Education
- 568 Curriculum Procedures II
- 570 Thesis

- **402 Philosophy of Vocational and Adult Education
- **423 Safety Education
- **472 Coordination
- **514 Vocational Psychology
- **520 Labor and Industrial Relations
- **557 Problems in Graphic Arts
- **480 Theory and Organization of General Shop
- **510 Problems in Industrial Education

Summarizing charts. In examination of the Industrial Education courses found in the graduate catalogs, it was evident that three types of courses are offered in this field. Chart I gives the name of the institutions, the total number of courses offered in Industrial Education, the number of practical laboratory courses, the number of theory courses of interest to Industrial Arts teachers, and the number of theory courses of general professional education. The tabulated results of the data will be found on Chart I on the following page.

CHART I

NUMBER AND TYPE OF COURSES OFFERED IN INDUSTRIAL EDUCATION
AT THE FOLLOWING INSTITUTIONS.

Institutions	A	B	C	D
University of Arkansas	6	0	5	1
University of Illinois	12	0	11	1
Purdue University	10	0	8	2
University of Minnesota	19	2	13	4
University of Missouri	15	0	12	3
Ohio State University	9	1	8	0
University of Oklahoma	12	0	10	2
University of West Virginia	41	15	6	20
Kansas State Teachers College	25	0	22	3
Iowa State Teachers College	21	13	6	2
Colorado A. and M. College	25	8	16	1
The Stout Institute	26	0	8	18

A-- Total number of courses offered
 B - Number of practical laboratory courses
 C - Theory courses of interest to Industrial Arts
 D - Theory courses of general professional education

Chart II which appears below gives the institution followed by an answer to the question of thesis required and the number of other plans of research available to the graduate student.

CHART II

INSTITUTIONS THAT REQUIRE A THESIS AND THE NUMBER OF OTHER RESEARCH PLANS AVAILABLE

Institutions	Thesis required	Other research plans
University of Arkansas	no	2
University of Illinois	yes	0
Purdue University	no	2
University of Minnesota	no	2
University of Missouri	no	3
Ohio State University	no	1
University of Oklahoma	no	2
University of West Virginia	no	3
Kansas State Teachers College	no	2
Iowa State Teachers College	yes	0
Colorado A. and M. College	no	3
The Stout Institute	no	2

An easy look at the different types of final examinations given to candidates for the master's degree may be found by examining Chart III below.

CHART III

TYPES OF FINAL EXAMINATIONS GIVEN TO CANDIDATES FOR
THE MASTER'S DEGREE

Institutions	Oral	Written	Maybe both
University of Arkansas	yes	yes	no
University of Illinois	no	no	no
Purdue University	yes	yes	yes
University of Minnesota	yes	yes	yes
University of Missouri	yes	yes	yes
Ohio State University	yes	yes	yes
University of Oklahoma	yes	yes	yes
University of West Virginia	yes	yes	yes
Kansas State Teachers College	yes	yes	yes
Iowa State Teachers College	yes	yes	yes
Colorado A. and M. College	yes	yes	yes
The Stout Institute	yes	no	no

SECTION V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Significant implications for graduate study in Industrial Education were found in the individual cases of this report. What was found and interpreted in this research paper are the basis for drawing the following conclusions.

1. Organization

In examination of the organization of the Industrial Education graduate program in the twelve selected schools, it was found that eleven institutions offer work in this field under the College of Education or the Division of Education. One institution offered its graduate work in this field through its School of Engineering.

2. Admission To Graduate Work In Industrial Education.

Admission to courses in the graduate schools does not necessarily mean that a student will become a candidate for a master's degree. Admission to candidacy is usually a separate step from admission to the graduate school. Formal admission to candidacy is usually initiated by graduate work of good standing and the fulfillment of the requirements concerning credentials and uniform admission blanks. Candidacy regulations show great diversity among graduate schools requirements; although, the graduate catalogs reviewed show that no student can be considered for candidacy for a master's degree unless he is properly enrolled in the graduate school.

