

TEACHER CERTIFICATION REQUIREMENTS
FOR TECHNOLOGY EDUCATION
IN THE UNITED STATES

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CHAPTER I

INTRODUCTION

The educational system in the United States has been criticized for lack of reform. The Report of the National Commission on Excellence in Education, A Nation at Risk: Imperatives for Education Reform (1983), called for reforms in education in order to restore the ". . . once unchallenged preeminence in commerce, industry, science, and technological innovations . . ." (p. 5). This report, as well as others, has included the study of technology as an essential element for a technologically literate population.

During the same time frame, the 1980's, there was a movement in the discipline of industrial arts toward a new disciplinary thrust in technology education. That movement not only involved a name change in the discipline, but also involved a change in the basic philosophy of the discipline. The reasons for the change were varied, but the primary reason was to provide an opportunity for students to learn to function in a fast paced, ever-changing, technological world.

By providing 'technology literacy,' TE [Technology Education] prepares students--male and female, academic and nonacademic alike--to function as knowledgeable citizens in our increasingly technological world (Peckham, 1989, p. 5).

Until recently, the debate concerning industrial arts versus technology education has been a major topic of professional discussion. The discussion now focuses on the implementation of technology education (Peckham, 1989).

In response to the calls for reform, and also to the new focus of the profession toward technology education, a number of state departments of education initiated changes in the area of industrial arts. Because technology education was different from industrial arts (Lauda, 1988), it follows that teacher preparation for technology education would be different than teacher preparation for industrial arts. Each state has the responsibility for certifying new teachers, therefore the question emerged, "have state certification standards made the transition from industrial arts to technology education?" If technology education implementation was the current trend, then the change from industrial arts to technology education should be reflected in teacher certification requirements at the state level. A concern was that although there was general certification information available, there was no specific information available concerning state certification requirements for technology education teachers.

Statement of the Problem

The problem was that decisions that affect the education and certification of industrial arts/technology education teachers were being made on a regular basis, with little or no documentation to support those decisions. There was no formal mechanism to disseminate the certification information to other states or to acquire input into each state's certification process.

Purpose of the Study

The purpose of this study was to determine state requirements for technology education teacher certification and to identify the minimum

criteria for certifying technology education teachers in the United States.

Research Questions

The following research questions were used to guide this study of technology education teacher certification.

1. What were the minimum requirements for a standard (or equivalent) certificate in technology education in each state?
2. What were the minimum requirements for recertification of a standard (or equivalent) certificate in technology education in each state?
3. Were there different certification requirements for industrial arts and technology education in the same state?

Limitations

This study had the following limitations:

1. The findings and conclusions were based on written state certification regulations and may conflict with the exact practice in each state.
2. The study was confined to state regulations that were in effect as of January 1, 1990.
3. The study does not include information concerning reciprocity between states.

Assumptions

The following assumptions were pertinent to the conduct of the study.

1. The responses to the inquiry were current standards for certification in the respective state.
2. The respective state certification standards and a follow-up telephone interview were adequate to properly collect the data for the study.
3. The certification information pertains to in-state students who graduated from a state approved institution with a major area of study in industrial arts/technology education.
4. The terms technology education, industrial technology education, and industrial arts/technology education are all titles for a given body of knowledge.

Definition of Terms

Full-Time Teacher: A state certified instructor, currently under contract, who teaches industrial arts/technology education four or more hours per school day.

Industrial Arts: A program of classroom and laboratory experiences which provide students with a basic education in the industrial and technological aspects of society. Industrial arts programs allow students to experiment, design, construct, and evaluate. Students use tools, machines, materials, and processes which, in addition to developing an understanding of industry and technology, assist students in making informed and meaningful occupational choices. Students can also prepare for entry into advanced trade and industrial or technical education programs (Oklahoma State Department of Vocational and Technical Education, 1985).

State Certification Officer: A person designated by the state who is responsible for the interpretation and administration of certification standards in that state.

Technology Education: A comprehensive, action-based educational program concerned with technical means, their evolution, utilization and significance; with industry, its organization, personnel, systems, techniques, resources, and products, and their social and cultural impact (International Technology Education Association, 1985).

Teaching Certificate or License: A credential issued by the state that authorizes employment as a classroom teacher.

NASDTEC: The National Association of State Directors of Teacher Education and Certification.

NCATE: National Council for the Accreditation of Teacher Education.

Initial Certificate: The first certificate issued by the state department of education contingent upon the holder having completed an approved teacher education program at a college or university.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The review of the literature was conducted to determine what had been written concerning the process of teacher certification for industrial arts/technology education. This review revealed that there was very little literature directly related to certification for industrial arts/technology education at the national or state level.

Much of the literature was descriptive in nature; that is, dealing with philosophical objectives of industrial arts/technology education, quantities and types of laboratories, and program content. The bulk of the literature was concerned with the program changes from industrial arts to technology education.

The following topics guided the review of the literature:

1. Industrial Arts
2. Technology Education
3. Teacher Certification
4. Influences on Teacher Certification
5. Certification Examinations

The review of the literature revealed that few similar studies existed and no standardized research instrument was available.

Industrial Arts

In the late nineteenth century, manual arts came to America. It was "an eclectic mix of elements derived from Scandinavian Sloyd, the Russian System, and contemporary industrial practices" (Sanders, 1985, p. 27). One of the earliest proponents in the 1870's of "manual training" was Calvin M. Woodard from Washington University in Saint Louis. He believed that general education should include "all of the manual arts, the mechanical processes, and the tools used in common in the trades and occupations" (Barlow, 1967, p. 35).

Due to an influx of public school students in the late 1800's, the public schools were forced to adapt curriculum offerings to meet the needs of children of the working class (Herschbach, 1979). Because many students failed to complete school, some educators argued that the purpose of industrial education was to prepare youngsters for the world of work, whereas others argued that the purpose of industrial education should be to erase social inequities (McCrorry, 1987). These two different views to social problems ultimately produced two different areas of industrial study: "Industrial arts, with a goal toward social reform and an emphasis on the developmental psychology of the learner; and vocational education, with an aim toward social efficiency using behavioralist psychology" (Herschbach, 1979, p. 13).

The manual arts movement of Charles Bennett, John Dewey's industrial occupations, and Charles Richards' industrial arts curricula at the turn of the century "all grew out of the general education theme" (Bennett, 1937, p. 78). Although there was agreement that there should be a general education program of industrial training in the schools,

there was a great deal of debate concerning the name for the program. In 1904, Charles R. Richards proposed the term "industrial art" to describe courses taught under the titles of manual training, manual arts, and mechanical arts. In 1909, James E. Russell further defined industrial art as a general education subject that was "devoted to the study of industry" (Sredl, 1966, p. 23). As with the earlier movement, industrial arts used the project as a vehicle to attain the objectives of the program. By the end of the 1920's industrial arts became the accepted term to describe a general education program that was based on the study of industry (Sredl, 1966).

In 1922, Frederick G. Bonser further defined the study of industrial arts by stating: ". . . the study of the industries must naturally and necessarily be placed upon the materials, processes, and methods that bear upon the selection and use of industrial products" (p. 318).

Industrial arts was a popular subject in the junior high school at that time and the use of projects was the most widely employed method of teaching. In a study of 379 schools throughout the country, Edgerton (1921) found that 97 percent of the program areas included "'benchwork and drawing' as the prominent types of activity" (p. 365). Edgerton also found that the 303 "most progressive" schools reporting recognized the "purpose of the work and study in these courses . . . (as) not primarily to produce skilled workers for definite vocations" (p. 365). It was also during this decade that the concept of exploratory experiences was introduced into the study of industrial arts (Sredl, 1966, p. 35).

Although the concept of industrial arts was becoming more narrowly

defined, there was still a great deal of confusion concerning exact standards for the curriculum. As an answer to the demand for a statement of position and interpretation of industrial arts offered in the public schools, in 1934, the federal Office of Education appointed a Committee on Industrial Arts. It was hoped that the statements of the committee regarding industrial arts "would command the respect of leaders in the fields of school administration and educational philosophy" (Proffitt, 1937, p. vi). After two years of work, the committee published a final report titled Industrial Arts: Its Interpretation in American Schools. The committee defined industrial arts in a broad sense, specifying that it was a curriculum area and not merely a subject or course. Specifically, industrial arts was defined as: "a phase of general education that concerns itself with the materials, processes, and products of manufacture, and with the contribution of those engaged in industry" (Proffitt, 1937, p. vi). The knowledge gained in this curriculum area was to result from "pupils' experiences with tools and materials and through his study of resultant conditions of life" (Proffitt, 1957, p. vi). This report became the nucleus used to describe industrial arts to the present.

In the 1939 convention of the American Association of School Administrators, William E. Warner (1939) stressed the need for "a national conference to identify the problems and formulate a program" (p. 3) for industrial arts. During that conference a constitutional convention was formed and the skeleton of a constitution for a new organization was developed. This new organization was called the American Industrial Arts Association (now known as the International Technology Education Association) which, to date, remains the primary

professional organization for the discipline (Sredl, 1966, p. 31). Its purpose was specifically that "of improving industrial arts instruction" (Hunt, 1960, p. 2).

It should be noted that there has been no mention of industrial arts curricula up to this point. The descriptions and definitions of industrial arts were sufficiently vague that many different subjects were taught in the name of industrial arts. A study by Anderson in 1947 revealed the state of the industrial arts curriculum in the United States. Anderson found that in the post-war period "about one half of the states" had some form of state syllabus, with the oldest published in 1930 and the newest published in 1944. During this 14 year period, only two states reported a revision in their syllabi. The syllabus for New Mexico consisted of one and one-half pages while the syllabus for New York contained 897 pages. There was also considerable variation in published objectives for industrial arts in each state. Four states failed to list any general objectives while one state included 15 objectives (Anderson, 1947).

Anderson's study also revealed a total of 37 subjects taught in the name of industrial arts. The following ten were most frequently mentioned and are listed according to frequency:

- a. Bench woodworking
- b. Electricity
- c. Mechanical drawing
- d. Auto mechanics
- e. Sheet metal
- f. Home mechanics
- g. Machine shop
- h. Architectural drawing
- i. General metals
- j. Printing

In 1947 the American Industrial Arts Association held its first post-war national convention in Columbus, Ohio. The featured

presentation at this conference was a new curriculum developed by William E. Warner entitled A Curriculum to Reflect Technology. One of the important aspects of this program was a functional definition of industrial arts:

. . . as a general and fundamental school subject in a free society . . . concerned with providing experiences that will help persons of all ages and both sexes to profit by the technology, because all are involved as consumers, and many as producers (Warner, 1947, p. 5).

Although not all of the definition was well received, the concepts of technological relevancy and the elimination of age and gender barriers had a lasting impression on the profession.

One year after Warner's (1947) presentation, the Florida State Department of Education published a new syllabus entitled A Brief Guide to Teaching Industrial Arts in the Secondary Schools. Sometimes called the Florida Plan, it was significant in that it listed the content organizers as communication, power, manufacture, construction, and transportation. These content organizers were basically the same as those found in current technology education literature.

Neither Warner's proposal nor the Florida Plan were successfully implemented into the industrial arts curriculum (Stredl, 1966). Both proposals would later become important aspects of the technology education movement.

In 1958, Micheels of the University of Minnesota published the results of a two-year study designed to prepare industrial arts teachers for the present and future technological society. The study was entitled The Minnesota Plan for Industrial Arts Teacher Education and was referred to as the Minnesota Plan. The resulting curriculum was developed from the three traditional curriculum areas: general

education, professional education, and the specialty area of industrial arts education. The most valuable contribution of the Minnesota Plan was its "recognition of the necessity of preparing teachers to teach contemporary industrial arts programs and then preparing them for this responsibility" (Sredl, 1967, p. 54). This concept was different from many previous proposals which attempted to propose a new curriculum without providing the necessary qualified teachers to implement the program.

During the 1950's, greater emphasis was placed on research and experimentation in industrial arts. Maley (cited in Sredl, 1967) has been credited for the first implementation of research and experimentation in industrial arts programs. He emphasized the importance of research and experimentation methods in industrial arts as the primary means for applying the principles of mathematics and science. The research and experimentation as described by Maley featured research activities including such basic materials as wood, plastic, metal, glass, and chemicals.

The related area of problem solving was also gaining recognition during the 1950's. Lux (cited in Sredl, 1967), of the University of Illinois summarized the beliefs of many industrial arts educators when he stated that "industrial arts is in the forefront of the move to increase the emphasis on problem solving in the schools" (p. 54). He further stressed the fact that:

. . . greater recognition still needs to be given to the fact that the teaching of problem solving with contemporary materials, tools, and processes of industry, rather than with imaginary academic problems, is one of the valid justifications for the requirements of industrial arts as general education (Lux, 1959 p. 147).

Although there were calls for change from the project approach to a greater emphasis in research, experimentation, and problem solving, a 1961 report from the U.S. Office of Education provided similar results to Anderson's 1947 study. The new report listed the following areas in descending order of popularity:

- a. Drawing and planning
- b. Woodworking
- c. Metalworking
- d. Electricity and electronics
- f. Graphic Arts
- f. Transportation and power
- g. Plastics (Schmitt, 1961, p. v).

The report also stated that the instructional topics that were most emphasized were:

. . . those dealing with (a) project planning, (b) hand tool techniques and machine processes, (c) technical information dealing with properties of materials and industrial processes, and (d) occupational information (Schmitt, 1961, p. v).

Less emphasis was found to be placed on:

topics that relate to modern industrial developments and problems, such as, automation, jigs and fixtures, and other mass production devices, practices, consumer problems, new products, and processes, and human relationships (Schmitt, 1961, p. vi).

Sredl (1967) reported that, at that time, grading and evaluation of industrial arts work was still done by an evaluation of the finished project, which in turn reflected the student's acquired skill.

During the late 1950's, leaders in the discipline began to advocate a change in the content and methodology of industrial arts. Due to rapid changes in industry and society, "it became increasingly difficult to justify traditional content" (Sanders, 1985, p. 27). In the late 1960's, several massive efforts were made to drastically redirect industrial arts.

The 1970's became a transition period where the emphasis moved from industrial arts to technology education. During this time period, a number of curriculum projects were developed. Among the more noted curriculum projects were the American Industry Project, Industrial Arts Curriculum Project, and the Maryland Plan. Through these curriculum projects, the concept that industrial arts should be organized around the general areas of manufacturing, construction, transportation, and communication was developed. All of these curriculum projects were mildly successful, with the Industrial Arts Curriculum Project more successful than the others. During a brief time, approximately 15 percent of the market adopted the Industrial Arts Curriculum Project (Lux, 1981). With regard to it, in 1972 Householder wrote:

The Industrial Arts Curriculum Project (IACP) is unique in several ways. It is the only major industrial arts curriculum effort which has been rooted in an analysis of the structure of knowledge. It is the first project to produce instructional materials and a sequence of courses correlated with a taxonomic classification of a body of knowledge (p. 18).

Although initially successful, by the middle part of the 1970's, the IACP had fallen out of favor with the majority of public schools.

Perhaps the lack of a national focus for industrial arts stemmed from the lack of a national curriculum. In the Journal of Industrial Teacher Education, Anderson (1970) commented:

. . . with no agreed upon national curriculum guidelines, we presently find ourselves confused over not knowing what industrial arts is or what it should encompass. It is not meant to imply that individuals and specific groups of industrial arts educators do not have their own answers. They have, and they are supported by extensive studies and experimentation. But there remains the necessity of a meeting of the minds to provide the guideline which will set the stage for a united front (p. 32).

Technology Education

The Technology Teacher (1985), a journal of the International Technology Education Association offered a definition of technology education:

[Technology education is:] a comprehensive, action-based educational program concerned with technical means, their evolution, utilization and significance; with industry, its organization, personnel, systems, techniques, resources, and products, and their social and cultural impact (np).

The philosophy for technology education evolved primarily from the Jackson's Mill Industrial Arts Curriculum Symposium. Known as the Jackson's Mill Conference, a group of 21 individuals met over an 18 month time span during 1980 and 1981 to live the "challenge of inquiry assimilation, compromise, and consensus" (Snyder and Hales, 1981, p. ii). The philosophy that was developed was a compromise between several schools of thought in the industrial arts/technology education profession. That conference provided the foundation for the transition from industrial arts to technology education (Starkweather, 1986). Snyder and Hales (1981) listed five key points that were established.

1. Technology Education is a study of technology, industry, and their impacts (p.p. 1-2).
2. The study of technology and industry is best organized around the human technical activities: communication, construction, manufacturing, and transportation (p. 23).
3. Each of the human technical endeavors is a system which has inputs, processes, outputs, feedback, and goals/restraints (p. 10).
4. Each human technical system often are developed in managed production systems (p. 25).
5. Human technical endeavors are dynamic activities which have a history, present practices, and a future (p. 26).

The rationale for curricula for technology education was to acquaint all persons with their technological environment so that they could make rational decisions concerning the impact of technology on their daily lives. Starkweather (1986), Executive Director of the International Technology Education Association, stated that course content was based on: "An organized set of concepts, processes, and systems that are uniquely technological . . . and a fundamental knowledge about the development of technology and its effect on people, the environment, and culture" (p. 5).

The four areas selected during the Jackson's Mill Conference (communication, construction, manufacturing, and transportation) were to serve as content organizers for the discipline. According to Technology Education--Perspective on Implementation (1985), course content was specifically focused on assisting students in the development of insight, understanding, and application of technological concepts, processes and systems by:

Applying tools, materials, machines, processes, and technical concepts safely and efficiently.

Developing students' problem-solving and decision-making abilities involving human and material resources, processes, and technological systems.

Preparing students for lifelong learning in a technological society.

Activity-oriented laboratory instruction with students reinforcing abstract concepts with concrete experiences (p. 16).

Another factor that contributed to the change from industrial arts to technology education was the "host of national commissions [that] conducted studies calling for change" (Starkweather, 1986, p. 3). Many of these commissions addressed the need for the study of technology:

Students must be prepared to understand technological innovations, the productivity of technology, the impact of the products of technology on the quality of life, and the need for critical evaluation of societal matters involving the consequences of technology. . . . people must know about technology in order to improve the quality of many personal and professional technology-based decisions. . . . people must understand the limitations as well as the capabilities of emerging technologies. The technologically literate person should have a sense of what technology can and cannot do (Educating Americans for the 21st Century, 1983, p. 74).

This new era of advancing technological change and global competition will radically change our concept of basic skills--of the minimum necessary skills for a person's economic survival. . . . we must begin now, act now, change now, so that in the future our children will be able to meet the demands of a new era that is already upon us (Task Force on Education for Economic Growth, 1983, p. 150).

We recommend that all students study technology, the history of man's use of tools, how science and technology have been joined, and the ethical and social issues technology has raised (Boyer, 1983, p. 110).

Although there was initial resistance to the change from industrial arts to technology education (LaPort, 1982) by 1986:

. . . over 80% of the states within the United States have either changed the name of their state association name or their state department of education, or conducted curriculum activities and/or conferences which are reflective of the technology thrust (Starkweather, 1986, p. 5).

The International Technology Education Association and its affiliate councils, was a major contributor to the transition from industrial arts to technology education. According to Starkweather (1986), "the ITEA assumed a proactive role as supporter, clearinghouse, articulator, and disseminator of information to assist in the transition" (p. 7). The ITEA developed the Standards for Technology Education to be used to evaluate technology education programs on a local and state level. It also developed a number of resource books, computer software,

professional development seminars, and leadership conferences to assist in the transition from industrial arts to technology education.

An affiliate council of the ITEA, the Council on Technology Teacher Educators (CTTE), joined the National Council for Accreditation of Teacher Education (NCATE) in a partnership to develop accreditation standards for technology education teacher education. Through that effort, standards specific to technology teacher education were made available to higher education institutions for the first time.

Despite the progress toward technology education during the 1980's, inconsistencies have continued to exist throughout the United States. According to Householder (1989), "states had almost complete autonomy in the design of their educational systems" (p. 13). Therefore, each state has been unique in some respect of technology education when compared to other states, especially concerning program titles. According to Arnett (1989), "the labels most frequently used are industrial arts, industrial technology, and technology education" (p. 35).

Teacher Certification

Until the middle of the last century the appointment of teachers was largely a local affair with a school committee interviewing candidates and making selections according to personal and local criteria. According to Kinney (1964), teacher certification became centralized, initially at the county level, with county examiners administering oral or written examinations to anyone who wished to gain approval to teach in that particular county. Most teachers established their qualifications by passing a county examination and obtaining a credential. Problems associated with county teacher examinations and

the great diversity among the county systems prompted a push toward state certification of teachers (Gardner and Palmer, 1982).

In the mid 1800's, states began to authorize the establishment of schools, permit local taxation for school support, regulate the expenditure of money, and provide state funds for local school operation. These fiscal responsibilities necessitated the creation of an administrative organization. Normally, this organization consisted of a chief state school officer and a state board of education (Kinney, 1964). State departments of education gradually developed as the need arose to oversee and control an emerging state system of schools (Kinney, 1964). During this time, these agencies gradually began to assume power over and responsibility for teacher certification (Gardner and Palmer, 1982).

After 1900, county examinations were gradually replaced by standards based on college or university credits and certification became almost solely a state function (Gardner and Plamer, 1982). States began to issue a general teaching credential that specified subjects and levels that the holder could teach. The general assumption was that it was unnecessary to examine a student over material taken as part of a college course, so certification standards were written in terms of college courses completed successfully (Kinney, 1964).

As professional training replaced teacher examinations as the basis for certification, programs of preparation became directly tied to the credential structure, thus subject to the control of the state certification agency. The following position statement from the Council of Chief State School Officers (1954) indicated the responsibility of the state toward teacher education and certification:

The role of the state department in teacher education is an outgrowth of its responsibility for assuring all children and youth of school age the best possible educational opportunity. The state department of education, therefore, must be concerned directly with all factors which influence the number of members in the teaching force and their quality. This role includes the following major responsibilities:

1. Education of professional school personnel.
2. Legal accreditation of institutions and programs for the education of teachers.
3. Certification of professional school personnel (Council of Chief State School Officers, 1954, p. iii).

The above statement had been interpreted in many different ways throughout the United States. "Certification requirements are usually stated in terms of courses taken and passed, clinical experiences completed, and distribution of credits" (Gardner and Palmer, 1982, p. 20). Each state established a set of certification standards that were similar to other states yet unique to that particular state.

Influences on Teacher Education

Teacher certification standards developed through an evolutionary process based primarily on the need to protect the public (Floden, 1979). According to Gardner and Palmer (1982), each state legislature controlled teacher certification through a state agency; usually the state department or board of education. In most cases, the agency was responsible for the development and implementation of teacher certification standards.

The process of program approval was the most popular method used to assure that teachers met the basic requirements for certification. The appropriate state agency "approved" a collegiate program based on the congruency of the preparation program and state certification

standards. Forty-nine of the 50 states used this procedure to approve teacher education programs (The Condition of Teaching, 1983).

Because the majority of teachers in the United States graduated from approved programs: ". . . the standards used to approve teacher education programs are of more significance than the individual certification requirements" (The Condition of Teaching, 1983, p. 98).

State standards developed in many different ways although two organizations have exerted a strong influence on teacher certification standards. The Carnegie Foundation noted: "In most cases, the state standards reflect the specificity in the individual certification regulations as well as features of the NCATE and NASDTEC standards" (p. 99).

NCATE

The National Council for Accreditation of Teacher Education (NCATE) was founded in 1952 through a coalition of the American Association of Colleges for Teacher Education (AACTE), the National Education Association (NEA), and chief state school officers. The concept was to act collectively to promote quality standards and to protect the integrity of teacher education through a process of peer assessment and self-regulation (Gardner and Palmer, 1982). NCATE membership was voluntary and accreditation was accomplished through a process of self-evaluation, peer review of the self-evaluation, and approval/denial of accreditation by the NCATE board.

In 1983, NCATE began a number of significant changes in its system of accreditation. Probably the most noticeable change was in the area of program standards (Bollnick and Kunkel, 1986). Those standards were

developed by committees from the NCATE Council over a two year period of time. Input was obtained from constituent members of NCATE and from experts on various aspects of teacher education. The new standards fell into five categories: "(a) knowledge base for professional education, (b) relationship to the world of practice, (c) students, (d) faculty, and (e) governance and resources" (Gollnick and Kunkel, 1986, p. 23).

One result of the new standards was the addition of several professional associations as constituent members of NCATE. Among those new members was the International Technology Education Association. A result of that association between the ITEA and NCATE was a set of unique program standards for technology education so that technology teacher education was evaluated as a unit.

The new standards impacted teacher certification in other ways, according to Gollnick and Kunkel (1986).

- a. Some states require teacher education programs that seek state approval to be accredited first by NCATE.
- b. Seven states will now grant a teaching certificate without analyzing a candidate's transcript and counting required credits, if the candidate has completed an NCATE-approved teacher education program (p. 22).

In an effort to create a system of national recognition of excellence in approaches to program approval, and to reduce duplication between state program approval and national accreditation, NCATE developed the option of a joint approval process with the state. Through that option, institutions received national accreditation/denial and state approval/denial during the same visit.

The combination of joint state and NCATE evaluations, acceptance by some states of NCATE as state standards, and unit approval for specific program areas were relatively new developments for NCATE and teacher education institutions. It follows then, that those developments had a significant effect on teacher certification standards.

NASDTEC

The membership of the National Association of State Directors of Teacher Education and Certification (NASDTEC) consists of:

Those agencies in states, the District of Columbia, and the Commonwealth of Puerto Rico that have major administrative responsibility for the preparation and certification of professional school personnel or professional standards and practices (NASDTEC Manual, 1988, p. iv).

The purpose of NASDTEC was to exercise leadership in matters related to the preparation and certification of professional school personnel. Although NASDTEC was founded in 1928, it did not develop its first set of standards until 1952. Since then, the standards were revised approximately every two years.

Unlike NCATE, NASDTEC does not accredit teacher education programs. NASDTEC standards were developed to assist state agencies in "reviewing, developing, and applying standards" (Standards for State Approval of Teacher Education, 1989, p. 1) for the approval of programs for the education of teachers.

The current NASDTEC standards (1989) address the organization and administration of teacher education, curriculum principles and standards for basic and advanced programs, innovative and experimental programs, and standards for approving competency-based or performance-based programs. The standards were developed through a committee process

where each member state was responsible for a designated portion of the standards. According to the Standards for State Approval of Teacher Education (1989):

State agency personnel generally convened ad hoc committees involving practitioners, curriculum personnel, higher education personnel from academic departments and schools of education, representatives of professional organizations, learned societies, and students for the preparation of revised drafts (Forward).

The drafts were reviewed by a Standards Committee and circulated to all state members for a critical review. Comments and suggestions were reported to the Standards Committee where action was taken.

Because the standards were developed by state education personnel with responsibilities for teacher education and certification, it follows that the standards were widely used and had a significant influence on teacher certification. According to The Carnegie Foundation (1983), 26 states reported that the NASDTEC standards were used in whole or in part for the development of teacher education program approval criteria.

Certification Examinations

A century ago many school districts, counties, and large cities used written examinations as a method of screening and certifying teachers. For a number of reasons, the practice slowly declined. By the 1940's the practice had largely disappeared, except for a few large cities that continued to test teacher applicants (Gardner and Palmer, 1982).

In recent years, teacher examinations have come back into vogue and were reintroduced at the state level as an additional part of the

certification process (Scherer, 1983). According to Andrews (1982) states were developing or using tests for three purposes: "(1) To screen candidates for basic skills mastery. (2) To test a candidate's knowledge of content in that individual's certification field. (3) To assess teaching performance on-the-job" (p. 61).

Several states had developed state tests to assess general or subject area competencies. The majority of those tests were developed with the aid of testing companies (Scherer, 1983). The Pre-Professional Skills Test was used in several states as a requirement for certification but the most widely used teacher examination is the National Teacher Examination (NTE) developed by the Educational Testing Service (Gardner and Palmer, 1982; Scherer, 1983; and Anderson, 1989).

National Teacher Examination

The NTE was composed of three separate modules, called the core battery, which could be taken together or one at a time. The core battery tests were the General Knowledge, Communication Skills, and Professional Knowledge. An additional test, called the Specialty Area, was also developed for 45 distinct subject areas of education (NTE Bulletin of Information, 1989-90).

The core battery contains 340 multiple-choice questions and one essay item. The total time allotted to the core battery was 5.5 hours. The communications skills test consisted of reading, writing, and listening tests. The general knowledge test contained subtests on literature and fine arts, mathematics, science, and social studies. The professional module was constructed to test knowledge of educational concepts, such as planning and evaluation techniques (Scherer, 1983).

When the NTE was used for certification in a given state, passing scores were determined by that state and were based on expected scores of minimally qualified examinees. Expected scores were determined by "gathering and analyzing judgments made by experienced teachers, administrators, and teacher educators within the state" (Rudner and Eissenberg, 1988, p. 4). Those judgments were combined into a "study score" that would represent a passing score of a minimally qualified individual would obtain if the tests were perfectly valid. Because "the tests were not perfectly valid" (Rudner and Eissenberg, 1988), the errors of measurement were considered by the State Department of Education and a passing score was established for the state. According to Rudner and Eissenberg, "of the states using the NTE . . . the passing scores ranged from a low of 630 to a high of 657, an average of eight points less than the study scores" (p. 6).

Pre-Professional Skills Test

The Pre-Professional Skills Test (PPST) of Reading, Mathematics, and Writing was developed by Educational Testing Services (ETS). The PPST consisted of three separate standardized achievement tests designed to measure basic proficiency in the titled subject areas. The tests consisted of multiple-choice questions and one essay question and were designed to be taken individually or in any combination.

According to ETS, the Reading skills tested were literal comprehension, ability to understand how material was organized and conveyed a message, and the ability to make reasoned qualitative judgments about the nature and merits of a written message. The test had 40 multiple-choice questions with a test time of 50 minutes (The

PPST Guide, 1986).

The Mathematics test measured competencies acquired in the study of mathematics at least through high school. The test assessed the skills of comparison and order of numbers, interpretation of graphic material, the use of ratios and percents, quantitative reasoning, and measurement concepts. As with the Reading test, the Mathematics test was composed of 40 multiple-choice questions with a test time of 50 minutes (The PPST Guide, 1986).

The Writing test assessed the use of appropriate grammar and language and the ability to communicate effectively in writing. The test consisted of two separately timed 30 minute sections. The first section contained 45 multiple-choice questions based on the use of standard English, the second section consisted of one essay question (The PPST Guide, 1986).

The multiple-choice portions of the PPST tests were scored on the basis of the number of correct responses only. The essay portion of the Writing Test was scored based on the mean score of two judges. As with the NTE, passing scores were determined by a panel of experts in the field.

Summary

The review of the literature revealed the evolution of industrial arts to technology education. Many national reports dealt with the need to study technology while at the same time practitioners in the field emphasized the curriculum change from industrial arts to technology education. State departments of education, professional associations, and accrediting agencies also initiated changes in certification and

accreditation standards. The review of the literature indicated that the International Technology Education Association, was an indirect influence on certification and accreditation standards. The National Association of State Directors of Teacher Education and Certification and the National Council for Accreditation of Teacher Education had a direct influence on the change to teacher certification standards that reflected technology education. Finally, the review indicated that a number of states used, or were in the process of adopting testing procedures as a part of teacher certification. The NTE, which has a specialty area test in technology education, was the most often used examination for certification purposes.

CHAPTER III

METHODOLOGY

The purpose of this study was to determine state requirements for technology education teacher certification and to identify the minimum criteria for certifying technology education teachers in the United States. The methodology described in this chapter was designed to answer the following questions concerned with technology teacher certification.

1. What were the minimum requirements for a standard (or equivalent) certificate in technology education in each state?
2. What were the minimum requirements for recertification of a standard (or equivalent) certificate in technology education in each state?
3. Were there different certification requirements for industrial arts and technology education in the same state?

Type of Research

Descriptive research, as defined by Key (1974) is: "used to obtain information concerning the current status of the phenomena. The purpose of these methods are to describe 'what exists' with respect to variables or conditions in a situation" (p. 126).

Van Dalen (1979) commented on the investigator's use of descriptive research: "Determining the nature of prevailing conditions, practices,

and attitudes--seeking accurate descriptions of activities, objects, processes, and persons--is their [the investigators'] objective" (p. 284).

The data for descriptive research may be collected in a number of ways although the most common method of descriptive data collection is by "administering questionnaires, interviewing subjects, observing events, or analyzing documentary sources" (Van Dalen, 1979, p. 285). There are two types of descriptive research, the survey and the case study (Turney and Robb, 1971). "The survey is an attempt to analyze, interpret, and report the status of an institution, group, or area in order to guide practice in the immediate future" (p. 63).

In a status descriptive survey, the researcher does not attempt to relate one variable to another. The objective is to search for accurate information about the "characteristics of particular subjects, groups, institutions, or situations or about the frequency with which something occurs" (Van Dalen, 1979, p. 285). Survey research was used to collect the data for this study.

Subjects

The subjects of this study were the state departments of education in each of the 50 states and the District of Columbia. Each state was represented by a person who was employed by the state department and was directly responsible for teacher certification in that state. Those people were identified through the use of the NASDTEC directory (1989-90). When more than one person's name was listed in the directory, the person with the title of coordinator, administrator, director, or executive secretary was selected (See Appendix A).

Data Collection

The data utilized in this study were collected in two ways; current certification documents from each state and a follow-up telephone interview with the responsible party. Because the data were extensive, a format for collecting the data was submitted to a panel of experts and decisions were made regarding parameters of the materials to be collected (See Appendix B).

A letter (See Appendix C) that requested documentation pertinent to current minimum certification requirements for industrial arts/technology education teachers was mailed to the responsible party in each state. A self-addressed, stamped envelope and a return addressed mailing label were also enclosed. Thirty-seven states responded to the initial request for information.

One month after the initial request for information, a second letter (See Appendix D) requesting certification information was mailed to the non-respondents. Again the second letter contained a self-addressed envelope and a return addressed mailing label. Eight states responded to the second request for information.

The remaining six non-respondents were contacted by telephone and asked to respond to the request for certification information. Five of the remaining six complied with the telephone request and submitted the appropriate certification documentation. Data from the remaining state were collected through a telephone interview.

When the information from each state was received, it was reviewed by the researcher and a data collection form was completed. Within five working days after the receipt of the information, a follow-up telephone interview was conducted to confirm the accuracy of the information. In

instances where there were contradictions between printed requirements and actual practice (based on the telephone interview), the printed information was recorded. The total amount of time required to collect the data was three months.

Analysis of the Data

The data from the collection instrument were entered into a computer data base so that it could be sorted and analyzed.

Because the data was obtained from the entire population instead of a sample, descriptive statistics were used to conduct the analysis.

According to Key (1974),

If descriptive information is sought, then descriptive statistics, such as count, percentages, means and ranges, may be the most adequate statistical tools.

However, if inference from a sample to a population is desired, then inferential statistical tools in addition to descriptive information will be needed (p. 80).

The frequency and percentage, or range was determined for selected areas of each category in this study.

The Kolmogorov-Smirnov one-sample test (K-S) was used to determine if statistically significant differences existed between the expected specialty area hourly requirements and the observed specialty area hourly requirements. According to Siegel (1956),

The test involves specifying the cumulative frequency distribution which would occur under the theoretical distribution and comparing that with the observed cumulative frequency distribution (p. 48).

An alpha level of .05 was selected by the researcher.

Several states reported college hour requirements in the form of quarter hours. In order to maintain uniformity for comparison purposes,

quarter hours were converted to credit hours with the formula:

$$\text{Quarter Hours} \times .6666 = \text{credit hours}$$

(Ohio, 1987, p. 3; Montana, 1989 p. 2).

Quarter hours were reported in Appendix E and were converted only when comparison data were needed.

CHAPTER IV

RESULTS OF THE STUDY

The purpose of this study was to determine state requirements for technology education teacher certification and to identify the minimum criteria for the certification of technology education teachers in the United States. The data described in this chapter were collected on a state by state basis in order to determine technology teacher certification and recertification requirements.

This chapter was devoted to the presentation of the data in regard to previously established research questions. The data from each state was divided into five areas: pre-certification requirements, certification requirements, first level renewal requirements, second level renewal requirements, and third level renewal requirements. A completed report of the findings for each state may be found in Appendix E; a summary of those findings follows.

Research Question One

What were the minimum requirements for a standard (or equivalent) certificate in technology education in each state?

Pre-Certification Requirements

The topics that were considered to be pre-certification requirements for technology education concerned degree requirements, minimum hours of general education, specialty hours and areas of study,

professional hours, and experience requirements. Each of these areas are reported separately.

Degree Requirements . All states were in agreement that a baccalaureate degree from an approved program was a minimum requirement for technology education certification. This area was the only area of pre-certification in which there was universal agreement among the states.

General Education Hours. Nineteen (37%) of the states specified a minimum number of hours in general education. In the remainder of the states, the university or college established the minimum requirements for general education. Of those 19 states, the range was from a low of ten to 20 hours in Nebraska to a high of 60 hours in Texas and Alabama. The median number of hours was 45 (Connecticut and Kentucky) while the most frequently reported number of general education hours was 40. There were four states that required 40 hours: Georgia, Indiana, Michigan, and Wyoming (Figure 1).

Specialty Hours. Thirty-seven states (73%) specified the number of hours in a major or specialty area. In the remainder of the states, the university or college established the minimum requirements for major or specialty hours. Of those 37 states, the range was from a low of 18 hours in South Dakota to a high of 52 in Indiana. The median number of specialty hours was 35 (Connecticut) while the most frequently reported number of specialty hours required was 30 (n=12) (Figure 2).

A hypothesis was formulated for the specialty hours:

H_0 : There is no difference in the expected number of required hours for the specialty area, and any observed differences are chance variations.