3. Course Requirements

In graduate work, the institution does not prescribe the field or fields in which a student must pursue his studies. Ordinarily, any group of subjects in the field of Industrial Education is considered proper and appropriate if the material is of recognized graduate standing and has a basic or related field unity. The selection of courses and a program of study is usually made in conference with advisers in the department of Industrial Education and with their approval.

4. Related To Teaching

Of the twelve institutions surveyed, six listed a teacher's certificate as a necessary part of the master's degree in the field of Industrial Education. Three of the institutions mentioned the needs for teaching skills and three gave no information as to teaching requirements.

5. Thesis And Other Research

The requirements of a thesis were found necessary in two institutions studied. The other options offered seem to be that of more course work, small research papers, and field study. It is not the intention of any of the institutions studied to lower the scholarly manner or style of research work, but rather, to give the student an opportunity to select the type of work that best fits his needs.

6. Final Examination

A final examination of some type is usually given a candidate for the master's degree to see if he is proficient in mastering his subject. Most institutions require an oral final examination; some written, some oral and written, and some require the oral and written only when deemed necessary. The final examinations are held from several days to several weeks before commencement.

7. Graduate Courses In Industrial Education

In examining the Industrial Education courses found in the graduate catalogs, it was evident that of the 221 courses offered by the twelve institutions surveyed, that the theory type of classroom course is by far the most predominate in graduate work. Only thirty-nine practical laboratory courses were found offered and six of the twelve institutions listed no graduate courses of this type. Although 125 theory courses of interest to Industrial Arts teachers were found in this survey.

Suggestions To The Institutions

The experience gained from conducting this investigation and from the intensive study of the data collected naturally resulted in certain convictions emerging. It is on the basis of these convictions that the following tentative recommendations are made.

1. The writer believes that misunderstandings between the graduate school and the candidate would indeed be less if all prospective students received a clear statement of the graduate school's objectives before registration. No doubt, many graduate students have a very vague idea as to their program
2. In the organization of a curriculum, for graduate Industrial Education, administration should be under the College of Education or its equivalent.
3. A very important part of the work of a candidate for the master's degree in Industrial Education is in the selection of courses for completion of his program. It is the writer's opinion that a graduate program for Industrial Arts teachers should be balanced with courses of three types; general professional education, theory courses of interest to Industrial Arts teachers, and practical laboratory courses. The program should give the graduate student a selection of courses in which his needs will be covered.

Suggestions To The Candidates

A candidate for master's degree may benefit himself by examining this research. This paper may give a candidate background on what to look for in the offerings of different institutions in the field of Industrial Education. The seven points of interest from Section IV: organization, admission, course requirements, related to teaching, thesis and other research, final examination, and graduate courses in Industrial Education should give a person seeking advanced work in this field a basic outline for comparing institutions.

The experience gained by the writer in this research may be passed along to Industrial Arts teachers, who plan to do graduate work in this field, by the way of three questions they may ask themselves before starting advanced

work. (1) Do you have your objectives well in mind as to what you want to achieve in your advanced work? (2) Does your undergraduate background fulfill the requirements of the institution where you plan to do your future advanced work? (3) Do the courses offered at the institution of your choice meet with your plan for future professional achievements? With these three questions positively answered the candidate may better proceed with his future study.

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APPENDIX A

ADDRESSES OF THE TWELVE SELECTED INSTITUTIONS

1. University of Arkansas
Fayetteville, Arkansas
2. University of Illinois
Chicago, Illinois
3. Purdue University
Lafayette, Indiana
4. University of Minnesota
Minneapolis, Minnesota
5. University of Missouri
Columbia, Missouri
6. Ohio State University
Columbus, Ohio
7. University of Oklahoma
Norman, Oklahoma
8. University of West Virginia
Morgantown, West Virginia
9. Iowa State Teachers College
Cedar Falls, Iowa
10. Kansas State Teachers College
Pittsburg, Kansas
11. Colorado Agricultural and Mechanical College
Fort Collins, Colorado
12. The Stout Institute
Menomonie, Wisconsin