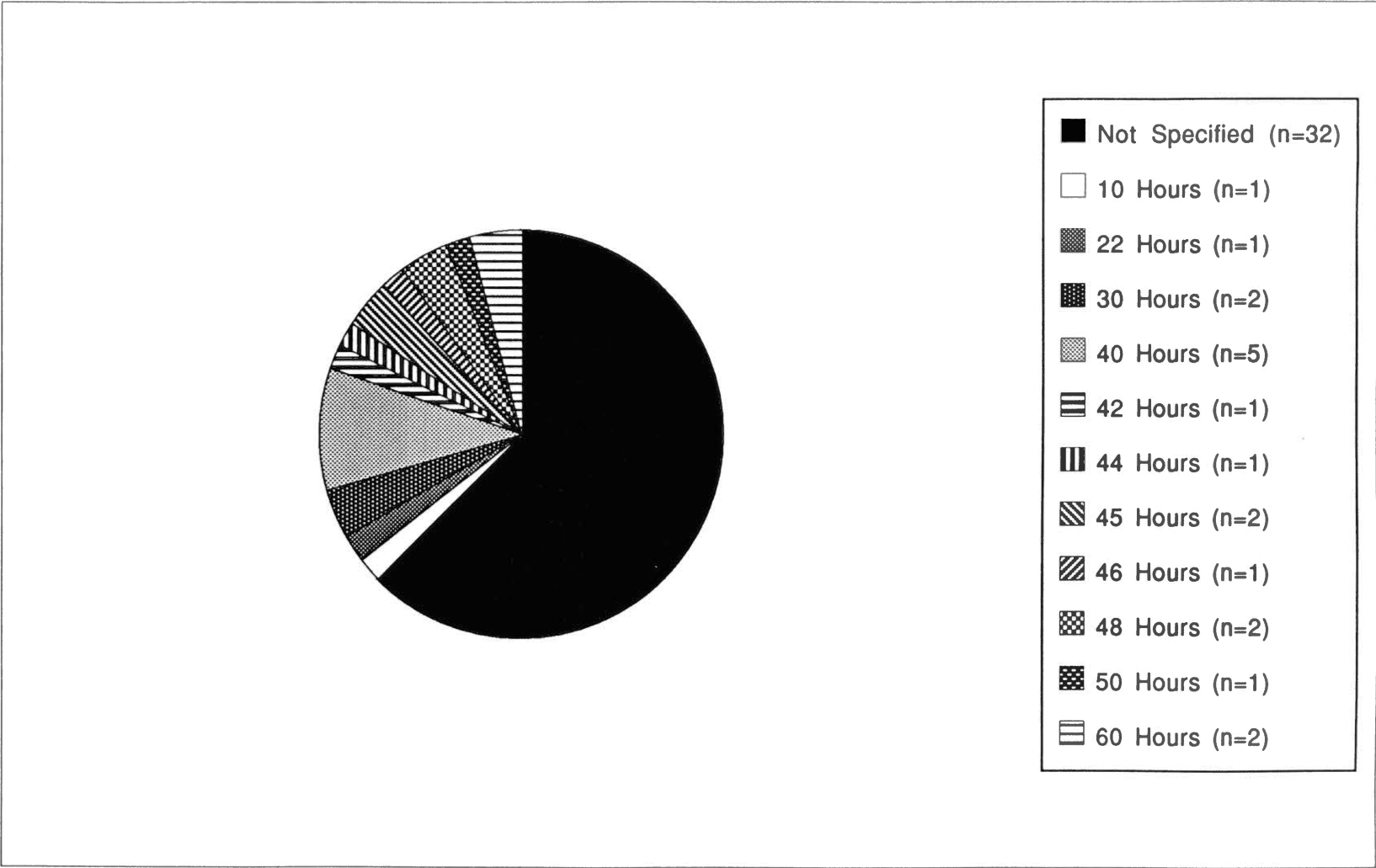


Figure 1. College Hours Required in General Education for First Level Teacher

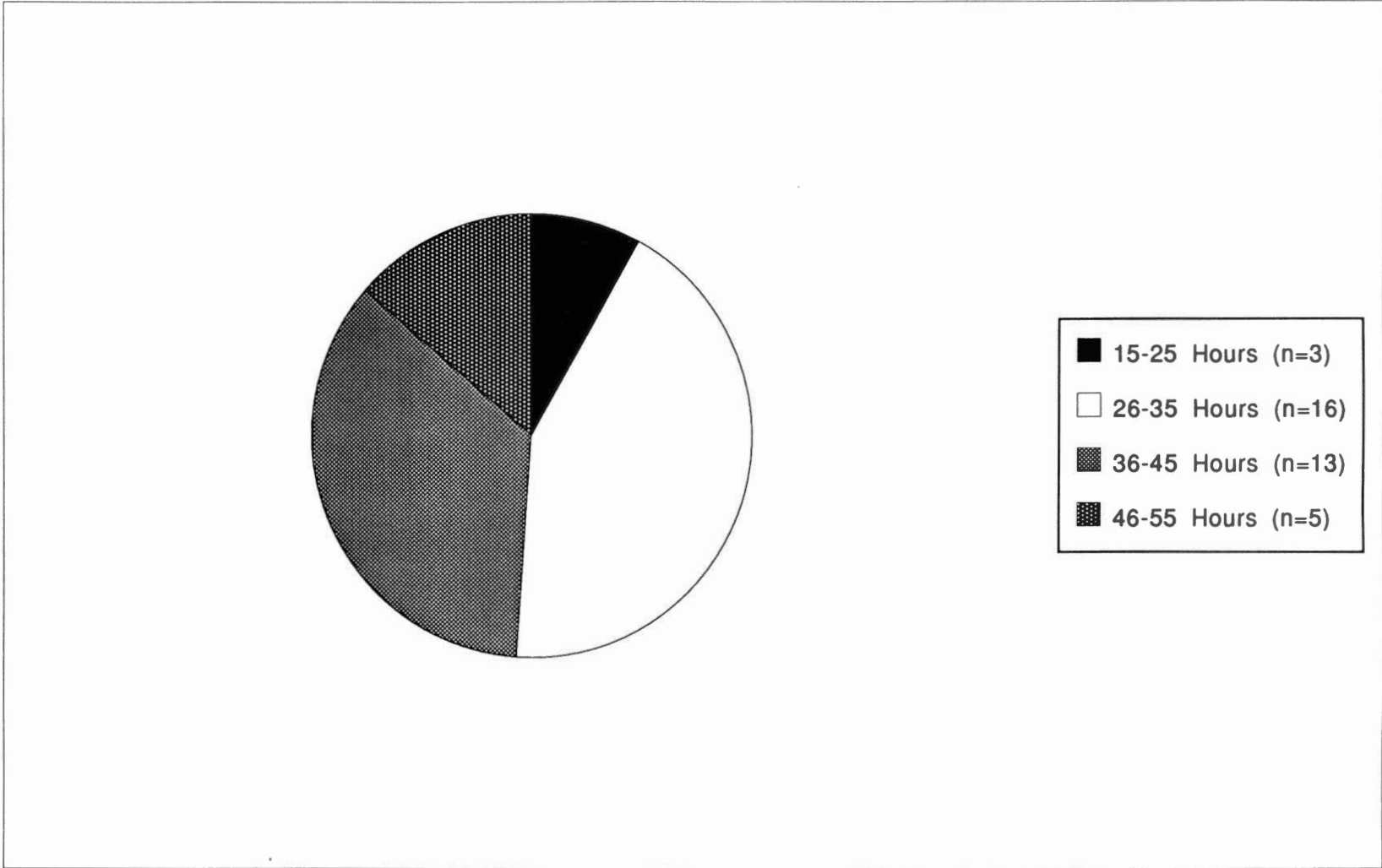


Figure 2. College Hours Required in the Speciality Area for the First Level Teacher Certification in the United States

H_1 : The frequencies f_1, f_2, f_3, f_4 are not all equal.

To test the hypothesis, the data were subjected to the K-S. The data was grouped into four subgroups: 15-25 hours ($n=3$), 26-35 hours ($n=16$), 36-45 hours ($n=13$), and 46-55 hours ($n=5$). Fourteen states did not specify required specialty hours. The calculated value ($KS=.22$; $DF=37$) was significant at $\alpha .05$; therefore, H_0 was rejected. There was a significant difference between the expected number and the observed number of required hours for the specialty area.

Specialty Area. Of the 37 states that specified a minimum number of hours in the specialty, 33 identified courses or areas of study that were required for certification. Fifteen of those 33 (45%) specified coursework exclusive to the four content organizers (Manufacturing, Transportation, Communication, Construction) established by the Jackson's Mill Conference. Nineteen of the 33 states specified course work in three of the four Jackson's Mill content organizers. Only eight states specified course work exclusive to the four content organizers and also included the word technology in the specialty area title. Those states were Connecticut, Indiana, Nebraska, South Carolina, South Dakota, Vermont, West Virginia, and Wisconsin.

The most frequently required area of study in the specialty area was energy/power. Twenty-five of the 33 states that specified course work required study in this area. Manufacturing and construction were the second most often ($n=24$) specified areas of study by the states. Of those 33 states, the least frequently required area of study was crafts. Only one state (Arkansas) required the study of crafts as a requirement for certification. Figure 3 illustrates the required areas of study and the frequency of the requirement.

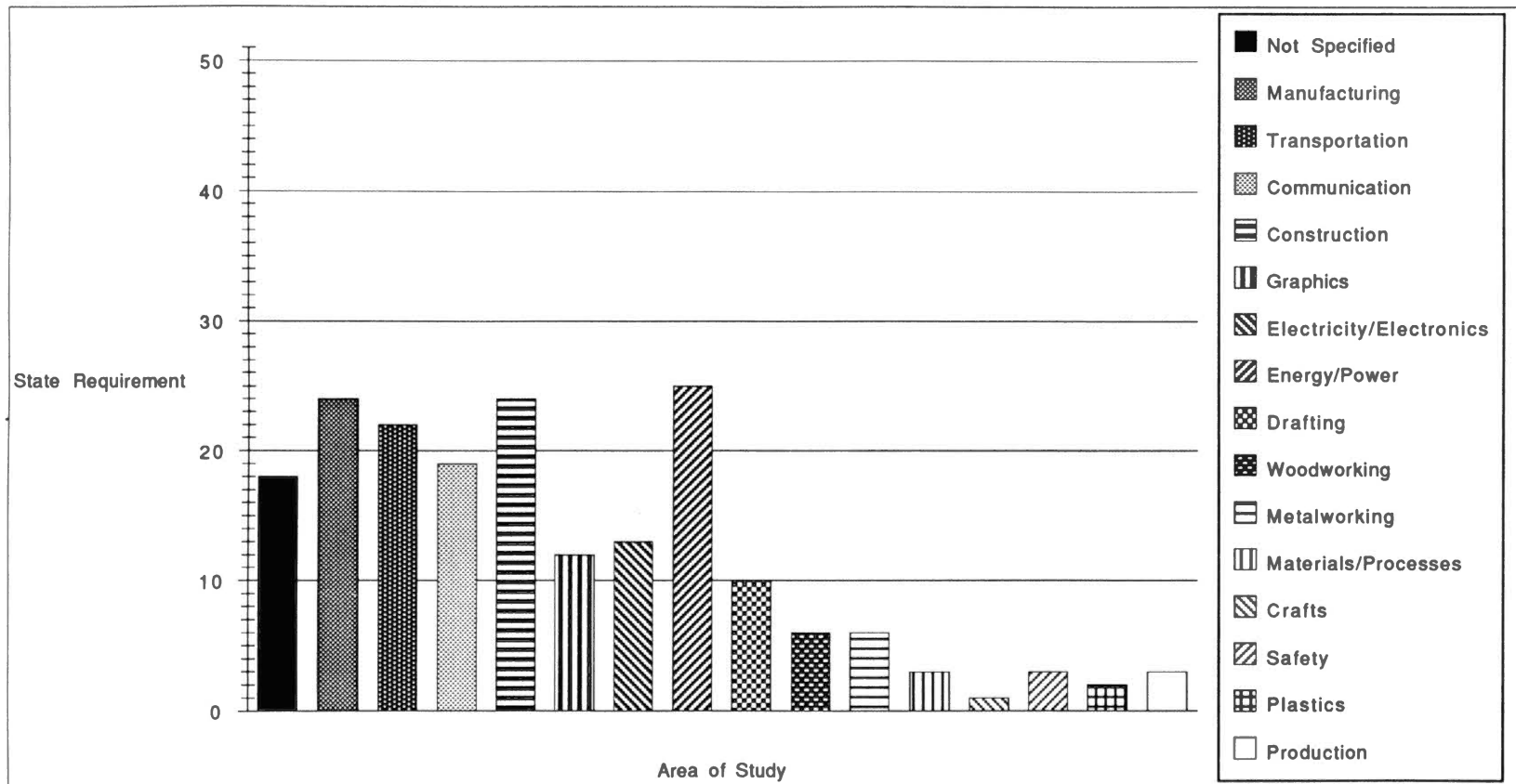


Figure 3. Required Areas of Study for Certification in Technology Education

Professional Hours. Thirty-two states (63%) specified the number of hours of professional education. In the remainder of the states, the university or college established the minimum requirements for professional education. Of those 32 states, the range was from a low of eight hours in Nebraska to a high of 36 in Alabama. The median number of specialty hours was 21 while the most frequently reported number of specialty hours required was 24 (n=8) (Figure 4).

Field Experience. Each state required some type of required field experience prior to certification. All of the states and the District of Columbia required student teaching as a field experience. Massachusetts did not require student teaching but did require a 300 clock-hour practicum. In addition to the field experience, 13 states also required some type of supervised monitoring or assistance program during the first year of teaching. Although each of the programs in these 13 states was unique, most utilized a committee or a mentor to provide assistance to the first year teacher (Figure 5).

Certification Requirements

The topics that were considered to be certification requirements for technology education included the title of the certification area, certification fee, grade levels, and competency tests. Each of these areas are reported separately.

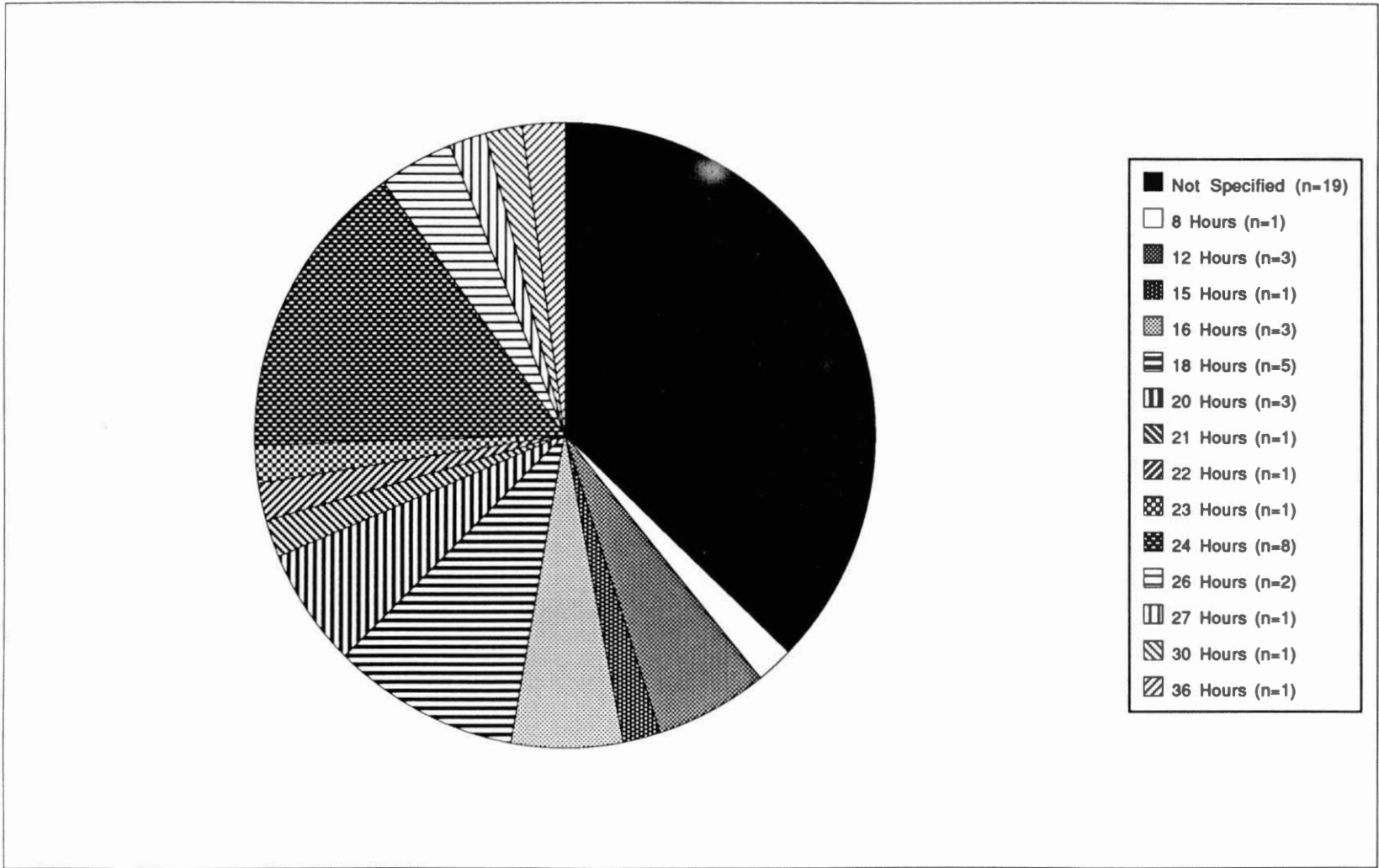


Figure 4. College Hours Required in Professional Education for First Level Teacher Certification in the United States

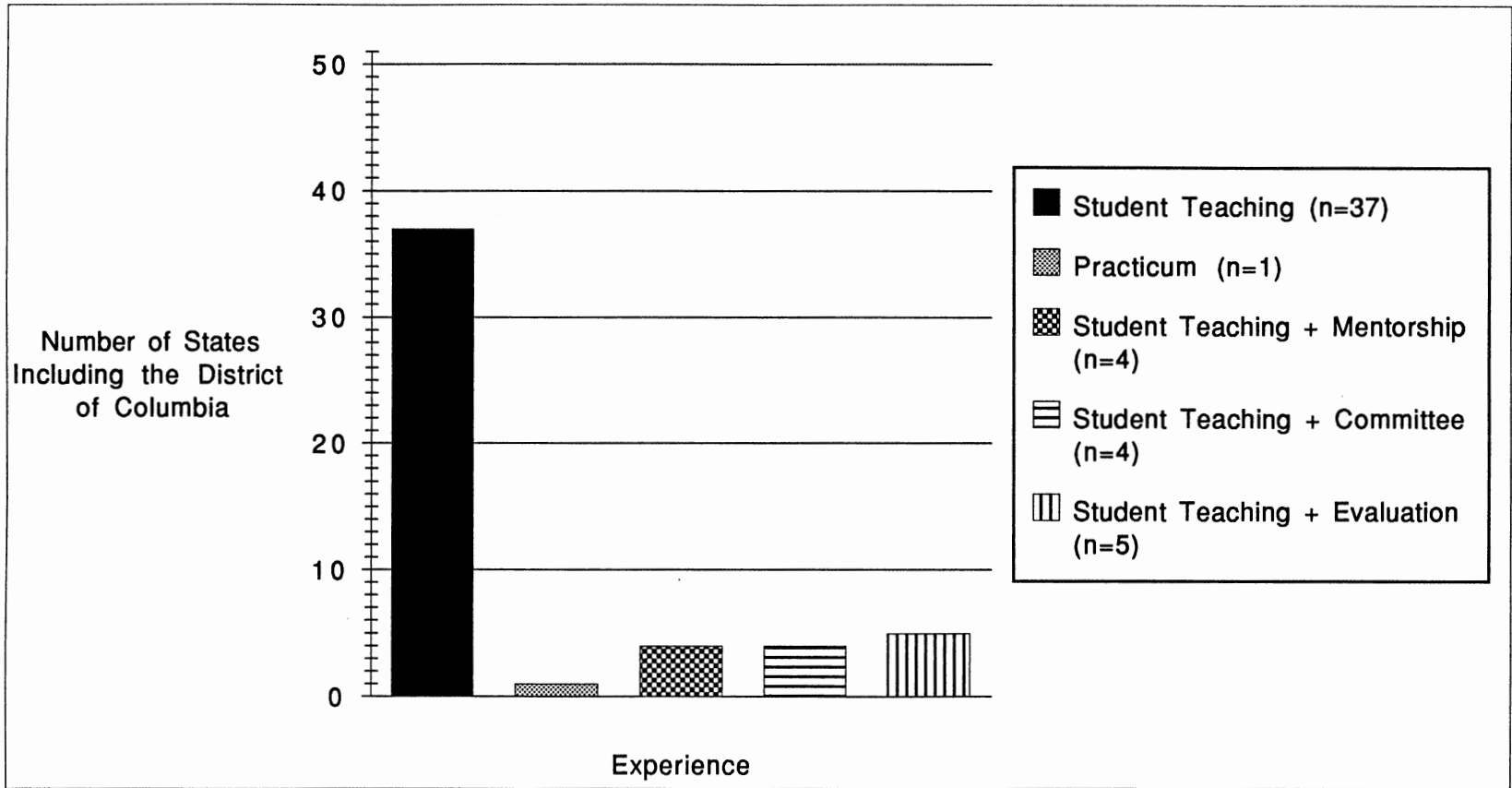


Figure 5. Required Teaching Experience for First Level Teacher Certification in the United States

Certification Area. Eight different titles were used to describe technology education throughout the nation. The majority of the states (n=31) used the title of Industrial Arts. Other titles used by more than one state were Technology Education (n=6), Industrial Technology Education (n=5), Industrial Technology (n=3), Industrial Arts/Technology Education (n=3). Three states had unique titles for the discipline. The title of Exploratory Industrial Technology Education was used in Arkansas. South Dakota used Industrial Arts/Technology and Kentucky was the only state to use Industrial Education. Figure 6 illustrates the diversity of the program titles employed throughout the United States.

It should be noted that three states have a certification area that includes technology education in the title but do not require course work from any of the Jackson's Mill content organizers. Those states are Arkansas, Oregon, and Wyoming.

Certificate Titles. Twenty-one different certificate titles were used to identify an entry level certificate throughout the nation. The most popular title was "Provisional," used by 12 states. Other titles included "Standard" (n=8), "Initial" (n=7), "Professional" (n=4), "Basic" (n=2), and "Level I" (n=2). The other 16 titles were unique to each particular state. Those unique titles are listed as "Other" in Figure 7. Massachusetts used the title "Teacher" and Colorado used the title "General Teacher" to describe an entry level certificate. On the other hand, Alaska used the title of "Type A Regular Teaching License" to describe an entry level certificate.

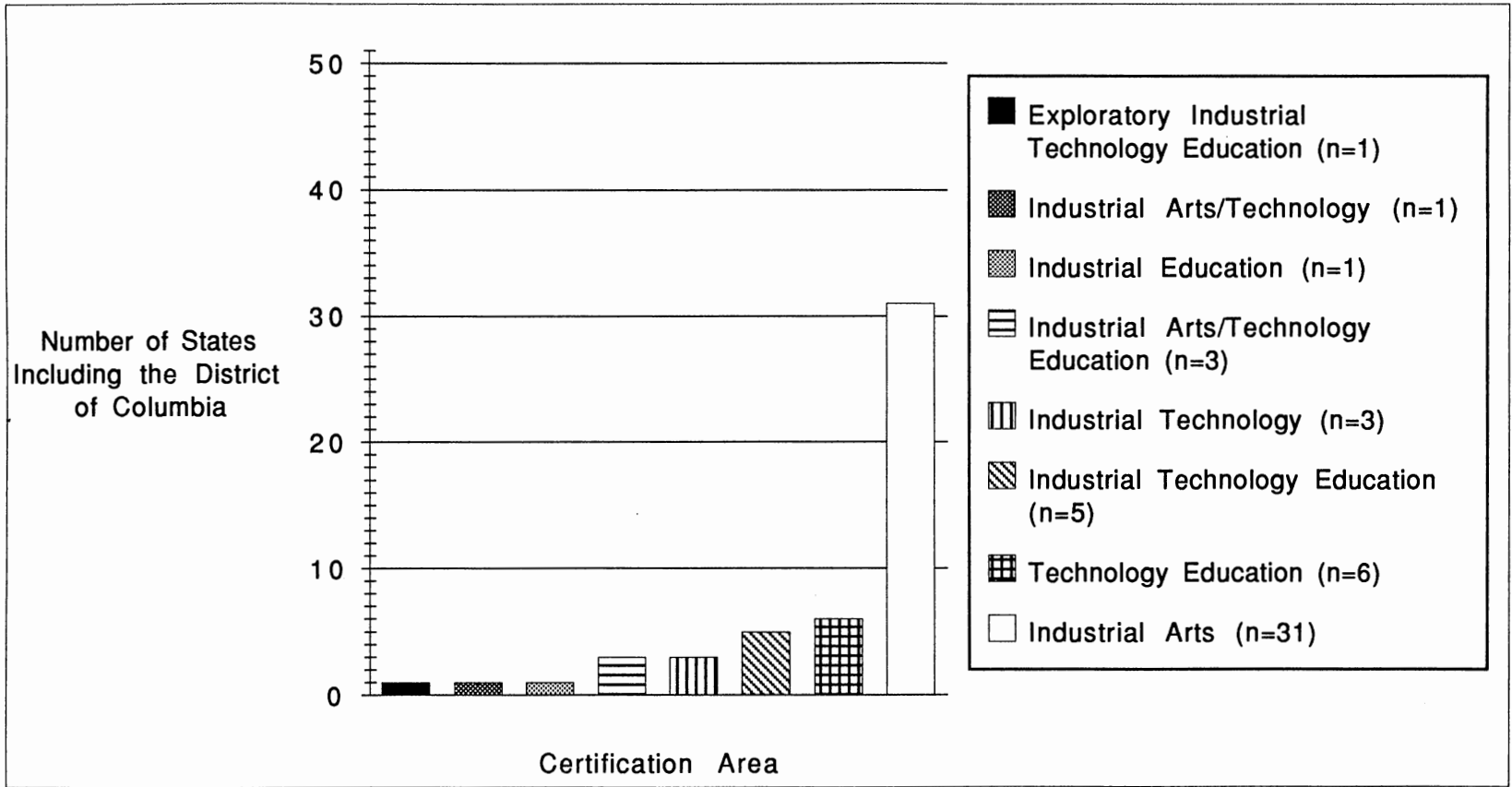


Figure 6. Titles Used for Technology Education in the United States

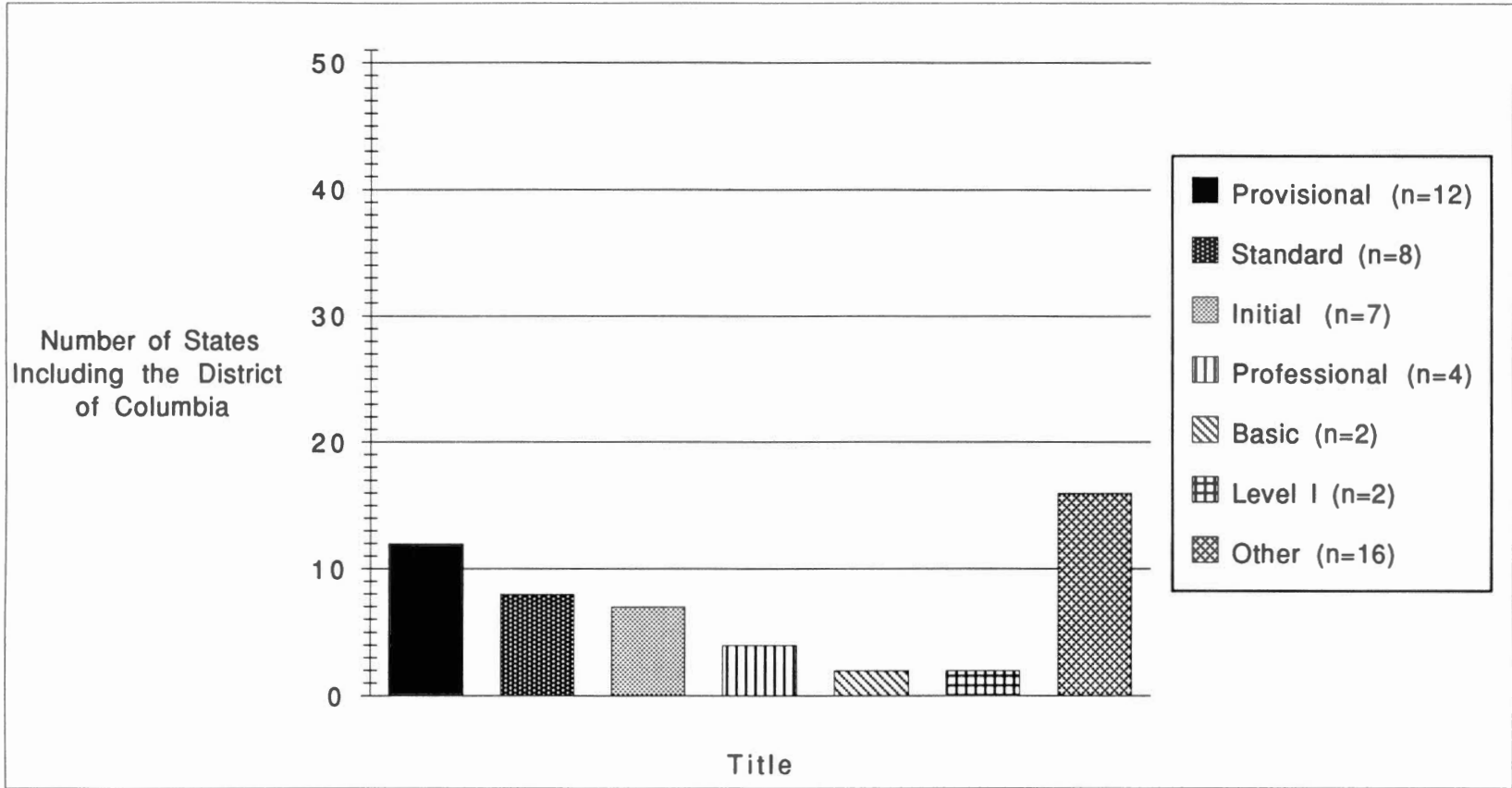


Figure 7. First Level Certificate Titles in the United States

Certification Fee. Twelve states provided certificates to teachers with no charge for the service. The remaining 39 states had a fee as a part of initial certification. This fee was sometimes called a "processing fee" or an "application fee" and ranged from \$2.00 (Ohio) to \$125.00 (Michigan). The mean cost of a certificate from the states that charged a fee was \$32.50. The median charge was \$25.00 (n=5). Only two states charged less than \$5.00; Oklahoma (\$3.00) and Ohio (\$2.00). Three states charged more than \$75.00; California (\$98.50), Alaska (\$100.00), and Michigan (\$125.00) (Figure 8).

Grade Levels. Each state had some form of restriction concerning grade levels that a teacher with technology education certification could teach. Twenty-three states restricted technology education to grade seven or above. Seven states use the designation of K, PK, or N to indicate the lowest grade level of technology education certification and grade 12 or adult to indicate the highest grade level of technology education certification. North Carolina, South Carolina, and Kentucky had the narrowest range (9-12) of grade levels for technology education. California had the widest range (PK-Adult) of grade levels for technology education. Seven states provided for technology education certification to start at the fifth grade and eight more states started technology education certification at the sixth grade level (Figure 9).

Certification Examinations. Fourteen states did not have an examination of some type as a requirement for initial certification. Twenty-three states used either all or part of the NTE as a requirement for certification. Of those 23, eight used the complete test (core and

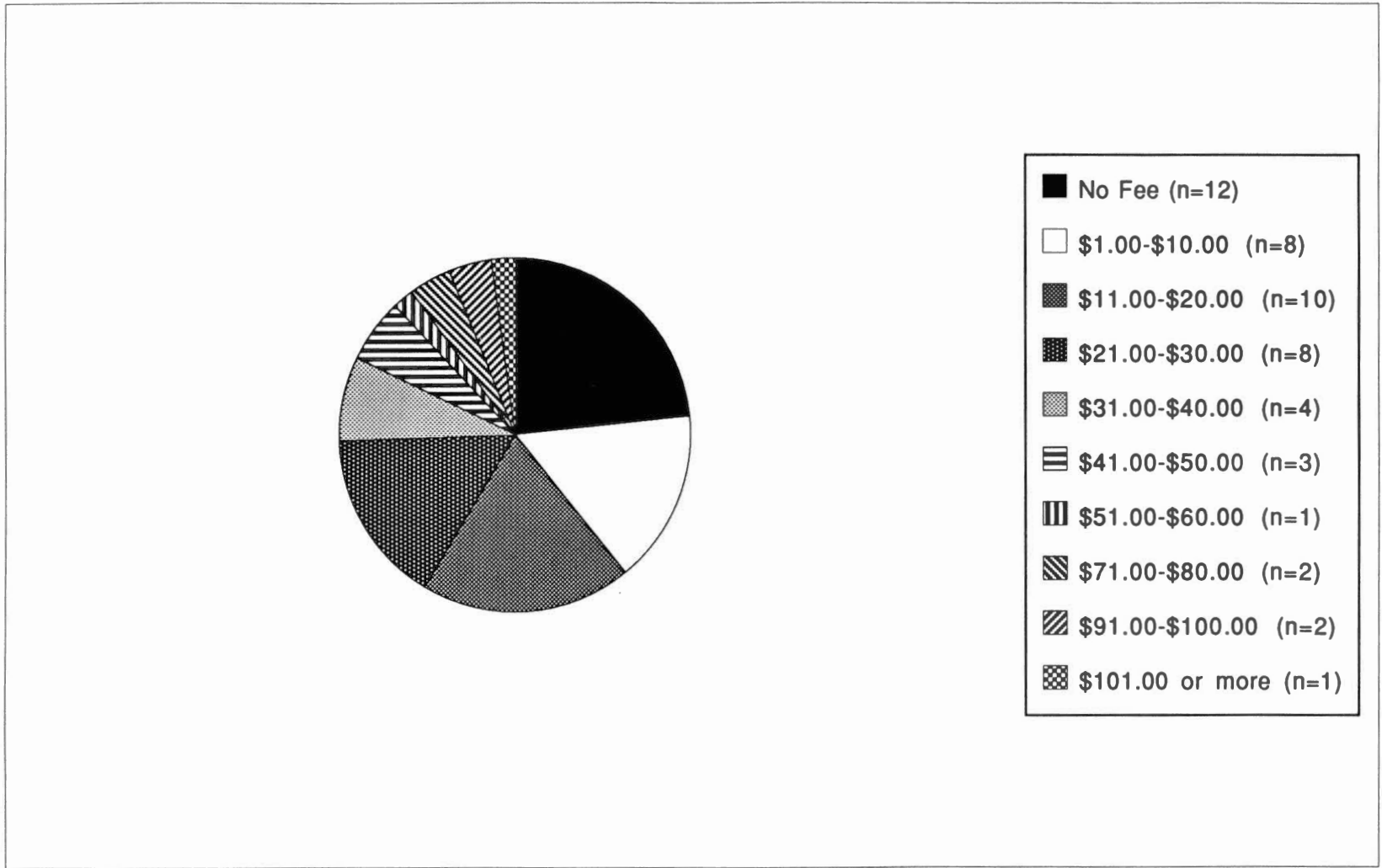


Figure 8. Fee for Initial Teaching Certificate in the United States

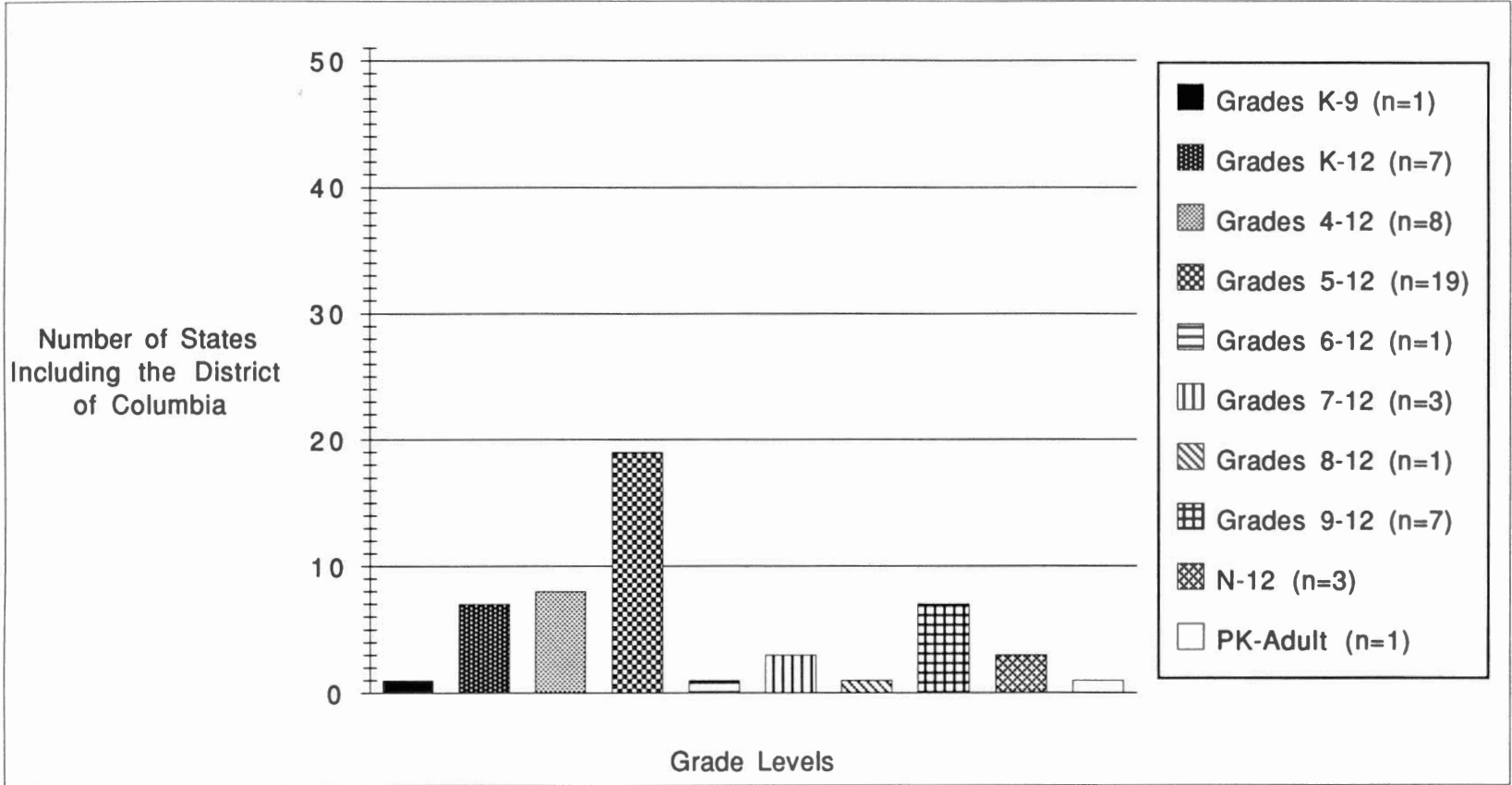


Figure 9. Approved Grade Levels for Technology Education in the United States

specialty area). Eight more used only the core, while one state (New Jersey) used the specialty area only. South Carolina and Arkansas used only the Professional Knowledge portion of the NTE while Nevada and Kansas used the Professional Knowledge in conjunction with the PPST. North Carolina used the Professional Knowledge and specialty area tests as a certification requirement while the District of Columbia used only the Communications portion of the NTE.

Several other national tests were used in other states as a requirement for certification. The PPST was used by three states (Minnesota, Delaware, and Nebraska), the California Basic Educational Skills Test (CBEST) was used by California and Oregon, and the California Achievement Test was used by Colorado.

Eight states used tests that were unique to each particular state as a requirement for initial certification. Those tests were the Arizona Teacher Proficiency Exam, Connecticut Basic Skills Test, Exam for Certification of Educators in Texas (EXCET), Florida Teacher Certification Exam (FTCE), Oklahoma Teacher Certification Exam, Illinois Teacher Certification Test, Georgia Teacher Certification Test, and the West Virginia Content Specialty Exam (Figure 10).

Summary. Research question number one asked, "What were the minimum requirements for a standard (or equivalent) certificate in technology education in each state? The response to that question was quite varied because no two states are exactly alike concerning certification requirements. Appendix E details the exact certification requirements for each state. Although each state was unique in its

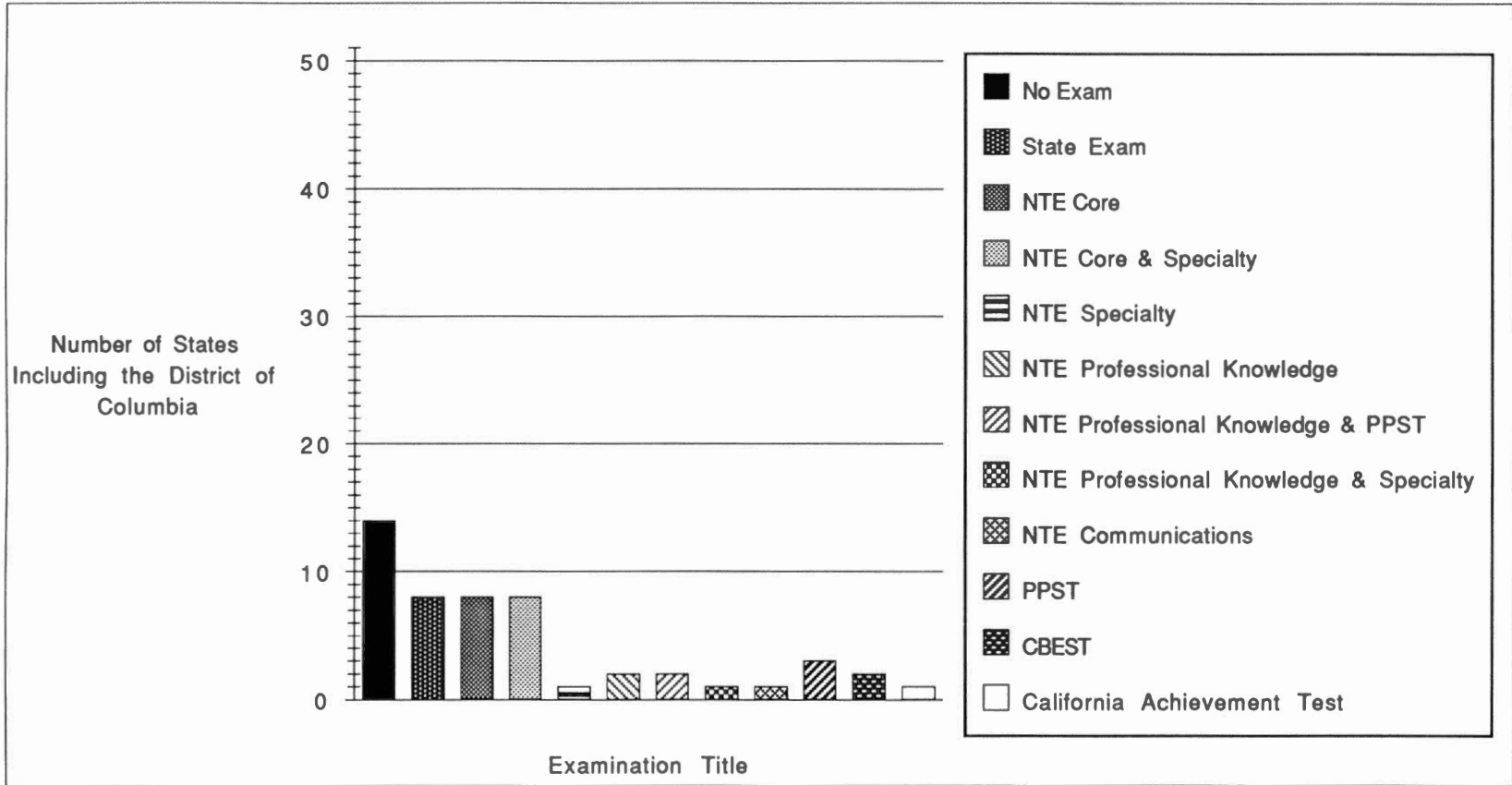


Figure 10. Required Teacher Certification Examinations in the United States

certification requirements, a profile utilizing the most frequently reported requirements follows.

All 50 states and the District of Columbia required a baccalaureate degree from an approved institution as a certification requirement. Therefore, the "average" minimum requirements for initial certification in technology education would include a baccalaureate degree. Other average minimum requirements would include: 40 hours of general education, a 30 hour major with study in at least three of the four Jackson's Mill content organizers, and 24 hours of professional education that included a student teaching field experience. The average profile for an initial certificate would also require a passing score on the NTE, a cost of \$20.00, and be issued as a professional certificate in industrial arts for grades seven through 12.

None of the states were an exact match of the profile. The two states that most closely resembled the average profile were Wyoming and Illinois. As previously stated, each state is unique in its requirements for initial certification. Appendix E provides an exact, state by state, answer to research question one.

Research Question Two

What were the minimum requirements for recertification of a standard (or equivalent) certificate in technology education in each state?

First Level Certificate Renewal

Those topics that were considered to be first level certificate renewal requirements for technology education concerned the term (duration) of the initial certificate and the requirements for renewal or advancement of the certificate. Both of these areas are reported separately.

Term of the Initial Certificate. Forty-eight of the 51 states required that an initial certificate had to be renewed. New Jersey, Texas, and Massachusetts issued an initial certificate that was valid for the life of the holder. Of the 48 states that required certificate renewal or advancement, the duration of the certificates ranged from one year (n=5) to eight years (n=2). The median certificate term was four years (n=4) although the most frequent certificate term reported was five years (n=16). Figure 11 indicates the range and certificate terms throughout the nation. It should be noted that all certificates in Mississippi are issued for one year only. All certificate holders in that state must reapply for recertification each year.

Initial Certificate Renewal Requirements. Eleven states issued an initial certificate that was not renewable. This restriction was designed to force the certificate holder to advance to the next level of certification. A continuing certificate was issued in Nevada and Vermont as the initial certificate. That continuing certificate was valid as long as the holder was employed as a teacher. Six states renewed the initial certificate without any type of restriction other than an application. The remaining 29 states renewed the initial certificate contingent on stated restrictions.

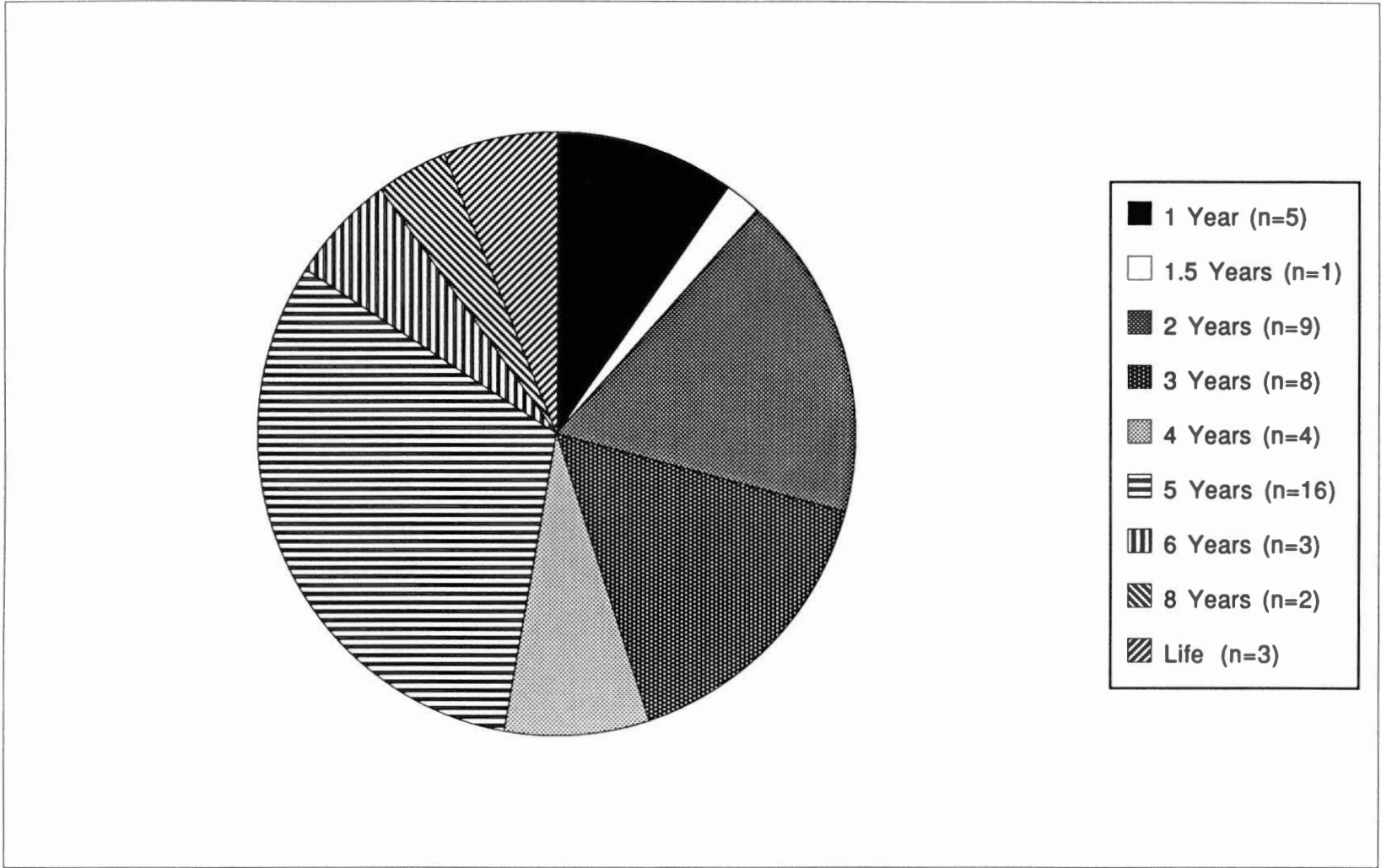


Figure 11. Terms of First Level Teaching Certificates in the United States

Six states allowed the renewal of the initial certificate only one time. Four of those six required college credit as a restriction for renewal. College credit was the most frequently reported restriction for initial certificate renewal. The number of hours of college credit ranged from 16 in Oregon to four in Montana. The most frequently reported number of hours required for initial certificate renewal was six (n=15). Other restrictions for renewal of the initial certificate included: In-state Experience (n=7), Committee Approval (n=2), and Staff Development (n=1) (Figure 12).

Second Level Certification Requirements

The information in this section was concerned with the attainment and renewal requirements of the second level of certification for technology education teachers. The topics that were considered to be second level certification requirements for technology education included: certificate titles, certificate terms, degree required, previous certification, experience, unique requirements, and renewal requirements. Each of these areas are reported separately.

Certificate Title. Nine of the 51 states had no second level of certification for a classroom teacher. One state, New York, reported that the second level of certification was permanent and was valid for life. The most frequently used title to describe the second level of certification was "Professional" (n=11). Other titles that were used more than one time were Standard (n=8), Continuing (n=4), 5-Year (n=3), Advanced (n=2), Level II (n=2), and Provisional (n=2).

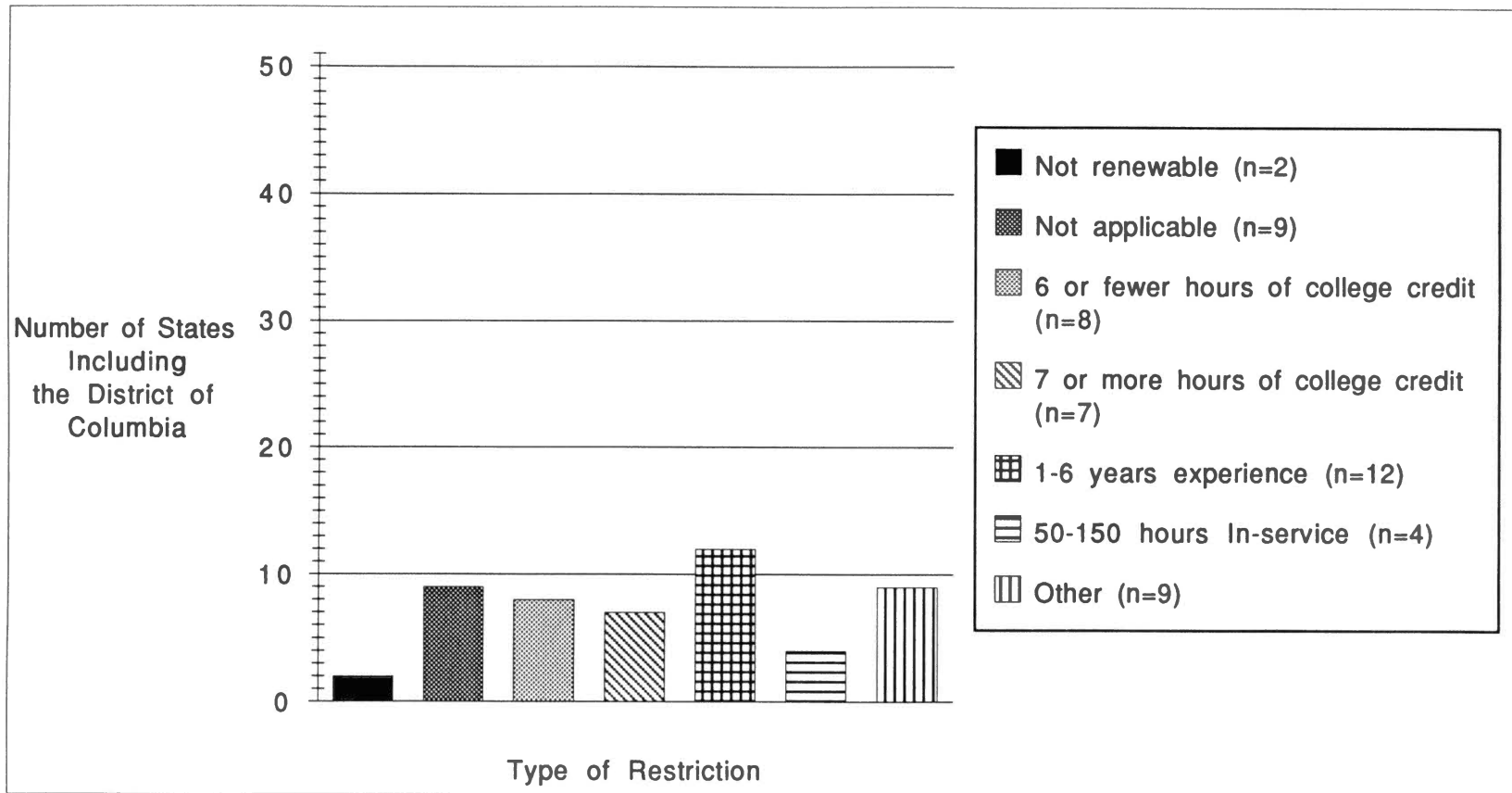


Figure 12. Restrictions for Renewal of First Level Teaching Certificates in the United States

Certificate Term. Pennsylvania, New York, and Texas reported that the certificate that was issued for the second level of certification was valid for life. Three more states, Hawaii, Michigan, and Louisiana, issued the second level certificate as a continuing certificate. Of the 36 states that issued second level certificates with time restrictions, the most frequently reported certificate term was five years (n=21). The range was from ten years (n=4) to one year (Mississippi). Figure 13 indicates the national range of second level certificate terms.

Degree Requirements. In order to obtain the second level of certification, 12 states required a master's degree. An additional seven states required a baccalaureate plus 30 college hours in order to certify at the second level. Pennsylvania required a baccalaureate degree plus 24 hours for the second level. Twenty-two states required only a baccalaureate degree in order to obtain the second level of certification in technology education. California was the only state to require completion of a Fifth Year Program in order to attain the second level. Figure 14 indicates degree requirements for the second level of certification throughout the nation.

Previous Certification. Of the 42 states that issued a second level certificate, nine states reported that the teacher must hold an initial certificate as a prerequisite for the second level certificate. The remaining states required that the teacher must meet the requirements of the initial certificate as a prerequisite for the second level certificate.

Experience. In order to receive the second level of certification, 37 of the 42 states required some form of documented teaching

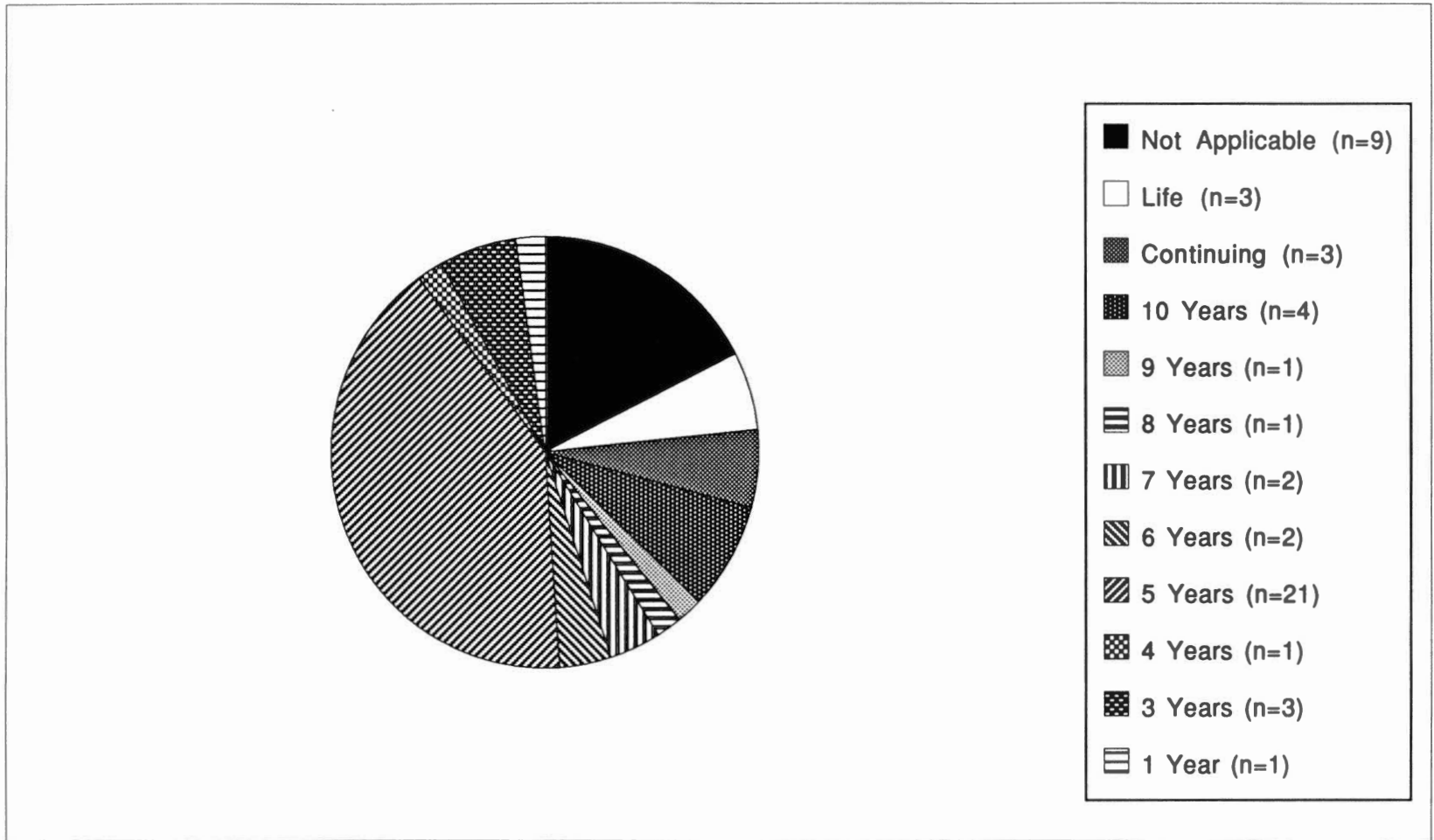


Figure 13. Terms of Second Level Teaching Certificates in the United States

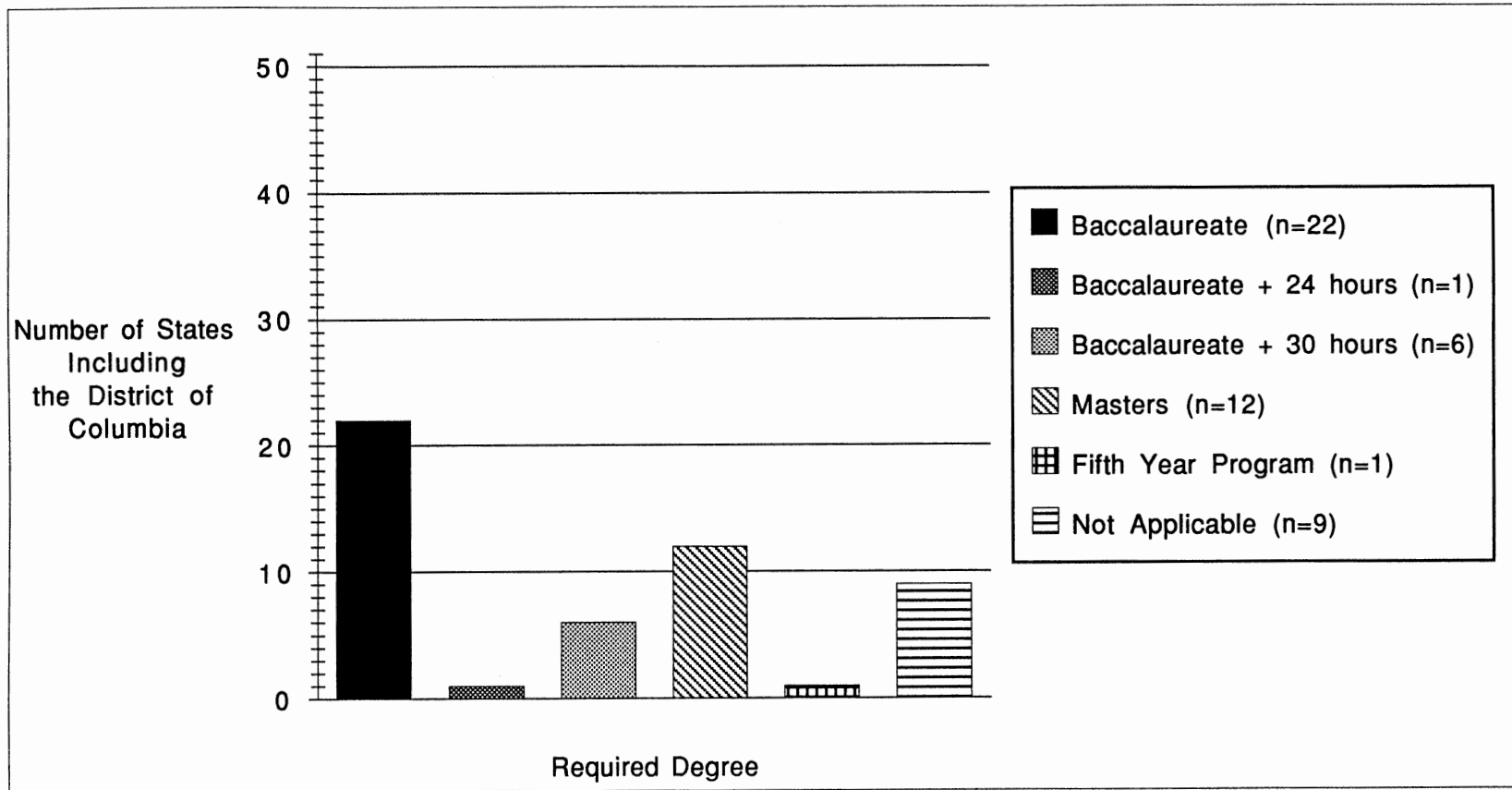


Figure 14. Degree Requirements for the Second Level of Teacher Certification in the United States

experience. Arizona, California, the District of Columbia, New Mexico, and Georgia did not specify teaching experience as a requirement for second level certification. The required teaching experience ranged from one year (n=5) to five years (n=2). The most frequently reported experience requirement was three years (n=15); second was two years required by 14 states.

Unique Requirements. Several states had unique requirements in order to obtain the second level of certification. The District of Columbia required only the Communications area of the NTE in order to obtain initial certification yet required the Content Knowledge area of the NTE for the second level of certification. Oregon required a master's degree for the second level but specified that at least ten hours of the master's must be in an additional endorsement area. Washington specified that in order to obtain a second level certificate in technology education, the teacher must be able to certify in an additional endorsement area. Maine required a professional improvement plan to be "on file" before a second level of certificate was issued. Missouri had a similar requirement that utilized a professional growth program.

Second Level Certificate Renewal. College credit was the most frequently cited requirement for renewal of the second level of certification. Fifteen of the 41 states required from six to 15 hours of college credit in order to renew the second level of certification (Figure 15). Experience was the second most frequently cited requirement for certificate renewal. Twelve states required from one to six years experience in order to renew the certificate (Figure 16). Six states specified college credit or approved in-service or staff

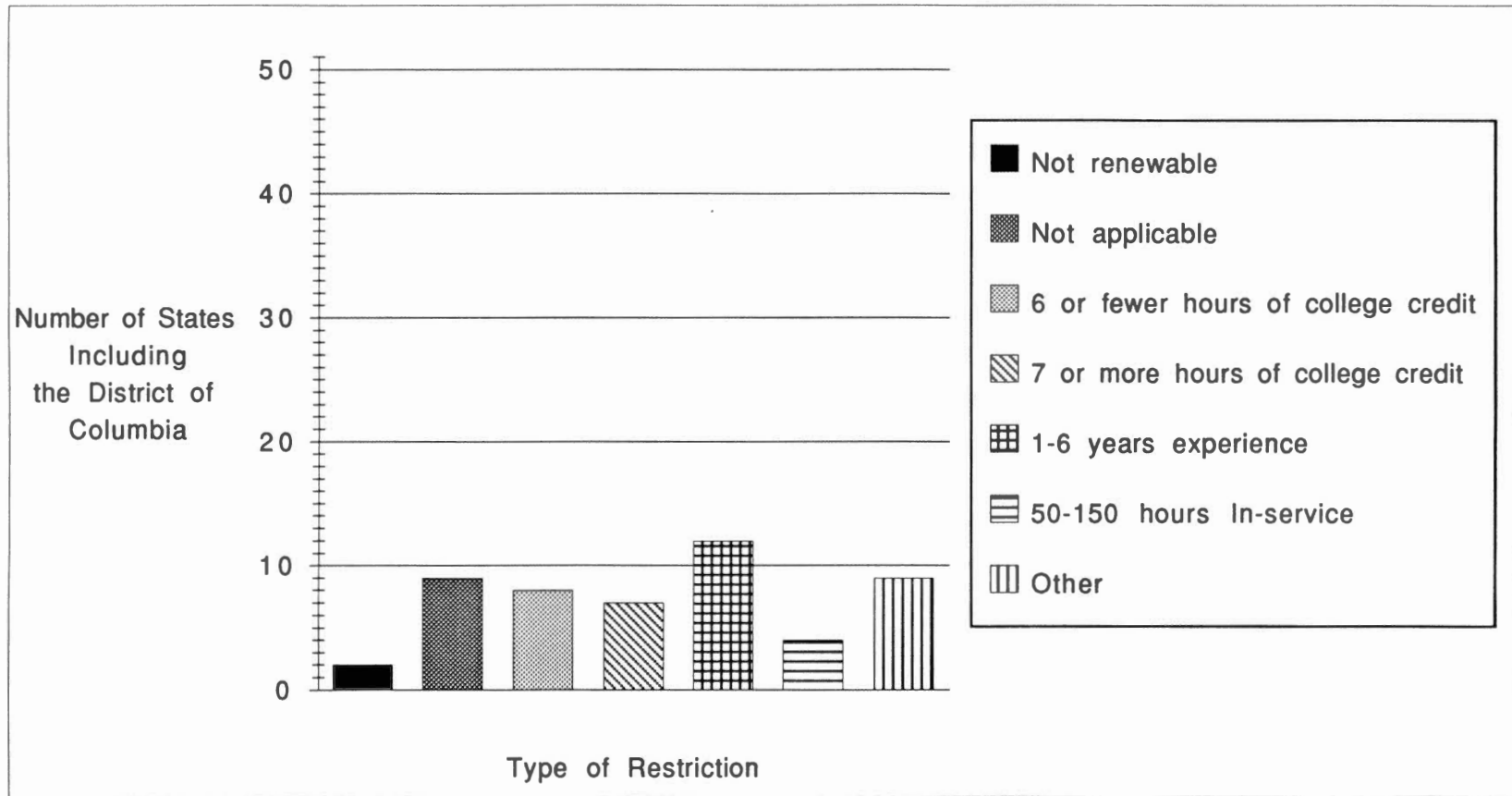


Figure 15. Restrictions for Renewal of Second Level Teaching Certificates in the United States

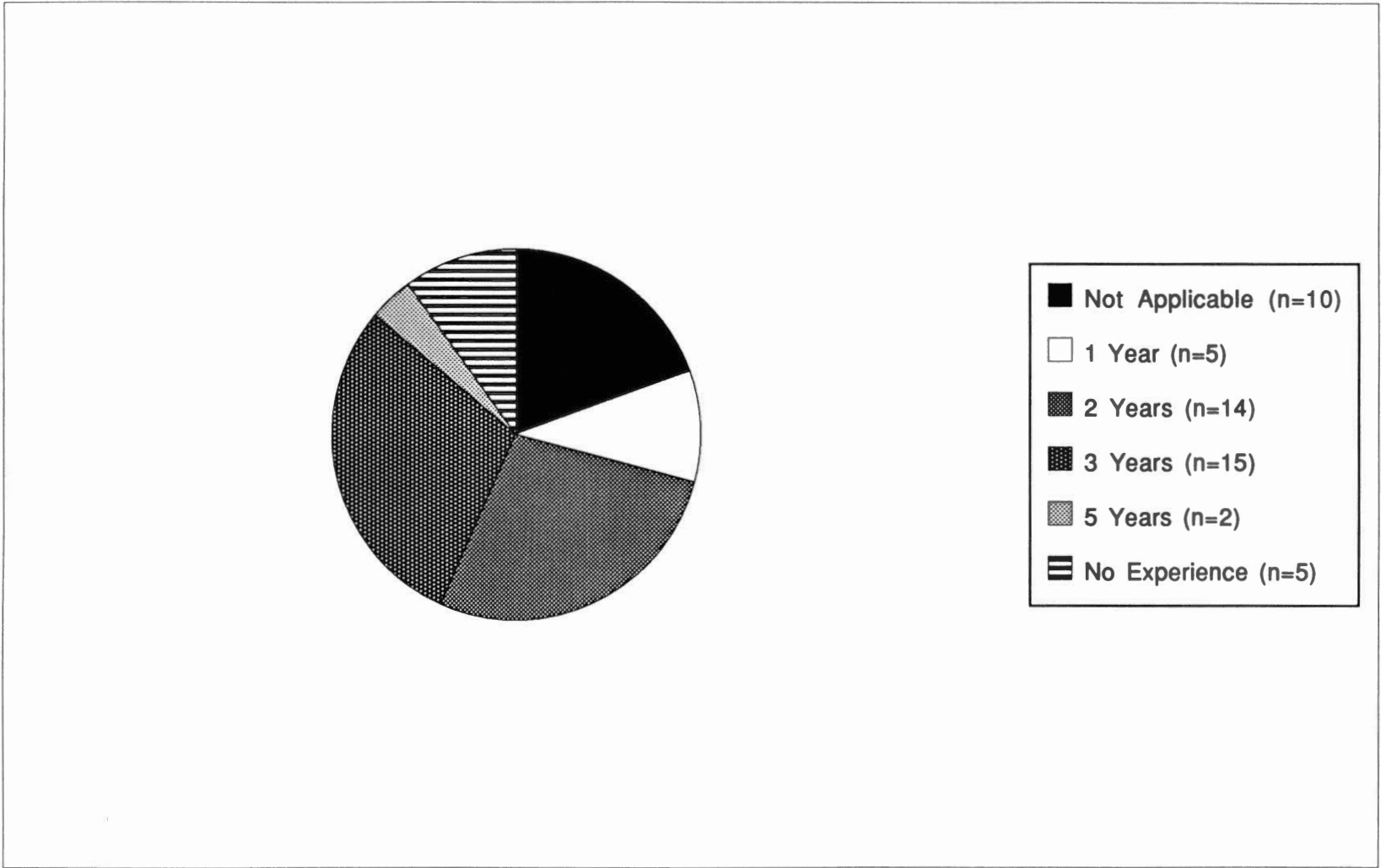


Figure 16. Required Teaching Experience for Second Level Certification in the United States

development as a requirement for recertification. In Missouri and Tennessee, the second level certificate was non-renewable, thus forcing the teacher to attain a higher level of certification. In New York, Texas, Hawaii, Pennsylvania, and Michigan, the second level certificate was issued for life.

Third Level Certification Requirements

The information in this section was concerned with the attainment and renewal requirements of the third level of certification for technology education teachers. The topics that were considered to be third level certification requirements for technology education included: certificate title, certificate terms, degree required, previous certification, experience, and renewal requirements. Each of these areas are reported separately.

Certificate Title. Sixteen (31%) of the 51 states offered a third level of certification for a classroom teacher. The most frequently used title for the third level of certification was "Professional" (n=6). Other titles that were used were "Standard" (n=3), "Class AA" (Alabama), "Level III" (New Mexico), "Level Six" (Georgia), and "Postgraduate Professional" (Virginia).

Certificate Term. West Virginia, Ohio, Louisiana, and Rhode Island reported that the third level of certification was a continuing certificate and valid for as long as the holder was employed as a classroom teacher. Hawaii issued a life certificate as the third level of certification. Of the remaining 11 states, the most frequently reported certificate term was five years (n=6). The range was from 12 years (Alabama) to one year (Mississippi). Figure 17 indicates the

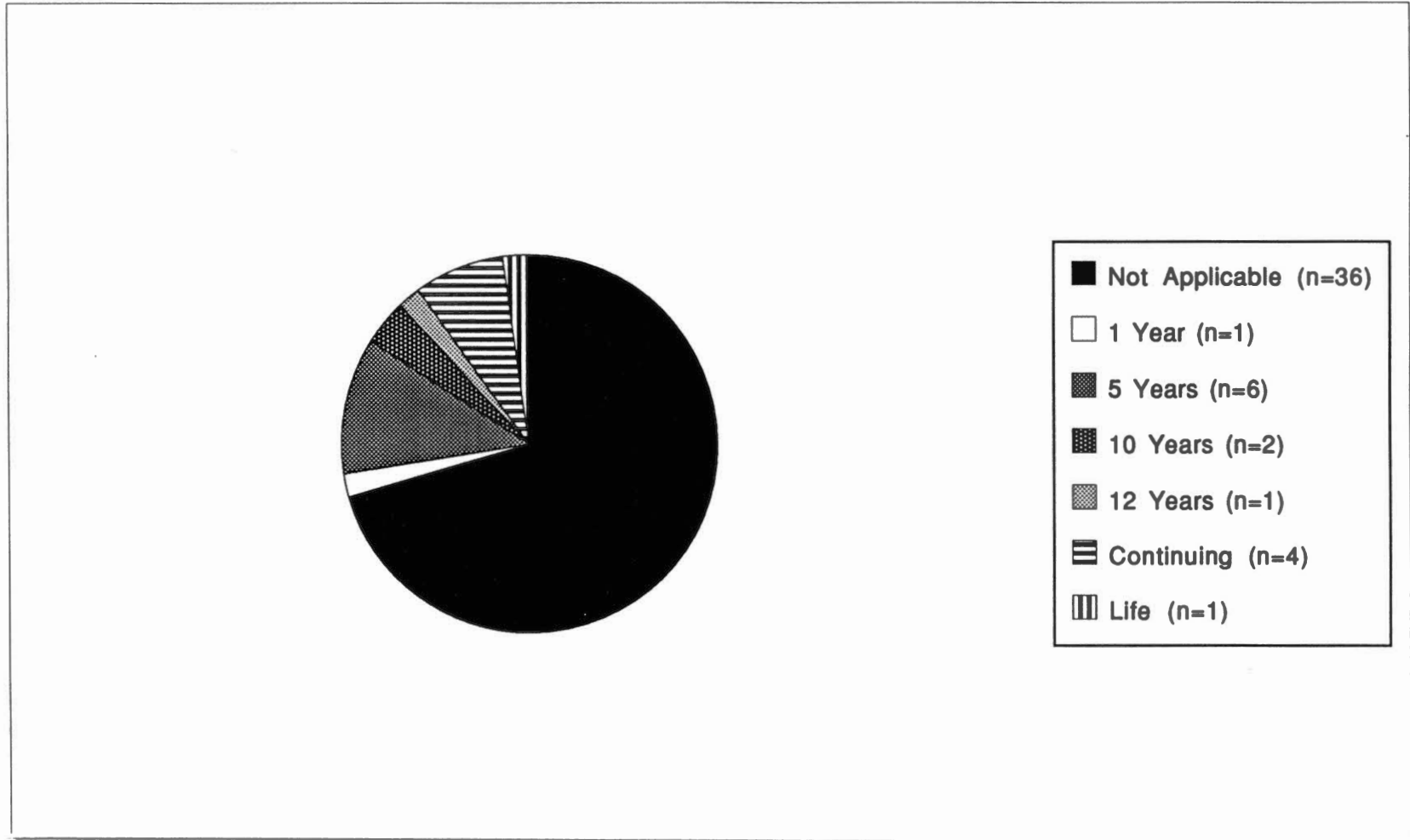


Figure 17. Terms of Third Level Teaching Certificates in the United States

national range of third level certificate terms.

Degree Requirements. To obtain the third level of certification, all 16 states that offered that level of certification required a minimum of a baccalaureate degree plus 30 college hours. Thirteen (81%) of the 16 states required a master's or a baccalaureate plus 30 hours. Hawaii required the completion of a Fifth Year Program and Georgia required an Education Specialist degree.

Previous Certification. Of the 16 states that issued a third level certificate, four states reported that the teacher must hold the second level certificate as a prerequisite for the third level certificate. The remaining states required that the teacher must meet the requirements of the second level certificate as a prerequisite for the third level certificate.

Experience. In order to receive the third level of certification, 15 of the 16 states required some form of documented teaching experience. New Mexico was the only state that did not require teaching experience as a prerequisite for the third level of certification. The range was from six years in Rhode Island to one year in Mississippi and Alabama. The experience requirement was bimodal in that five states required five years experience and five states required three years experience. Both Nebraska and Hawaii specified two years experience as a requirement for a third level certificate.

Third Level Certificate Renewal. As previously reported, four of the 16 states issued either a continuing or a life certificate at the third level. Of the remaining 12 states, the renewal requirements were bimodal in that four states required college credit and four states had an experience requirement. Tennessee required eight quarter hours (5

credit hours) and Georgia, Iowa, and Virginia required six credit hours in order to renew the third level certificate. Louisiana (not specified), Alabama (6 years), Missouri (5 years), and Nebraska (2 years) were the states that required experience in order to renew the third level certificate. New Mexico required that specified competencies be verified before renewal and Kentucky had no restrictions on the renewal of the third level certificate.

Summary. Research question two asked "What were the minimum requirements for recertification of a standard (or equivalent) certificate in technology education in each state?" Again, an exact response is dependent upon the state in question. As with certification requirements, recertification requirements are unique to each state. Although each state was different from the others concerning recertification, the "average" or most frequently reported requirements can be profiled.

Thirty-four of the 51 states provided for continuous renewal of the initial or "standard" certificate. Of the states that provided for renewal of the initial certificate, the most frequently reported renewal period was for five years. In 25 of the 34 states, renewal of the initial certificate was contingent upon additional college hours or experience.

The average initial certificate would be renewable for a five year term provided that the holder had completed six hours of college credit or had one year of teaching experience. Kansas and Montana most closely resembled the average profile.

In 17 states the initial certificate was either non-renewable or renewable only one time, thus forcing the holder to obtain a higher

level credential in order to be certified. Of those 17 states, 15 provided for continuous renewal of the second certification level. Only Missouri and Tennessee had a non-renewable second level certificate. The average second level certificate would be renewable for a five year term provided that the holder had completed six hours of college credit or had one to two years of teaching experience. Nebraska most closely resembled the average profile.

The third level of certification was the level that provided for continuous renewal in Missouri and Tennessee. In Tennessee, the third certificate level required a Master's degree and was called a Professional Life Certificate. It was renewable in ten year intervals, provided the holder obtained five hours of college credit. In Missouri, the third certificate level required a baccalaureate degree and was called a Professional Certificate III. It was renewable in five year intervals provided the holder had five years of teaching experience during the past five years, obtained six hours of college credit during the past five years, and had evidence of professional growth.

As stated in the literature and as evidenced by the data presented, each state had a unique set of requirements for recertification. Appendix E provides an exact, state by state, answer to research question two.

Research Question Three

Were there different certification requirements for industrial arts and technology education in the same state?

In response to research question three, there was no evidence of dual certification or that there were different certification

requirements for industrial arts and technology education in the same state. In each state that changed the title of the certification area from industrial arts to one of the several titles for technology education, all new certificates were issued with the appropriate title for technology education for that state. The certificates that were issued under the old title were reissued (during the anniversary year) with the appropriate new title.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine state requirements for technology education teacher certification and to identify the minimum criteria for certifying technology education teachers in the United States. Based on the data collected, this chapter presents a summary of the study, the conclusions, and recommendations concerning technology education teacher certification.

Three research questions were used to guide the study. The questions were:

1. What were the minimum requirements for a standard (or equivalent) certificate in technology education in each state?
2. What were the minimum requirements for recertification of a standard (or equivalent) certificate in technology education in each state?
3. Were there different certification requirements for industrial arts and technology education in the same state?

The literature review consisted of five major areas of discussion: industrial arts, technology education, teacher certification, influences on teacher certification, and certification examinations. The review of the literature revealed that few similar studies existed and that no standardized research or reporting instrument was available.

The subjects of this study were the state departments of education in each of the 50 states and the District of Columbia. Each state was represented by one person who was employed by the state department and was directly responsible for teacher certification in that state. Each of those people was contacted by mail with a request for information concerning technology education teacher certification. Responses were received either by mail or by telephone interview from all 50 states and the District of Columbia.

The data were divided into five categories: pre-certification requirements, certification requirements, first level renewal requirements, second level renewal requirements, and third level renewal requirements. The data from the pre-certification and certification categories was used to answer research question one. The data from the first, second, and third level renewal requirements was used to answer research question two. The data as a whole was used to answer research question three.

Summary

An analysis of the data revealed that no two states were exactly alike concerning technology education teacher certification and recertification. The only requirement that was universal was that a baccalaureate degree was necessary for initial technology education teacher certification. The data revealed that many, but not all, states established minimum hourly requirements for general education, specialty areas, and professional education. The traditional curricular areas of industrial arts (woodworking, metalworking, crafts, etc.) were required less frequently for certification than the curricular areas of

technology education (manufacturing, transportation, communication, construction). The NTE, or a portion of the NTE, was the most often required examination for initial teacher certification. A majority of the states call the specialty area industrial arts although 19 states include the word technology in the specialty area title.

The data also revealed that some states still issue life or permanent certificates on a regular basis. The majority of states restrict the certificate term and then establish requirements for certificate renewal. Most of the restrictions on certificate renewal were in the form of acquired teacher in-service, college hours, or teaching experience. The upper levels of certification usually required additional college hours, experience, or a Master's degree.

Although each state's certification requirements were different, there was no evidence that there were different certification requirements for the industrial arts and technology education in the same state. There was a great deal of diversity among the states concerning technology education teacher certification and recertification; each state was unique in some aspect of its certification requirements.

Conclusions

The following conclusions were based upon the review of the literature and the interpretation of the findings of this study:

1. Based upon the findings with respect to certification and recertification requirements among the states, it can be concluded that there is no nationally accepted model for technology education teacher certification or recertification.

2. Based upon the findings, the diversity of specialty area requirements among the states was statistically significant. Therefore, it can be concluded that there was no nationally accepted curriculum model for technology education.

3. Based upon the findings with respect to the inclusion of the word technology in the certification area titles and the identification of the four Jackson's Mill content organizers in specialty area requirements, it can be concluded that the Jackson's Mill conference was an important contributing factor in the change from industrial arts to technology education.

4. Based upon the findings concerning the certification area titles and specialty area requirements, it can be concluded that states are changing from industrial arts to technology education.

5. Based upon the findings regarding the certification area titles and specialty area requirements, it can be concluded that some states have only changed the name from industrial arts to technology education.

6. Based upon the findings concerning recertification requirements and the practice of granting life or permanent certificates, it can be concluded that in some states it is possible to teach technology education without formal study in the discipline.

7. Based upon the findings, there was no evidence of different certification standards for industrial arts and technology education within the same state. Therefore, it can be concluded that dual certification for industrial arts and technology education within the same state does not exist.

8. Based upon the findings regarding the influence of NASDTEC, NCATE, and professional associations on teacher certification

requirements, and because of the universal requirement for a baccalaureate degree for initial certification, it can be concluded that state universities and colleges are the most likely places to initiate the change from industrial arts to technology education.

Recommendations

This study has provided information concerning the requirements for certification and recertification of technology education teachers that was previously unavailable. The information presented in this study should be useful to state departments of education, teacher educators, professional associations, and other groups that are concerned with the development of state certification and recertification standards.

Based on the findings of this study, the following recommendations are offered:

1. As revealed in the findings, no nationally accepted model for technology education teacher certification and recertification exists. It is recommended that a national task force be assembled, with equal representation from each state, to develop a national model for teacher certification.

2. As revealed in the findings, no nationally accepted curriculum model for technology education exists. It is recommended that the ITEA take a proactive role in the development and implementation of a national curriculum model for technology education.

3. It is recommended that the practice of granting life certificates in technology education be discontinued.

4. It is recommended that this study be reviewed by teacher certification policy makers in each state.

5. It is recommended that this study be made available to teacher educators and other university personnel who are responsible for preparing teachers for certification.

6. It is recommended that this study be reconducted at periodic intervals in order to provide current certification information and comparison data for curriculum committees, teacher educators, reciprocity studies, and other policy makers throughout the nation.

BIBLIOGRAPHY

- Anderson, Herbert A. "A National Industrial Arts Curriculum--To Be or Not To Be." Journal of Industrial Teacher Education, Vol. 7, No. 2 (Winter, 1970), pp. 32-35.
- Anderson, Lowell D. "Certification Testing for Licensing of Industrial Arts Teachers." Journal of Technology and Society, Vol. 2, No. 2 (Winter, 1989), pp. 1-11.
- Anderson, William R. "State Syllabi in Industrial Arts." Industrial Arts and Vocational Education, Vol. 36, no. 7 (September, 1947), p. 286.
- Andrews, Theodore E. Current Issues in Teacher Education: From A State Perspective. Chelmsford, MA: The Northeast Regional Exchange, Inc., 1982.
- Arnett, Harold W. "Sermon on the Mounting Tech Ed Movement." School Shop, Vol. 49, No. 3 (October, 1989), pp. 35-37.
- Barlow, Melvin L. History of Industrial Education in the United States. Peoria, IL: Charles A. Bennett Company, Inc., 1967.
- Bennett, Charles A. History of Manual and Industrial Education, 1870 to 1917. Peoria, IL: The Manual Arts Press, 1937.
- Bonser, Frederick G. "Industrial Education in Present School Problems." School and Society, Vol. 4, No. 87 (August, 1916), pp. 318-325.
- Boyer, E. L. High School: A Report on Secondary Education in America. (The Carnegie Foundation for the Advancement of Teaching). New York, NY: Harper and Row, 1983.
- Council of Chief State School Officers. Responsibilities of State Departments of Education for Teacher Education. Washington, DC: Council of Chief State School Officers, 1954.
- Edgerton, A. H. "Industrial Arts and Prevocational Education in Our Intermediate and Junior-high Schools." Industrial Arts Magazine, Vol. 10, No. 10 (October, 1921), pp. 365-370.
- Educational Testing Service. NTE Programs: Bulletin of Information. Princeton, NJ: Educational Testing Service, 1989-90.

- Educational Testing Service. The PPST Guide. Princeton, NJ: Educational Testing Service, 1986.
- Floden, Robert E. "Analogy and Credentialing." In John Sikula (Ed.), Action in Teacher Education. Reston, VA: The Association of Teacher Educators, 1979.
- Florida State Department of Education. A Brief Guide to Teaching Industrial Arts in the Secondary Schools. Tallahassee, FL: State Department of Education, 1948.
- Gardner, William E. and Palmer, John R. Certification and Accreditation: Background, Issue, Analysis, and Recommendations. Washington, DC: U.S. Department of Education, 1982.
- Gollnick, Donna M. and Kundel, Richard C. "The Reform of National Accreditation." Phi Delta Kappan, Vol. 68, No. 4 (December, 1986), pp. 310-314.
- Herschbach, Dennis R. "The Roots of Industrial Arts: Late 19th Century Social Reform" Man/Society Technology, Vol. 39, No. 2 (November, 1979), pp. 10-14.
- Householder, D. Review and Evaluation of Curriculum in Industrial Arts Education. Bloomington, IL: McKnight Publishing Company, 1972.
- Householder, D. "The Emerging Curriculum" The Technology Teacher. (Special Issue, March, 1989), pp. 11-14.
- Hunt, DeWitt. "History of the American Industrial Arts Association." Alexandria, VA: American Industrial Arts Association, 1960.
- International Technology Education Association. Technology Education--Perspective on Implementation. Reston, VA: International Technology Education Association, 1985.
- Key, J. P. Research Design. Stillwater, OK: Oklahoma State University, 1974.
- Kinney, Lucien B. Certification in Education. Engle Cliffs, NJ: Prentice Hall, 1964.
- LaPorte, James E. "Thoughts on Why We Haven't Changed." The Journal of Epsilon Pi Tau, Vol. 8, No. 2 (Fall, 1982), pp. 75-79.
- Lauda, Donald P. "Technology Education." In William H. Kemp and Anthony E. Schwaller (Eds.). Instructional Strategies for Technology Education. Mission Hills, CA: Glenco Publishing Company, 1988.
- Lux, Donald G. "Teach Them How to Solve Problems." Industrial Arts and Vocational Education, Vol. 48, No. 5 (May, 1959), pp. 147-150.

- Lux, Donald G. "Industrial Arts Redirected." Richard Barella and Thomas Wright (Eds.). An Interpretative History of Industrial Arts: The Interrelationship of Society, Education, and Industrial Arts. Bloomington, IN: McKnight Publishing Company, 1981.
- Mastain, Richard K. (Ed.). The NASDTEC Manual. Sacramento, CA: The National Association of State Directors of Teacher Education and Certification, 1988.
- McCrorry, David L. Technology Education: Industrial Arts in Transition. A Review and Synthesis of the Reserach, fourth edition. Information Series No. 325. Washington, DC: American Vocational Association, 1987.
- Micheels, William J. The Minnesota Plan for Industrial Arts Teacher Education. Bloomington, IL: McKnight and McKnight, 1958.
- Montana Office of Public Instruction. Questions and Answers on Certification of Montana Teachers, Administrators, and Specialists. Helena, MT: Office of Public Instruction, 1989.
- National Association of State Directors of Teacher Education and Certification. 1989 Directory. Seattle, WA: NASDTEC, 1989.
- National Commission on Excellence in Education. A Nation at Risk: Imperatives for Education Reform. Washington, DC: U.S. Department of Education, 1983.
- National Science Board Commission on Precollege Education in Mathematics, Science and Technology. Educating Americans for the 21st Century. Washington, DC: The National Science Foundation, 1983.
- Oklahoma State Department of Vocational and Technical Education. Industrial Arts/Technology Education Programs. Stillwater, OK: Oklahoma State Department of Vocational and Technical Education, 1985.
- Peckham, Susanne. "What is Technology Education?" School Shop, Vol. 49, No. 2 (September, 1989), pp. 15-17.
- Proffitt, Maris M. Industrial Arts: Its Interpretation in American Schools. U.S. Department of the Interior, Office of Education, Bulletin No. 34. Washington, DC: U.S. Government Printing Office, 1937.
- Rudner, Lawrence M. and Thomas E. Eissenberg. "Standard Setting Practices for Teacher Tests." (Paper presented at the Annual Meeting of the National Council on Measurement in Education. New Orleans, LA, April 6-8, 1988.)
- Sanders, Mark. "Transitioning Quality Industrial Arts into Technology Education." The Technology Teacher, Vol. 45, No. 5 (November, 1985), pp. 27-29.

- Scherer, Marge. "Who's Afraid of Teacher Competency Tests?" Instructor, Vol. 92, No. 6 (February, 1983), pp. 48-50, 52, 59.
- Schmitt, Marshall L. Industrial Arts. Washington, DC: U.S. Government Printing Office, 1961.
- Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York, NY: McGraw Hill Book Company, 1956.
- Snyder, J. F. and Hales, J. A. Jackson's Mill Industrial Arts Curriculum Theory. Charleston, WV: Department of Education, 1981.
- Sredl, Henry J. "Evolution of Industrial Arts to 1920." The Journal of Industrial Arts Education, Vol. 25, No. 1 (January-February, 1966), pp. 22-23.
- Sredl, Henry J. "Industrial Arts in the 1920's." Journal of Industrial Arts Education, Vol. 25, No. 2 (March-April, 1966), pp. 32-36.
- Sredl, Henry J. "Industrial Arts Education." The Journal of Industrial Arts Education, Vol. 25, No. 3 (May-June, 1966), pp. 32-36.
- Sredl, Henry J. "Years of Famine, Years of Growth." The Journal of Industrial Arts Education, Vol. 26, No. 2 (January-February, 1967), pp. 30-22.
- Sredl, Henry J. "Industrial Arts in the 1950's." Journal of Industrial Arts Education, Vol. 26, No. 2 (March-April, 1967), pp. 53-57.
- Standards for State Approval of Teacher Education. Salt Lake City, UT: The National Association of State Directors of Teacher Education and Certification, 1989.
- Starkweather, Kendell N. (Ed.). "A Journal of the International Technology Education Association." The Technology Teacher, Vol. 45, No. 2 (November, 1985), cover.
- Starkweather, Kendell N. "The Technology Education Thrust: Its Status and Opportunities." The Technology Teacher, Vol. 45, No. 1 (September-October, 1986), pp. 3-8.
- State of Ohio State Board of Education. Teacher Education and Certification Standards. Columbus, OH: Department of Education, 1987.
- Task Force on Education for Economic Growth. Action for Excellence: A Comprehensive Plan to Improve our Nation's Schools. Washington, DC: Education Commission of the States, 1983.
- The Condition of Teaching. Teacher Education and Certification. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching, 1983.

- Turney, B. and Robb, G. Research in Education: An Introduction. Hinsdale, IL: Dryden Press, 1971.
- Van Dalen, Deobold B. Understanding Educational Research. New York, NY: McGraw Hill Book Company, 1979.
- Warner, William E. "Industrial Arts Teacher Education, Invitation to A National Conference." Columbus, OH: Epsilon Pi Tau, 1939.
- Warner, William E. A Curriculum to Reflect Technology. Columbus, OH: The Ohio State University, Teacher Education Program, 1947.

APPENDIXES

APPENDIX A

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APPENDIX B

DATA ORGANIZATION INSTRUMENT

STATE**I. Pre-certification Requirements**

- A. Degree:
- B. General Education Hours:
- C. Specialty Area Hours:
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Graphics
 - Electricity/Electronics
 - Energy/Power
 - Drafting
 - Woodworking
 - Material/Processes
 - Crafts
 - Other:
- E. Professional Hours:
- F. Experience:

II. Certification Requirements

- A. Certificate Title:
- B. Certification Area:
- C. Grade Level:
- D. Certification Fee:
- E. Competency Test:
- F. Other Requirements:

III. First Level Renewal

- A. Certificate Term:
- B. Additional Degree:
- C. Requirements:

IV. Second Level Certificate

- A. Certificate Title:
- B. Certificate Term:
- C. Degree Required:
- D. Previous Certificate:
- E. Experience:
- F. Other Restrictions:
- G. Renewal:

V. Third Level

- A. Certificate Title:
- B. Certificate Term:
- C. Degree Required:
- D. Previous Certificate:
- E. Experience:
- F. Other Requirements:
- G. Renewal:

APPENDIX C

REQUEST TO PARTICIPATE



Oklahoma State University

SCHOOL OF OCCUPATIONAL AND ADULT EDUCATION
COLLEGE OF EDUCATION

STILLWATER, OKLAHOMA 74078-0406
CLASSROOM BUILDING 406
(405) 744-6275

January 31, 1990

^[NAME]
^[STREET]
^[TOWN, STATE, ZIP]

Dear ,

I am in the process of collecting data concerning teacher certification requirements for the field of Industrial Arts/Technology Education. My objective is to compile a comprehensive document that will include certification criteria for Industrial Arts/Technology Education for each state.

A review of the current literature indicates that there is a need to update this information. Since the area of Industrial Arts/Technology Education is rapidly changing, current certification information would be an asset not only to state agencies but also to colleges and universities.

Would you please use the enclosed envelope to send me a copy of the current requirements for [State]. The focus of the study is on the requirements for the following types (or equivalent) of certification:

Temporary
Provisional
Standard

Please include the documentation that lists the requirements for General Education, Specialty Area, and Professional Education in the field of Industrial Arts/Technology Education only.

Sincerely,

Gary Bell
Graduate Research Associate

Ray Sanders, Assistant Professor
Thesis Advisor

GB/kp



APPENDIX D

FOLLOW-UP LETTER TO NON-RESPONDENTS



Oklahoma State University

SCHOOL OF OCCUPATIONAL AND ADULT EDUCATION
COLLEGE OF EDUCATION

STILLWATER, OKLAHOMA 74078-0406
CLASSROOM BUILDING 406
(405) 744-6275

March 3, 1990

^<NAME>
^<BUILDING>
^<STREET>
^<TOWN, STATE, ZIP>

Dear ,

In a letter dated January 31, I requested a copy of the current certification standards in Industrial Arts and/or Technology Education for [State]. I am especially interested in the specific requirements for the following (or equivalent) types of certification:

Temporary
Provisional
Standard

Would you please use the enclosed envelope to send me a copy of those standards. It is important to me and to the profession that [State] be included in this national study.

Sincerely,

Gary Bell
Graduate Research Associate

Ray Sanders, Assistant Professor
Thesis Advisor

GB/kp



Celebrating the Past . . . Preparing for the Future

APPENDIX E

FINDINGS

ALABAMA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 60
- C. Specialty Area Hours: 39
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Construction
 - Graphics
 - Electricity/Electronics
 - Energy/Power
 - Drafting
- E. Professional Hours: 36
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Class B
- B. Certification Area: Industrial Arts
- C. Grade Level: N-12
- D. Certification Fee: \$10.00
- E. Competency Test: None
- F. Other Requirements: None

III. First Level Renewal

- A. Certificate Term: 8 years
- B. Additional Degree: None
- C. Requirements: 4 years experience or 12 college hours

IV. Second Level Certificate

- A. Certificate Title: Class A
- B. Certificate Term: 10 years
- C. Degree Required: Masters
- D. Previous Certificate: Must hold Class B
- E. Experience: 1 year
- F. Other Restrictions: None
- G. Renewal: 5 years experience or 12 college hours

V. Third Level

- A. Certificate Title: Class AA
- B. Certificate Term: 12 years
- C. Degree Required: Masters
- D. Previous Certificate: Class A
- E. Experience: 1 year
- F. Other Requirements: None
- G. Renewal: 6 years experience or 12 college hours

ALASKA

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: University Discretion
 - D. Specified Areas: None
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching

- II. Certification Requirements
 - A. Certificate Title: Type A Regular
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 7-12
 - D. Certification Fee: \$100.00
 - E. Competency Test: None

- III. First Level Renewal
 - A. Certificate Term: 5 years
 - B. Additional Degree: None
 - C. Requirements: renewable with 6 years experience

- IV. Second Level Certificate
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Restrictions: None
 - G. Renewal: -

- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Requirements: -
 - G. Renewal: -

ARIZONA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 30
- D. Specified Areas: None
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Temporary Secondary
- B. Certification Area: Industrial Arts
- C. Grade Level: 7-12
- D. Certification Fee: \$20.00
- E. Competency Test: Arizona Teacher Proficiency Exam

III. First Level Renewal

- A. Certificate Term: 8 years
- B. Additional Degree: None
- C. Requirements: Non-renewable

IV. Second Level Certificate

- A. Certificate Title: Standard Secondary
- B. Certificate Term: 6 years
- C. Degree Required: Masters or 40 graduate hours
- D. Previous Certificate: Temporary
- E. Experience: None
- F. Other Restrictions: -
- G. Renewal: 6 years teaching or 5 hours

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

ARKANSAS**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 48
- C. Specialty Area Hours: 30
- D. Specified Areas:
 - Graphics
 - Electricity/Electronics
 - Energy/Power
 - Drafting
 - Woodworking
 - Metalworking
 - Crafts
- E. Professional Hours: 18
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Standard
- B. Certification Area: Exploratory Industrial Technology Education
- C. Grade Level: 7-12
- D. Certification Fee: None
- E. Competency Test: NTE PK

III. First Level Renewal

- A. Certificate Term: 6 years (B)/10 years (M)
- B. Additional Degree: None
- C. Requirements: Renewable with 2 years experience or 6 hours

IV. Second Level Certificate

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Restrictions: -
- G. Renewal: -

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

CALIFORNIA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: University Discretion
- D. Specified Areas: None
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: 5 year preliminary
- B. Certification Area: Industrial Technology Education
- C. Grade Level: PK-Adult
- D. Certification Fee: \$98.50
- E. Competency Test: CBEST

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Non-renewable

IV. Second Level Certificate

- A. Certificate Title: 5 year Professional
- B. Certificate Term: 5 years
- C. Degree Required: Fifth year or 30 hours
- D. Previous Certificate: Preliminary
- E. Experience: None
- F. Other Restrictions: -
- G. Renewal: 150 clock hours and 1/2 year experience

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

COLORADO

I. Pre-certification Requirements

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: University Discretion
- D. Specified Areas:
 - Manufacturing
 - Construction
 - Graphics
 - Energy/Power
 - Other: Safety
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: General Teacher
- B. Certification Area: Industrial Arts
- C. Grade Level: 7-12
- D. Certification Fee: \$45.00
- E. Competency Test: California Achievement Test

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 hours

IV. Second Level Certificate

- A. Certificate Title: Professional Teacher
- B. Certificate Term: 5 years
- C. Degree Required: Masters
- D. Previous Certificate: General Teacher
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: 6 hours

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

CONNECTICUT

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: 45
 - C. Specialty Area Hours: 35
 - D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Other: General Lab
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching
- II. Certification Requirements
 - A. Certificate Title: Initial
 - B. Certification Area: Technology Education
 - C. Grade Level: PK-12
 - D. Certification Fee: \$18.00
 - E. Competency Test: Connecticut Basic Skills Test and NTE Specialty
- III. First Level Renewal
 - A. Certificate Term: 1 year
 - B. Additional Degree: None
 - C. Requirements: Renewable
- IV. Second Level Certificate
 - A. Certificate Title: Provisional
 - B. Certificate Term: 5 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Initial
 - E. Experience: 3 years
 - F. Other Restrictions: -
 - G. Renewal: Non-renewable
- V. Third Level
 - A. Certificate Title: Professional
 - B. Certificate Term: 5 years
 - C. Degree Required: Masters or 30 above Bachelor
 - D. Previous Certificate: Provisional
 - E. Experience: 3 years
 - F. Other Requirements: -
 - G. Renewal: 9 continuing education units

DELAWARE

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: 30
 - D. Specified Areas:
 - Manufacturing
 - Construction
 - Graphics
 - Electricity/Electronics
 - Energy/Power
 - E. Professional Hours: 15
 - F. Experience: Student Teaching
- II. Certification Requirements
 - A. Certificate Title: Initial
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 5-12
 - D. Certification Fee: None
 - E. Competency Test: PPST
- III. First Level Renewal
 - A. Certificate Term: 1 year
 - B. Additional Degree: None
 - C. Requirements: Renewable
- IV. Second Level Certificate
 - A. Certificate Title: Professional
 - B. Certificate Term: 5 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Initial
 - E. Experience: 3 years
 - F. Other Restrictions: -
 - G. Renewal: Renewable
- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Requirements: -
 - G. Renewal: -

DISTRICT OF COLUMBIA

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: University Discretion
 - D. Specified Areas: None
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching or 1 year experience

- II. Certification Requirements
 - A. Certificate Title: Initial
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 5-12
 - D. Certification Fee: None
 - E. Competency Test: PPST

- III. First Level Renewal
 - A. Certificate Term: 1 year
 - B. Additional Degree: None
 - C. Requirements: Renewable

- IV. Second Level Certificate
 - A. Certificate Title: Professional
 - B. Certificate Term: 5 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Initial
 - E. Experience: 3 years
 - F. Other Restrictions: -
 - G. Renewal: Renewable

- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Requirements: -
 - G. Renewal: -

FLORIDA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 30
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Construction
 - Electricity/Electronics
 - Energy/Power
 - Drafting
 - Other: Robotics/Laser/Fiber Optics
- E. Professional Hours: 20
- F. Experience: Student Teaching plus Florida Beginning Teacher Program

II. Certification Requirements

- A. Certificate Title: Professional
- B. Certification Area: Industrial Arts/Technology Education
- C. Grade Level: 6-12
- D. Certification Fee: \$20.00
- E. Competency Test: Florida Teacher Certification Exam (FTCE)

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 hours or 120 staff development units

IV. Second Level Certificate

- A. Certificate Title: -
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Restrictions: -
- G. Renewal: -

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

GEORGIA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 60 quarter hours
- C. Specialty Area Hours: 50 quarter hours
- D. Specified Areas:
 - Transportation
 - Communication
 - Graphics
 - Energy/Power
- E. Professional Hours: 40 quarter hours
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Level Four
- B. Certification Area: Industrial Arts
- C. Grade Level: 7-12
- D. Certification Fee: None
- E. Competency Test: State Teacher Certification Test

III. First Level Renewal

- A. Certificate Term: 3 years
- B. Additional Degree: None
- C. Requirements: Renewable

IV. Second Level Certificate

- A. Certificate Title: Level Five
- B. Certificate Term: 5 years
- C. Degree Required: Masters
- D. Previous Certificate: Level Four
- E. Experience: None
- F. Other Restrictions: -
- G. Renewal: 10 quarter hours

V. Third Level

- A. Certificate Title: Level Six
- B. Certificate Term: 5 years
- C. Degree Required: Education Specialist
- D. Previous Certificate: Level Five
- E. Experience: 3 years
- F. Other Requirements: -
- G. Renewal: 10 quarter hours

HAWAII**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: University Discretion
- D. Specified Areas: University Discretion
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching plus 2 years probation

II. Certification Requirements

- A. Certificate Title: Initial Basic Certification
- B. Certification Area: Industrial Arts
- C. Grade Level: K-12
- D. Certification Fee: None
- E. Competency Test: NTE Core and Speciality

III. First Level Renewal

- A. Certificate Term: 2 years
- B. Additional Degree: None
- C. Requirements: Non-renewable

IV. Second Level Certificate

- A. Certificate Title: Basic Teacher Certification
- B. Certificate Term: Continuing
- C. Degree Required: Baccalaureate plus 30 hours
- D. Previous Certificate: Initial-Must hold
- E. Experience: 2 years
- F. Other Restrictions: Successful Probation
- G. Renewal: Life of employment

V. Third Level

- A. Certificate Title: Professional
- B. Certificate Term: Life
- C. Degree Required: Fifth year program
- D. Previous Certificate: Initial
- E. Experience: 2 years
- F. Other Requirements: Successful Probation
- G. Renewal: Life

IDAHO**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 30
- D. Specified Areas:
 - Electricity/Electronics
 - Drafting
 - Woodworking
 - Metalworking
- E. Professional Hours: 20
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Standard
- B. Certification Area: Industrial Arts
- C. Grade Level: 6-12
- D. Certification Fee: \$35.00
- E. Competency Test: NTE Core Battery

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 years

IV. Second Level Certificate

- A. Certificate Title: Advanced
- B. Certificate Term: -
- C. Degree Required: Masters
- D. Previous Certificate: Standard
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: 6 hours

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

ILLINOIS**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 42
- C. Specialty Area Hours: 32
- D. Specified Areas: None
- E. Professional Hours: 16
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Standard
- B. Certification Area: Industrial Arts
- C. Grade Level: 6-12 or K-12
- D. Certification Fee: \$25.00
- E. Competency Test: State Teacher Certification Test

III. First Level Renewal

- A. Certificate Term: 4 years
- B. Additional Degree: None
- C. Requirements: Renewable

IV. Second Level Certificate

- A. Certificate Title: None
- B. Certificate Term: 5 years
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Restrictions: -
- G. Renewal: -

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

INDIANA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 40
- C. Specialty Area Hours: 52
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
- E. Professional Hours: 24
- F. Experience: Student Teaching plus Mentorship

II. Certification Requirements

- A. Certificate Title: Standard License
- B. Certification Area: Industrial Technology Education
- C. Grade Level: K-12
- D. Certification Fee: \$15.00
- E. Competency Test: NTE Core and Speciality

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 years

IV. Second Level Certificate

- A. Certificate Title: Professional License
- B. Certificate Term: 10 years initial and 5 years after
- C. Degree Required: Masters
- D. Previous Certificate: Standard
- E. Experience: 5 years
- F. Other Restrictions: -
- G. Renewal: 6 hours

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

IOWA

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: 24
 - D. Specified Areas:
 - Manufacturing
 - Transportation
 - Construction
 - Graphics
 - Energy/Power
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching

- II. Certification Requirements
 - A. Certificate Title: Provisional
 - B. Certification Area: Industrial Technology
 - C. Grade Level: 7-12
 - D. Certification Fee: \$15.00
 - E. Competency Test: None

- III. First Level Renewal
 - A. Certificate Term: 2 years
 - B. Additional Degree: None
 - C. Requirements: Renewable 1 time

- IV. Second Level Certificate
 - A. Certificate Title: Educational
 - B. Certificate Term: 5 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Provisional
 - E. Experience: 2 years
 - F. Other Restrictions: -
 - G. Renewal: 8 hours

- V. Third Level
 - A. Certificate Title: Professional
 - B. Certificate Term: 5 years
 - C. Degree Required: Masters
 - D. Previous Certificate: Educational
 - E. Experience: 5 years
 - F. Other Requirements: -
 - G. Renewal: 6 hours

KANSAS**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: University Discretion
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Energy/Power
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Initial Certificate
- B. Certification Area: Industrial Arts
- C. Grade Level: 7-12
- D. Certification Fee: \$24.00
- E. Competency Test: NTE PK; PPST

III. First Level Renewal

- A. Certificate Term: 3 years
- B. Additional Degree: None
- C. Requirements: Renewable with 1 year experience and 8 hours

IV. Second Level Certificate

- A. Certificate Title: 5 year certificate
- B. Certificate Term: 5 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: Initial
- E. Experience: 2 years
- F. Other Restrictions: -
- G. Renewal: 8 hours or 160 in-service points

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

KENTUCKY**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 45
- C. Specialty Area Hours: 48
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Energy/Power
- E. Professional Hours: 23
- F. Experience: Student Teaching plus first year with committee

II. Certification Requirements

- A. Certificate Title: Provisional-Eligible
- B. Certification Area: Industrial Education
- C. Grade Level: 9-12
- D. Certification Fee: None
- E. Competency Test: NTE Core and Speciality

III. First Level Renewal

- A. Certificate Term: 1 year
- B. Additional Degree: None
- C. Requirements: Restricted by Committee

IV. Second Level Certificate

- A. Certificate Title: Provisional
- B. Certificate Term: 4 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: Provisional-Eligible
- E. Experience: 1 year
- F. Other Restrictions: Internship
- G. Renewal: 15 hours

V. Third Level

- A. Certificate Title: Standard
- B. Certificate Term: 5 years
- C. Degree Required: Masters
- D. Previous Certificate: Provisional
- E. Experience: 5 years
- F. Other Requirements: -
- G. Renewal: Renewable

LOUISIANA

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: 46
 - C. Specialty Area Hours: 48
 - D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Graphics
 - Electricity/Electronics
 - Energy/Power
 - Drafting
 - Woodworking
 - Metalworking
 - Material/Processing
 - E. Professional Hours: 27
 - F. Experience: Student Teaching
- II. Certification Requirements
 - A. Certificate Title: Standard-Type C
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 6-12
 - D. Certification Fee: \$55.00
 - E. Competency Test: NTE Core
- III. First Level Renewal
 - A. Certificate Term: 3 years
 - B. Additional Degree: None
 - C. Requirements: Renewable with 6 years
- IV. Second Level Certificate
 - A. Certificate Title: Type B
 - B. Certificate Term: Continuing
 - C. Degree Required: Baccalaureate plus 30 hours
 - D. Previous Certificate: Type C
 - E. Experience: 3 years
 - F. Other Restrictions: -
 - G. Renewal: Experience or 6 hours
- V. Third Level
 - A. Certificate Title: Standard-Type A
 - B. Certificate Term: Continuing
 - C. Degree Required: Masters
 - D. Previous Certificate: Type B
 - E. Experience: 5 years
 - F. Other Requirements: -
 - G. Renewal: Experience or 6 hours

MAINE

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: 36
 - D. Specified Areas: None
 - E. Professional Hours: 24
 - F. Experience: Student Teaching
- II. Certification Requirements
 - A. Certificate Title: Provisional
 - B. Certification Area: Industrial Arts
 - C. Grade Level: K-12
 - D. Certification Fee: None
 - E. Competency Test: NTE Core
- III. First Level Renewal
 - A. Certificate Term: 2 years
 - B. Additional Degree: None
 - C. Requirements: Renewable with recommendation
- IV. Second Level Certificate
 - A. Certificate Title: Professional
 - B. Certificate Term: 5 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Provisional
 - E. Experience: 2 years
 - F. Other Restrictions: Improvement Plan
 - G. Renewal: Recommendation from school
- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Requirements: -
 - G. Renewal: -

MARYLAND**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 36
- D. Specified Areas:
 - Manufacturing
 - Communication
 - Construction
 - Energy/Power
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Standard Professional Certificate
- B. Certification Area: Industrial Arts
- C. Grade Level: 5-12
- D. Certification Fee: \$10.00
- E. Competency Test: NTE Core and Speciality

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable one time with 6 hours

IV. Second Level Certificate

- A. Certificate Title: Advanced Professional Certificate
- B. Certificate Term: 10 years
- C. Degree Required: Baccalaureate plus 30 hours
- D. Previous Certificate: Standard
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: Renewable

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

MASSACHUSETTS**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 36
- D. Specified Areas:
 - Manufacturing
 - Construction
 - Graphics
 - Electricity/Electronics
 - Energy/Power
- E. Professional Hours: 21
- F. Experience: Practicum-300 clock hours

II. Certification Requirements

- A. Certificate Title: Teacher
- B. Certification Area: Industrial Arts
- C. Grade Level: K-9 or 5-12
- D. Certification Fee: \$10.00
- E. Competency Test: None

III. First Level Renewal

- A. Certificate Term: Lifetime
- B. Additional Degree: None
- C. Requirements: N/A

IV. Second Level Certificate

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Restrictions: -
- G. Renewal: -

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

MICHIGAN**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 40
- C. Specialty Area Hours: 30
- D. Specified Areas: None
- E. Professional Hours: 20
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Provisional
- B. Certification Area: Industrial Arts
- C. Grade Level: 7-12
- D. Certification Fee: \$125.00
- E. Competency Test: None

III. First Level Renewal

- A. Certificate Term: 6 years
- B. Additional Degree: None
- C. Requirements: Renewable

IV. Second Level Certificate

- A. Certificate Title: Continuing Certificate
- B. Certificate Term: Continuing
- C. Degree Required: Baccalaureate plus 30 hours
- D. Previous Certificate: Provisional
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: Continuing for life

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

MINNESOTA

I. Pre-certification Requirements

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 1/3 Basic Program
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Energy/Power
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Two Year License
- B. Certification Area: Industrial Arts
- C. Grade Level: 5-12
- D. Certification Fee: \$40.00
- E. Competency Test: PPST

III. First Level Renewal

- A. Certificate Term: 2 years
- B. Additional Degree: None
- C. Requirements: Renewable with one year experience each term

IV. Second Level Certificate

- A. Certificate Title: Continuing License
- B. Certificate Term: 5 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: 2 year license
- E. Experience: 1 year
- F. Other Restrictions: -
- G. Renewal: 125 clock hours in-service

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

MISSOURI**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 22
- C. Specialty Area Hours: 36
- D. Specified Areas:
 - Graphics
 - Electrics/Electronics
 - Energy/Power
 - Drafting
 - Woodworking
 - Metalworking
 - Other: Plastics; Organization & Administration
- E. Professional Hours: 24
- F. Experience: Student Teaching plus Mentorship

II. Certification Requirements

- A. Certificate Title: Professional Certificate I
- B. Certification Area: Industrial Arts
- C. Grade Level: K-12
- D. Certification Fee: None
- E. Competency Test: None

III. First Level Renewal

- A. Certificate Term: 2 years
- B. Additional Degree: None
- C. Requirements: Non-renewable

IV. Second Level Certificate

- A. Certificate Title: Professional Certificate II
- B. Certificate Term: 3 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: PC I
- E. Experience: 2 years
- F. Other Restrictions: Growth Program plus 6 hours
- G. Renewal: Non-renewable

V. Third Level

- A. Certificate Title: Professional Certificate III
- B. Certificate Term: 5 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: PC II
- E. Experience: 5 years
- F. Other Requirements: Professional Growth Program plus 6 hours
- G. Renewal: 5 years teaching experience

MISSISSIPPI

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: 44
 - C. Specialty Area Hours: University Discretion
 - D. Specified Areas: None
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching plus one year experience

- II. Certification Requirements
 - A. Certificate Title: Provisional Class A
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 7-12
 - D. Certification Fee: None
 - E. Competency Test: NTE Core and Speciality

- III. First Level Renewal
 - A. Certificate Term: 1 year
 - B. Additional Degree: None
 - C. Requirements: Renewable one time-three person committee

- IV. Second Level Certificate
 - A. Certificate Title: Standard AA
 - B. Certificate Term: 1 year
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Provisional-must hold
 - E. Experience: 1 year
 - F. Other Restrictions: Meet Competencies
 - G. Renewal: Staff Development

- V. Third Level
 - A. Certificate Title: Standard AA
 - B. Certificate Term: 1 year
 - C. Degree Required: Masters
 - D. Previous Certificate: Standard AA
 - E. Experience: 1 year with Standard AA
 - F. Other Requirements: -
 - G. Renewal: Staff Development

MONTANA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 30
- D. Specified Areas: None
- E. Professional Hours: 16
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Standard Class 2
- B. Certification Area: Industrial Arts
- C. Grade Level: 5-12
- D. Certification Fee: \$30.00
- E. Competency Test: NTE Core

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with one year experience 4 hours

IV. Second Level Certificate

- A. Certificate Title: Professional Class I
- B. Certificate Term: 5 years
- C. Degree Required: Masters
- D. Previous Certificate: Standard
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: 1 year experience

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

NEBRASKA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 10-20
- C. Specialty Area Hours: 45
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Energy/Power
 - Other: Lab Management
- E. Professional Hours: 8-15
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Initial Teaching Certificate
- B. Certification Area: Industrial Technology
- C. Grade Level: 7-12
- D. Certification Fee: \$25.00
- E. Competency Test: PPST

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable

IV. Second Level Certificate

- A. Certificate Title: Standard
- B. Certificate Term: 7 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: Initial
- E. Experience: 2 year
- F. Other Restrictions: -
- G. Renewal: 2 years experience or 6 hours

V. Third Level

- A. Certificate Title: Professional
- B. Certificate Term: 10 years
- C. Degree Required: Masters
- D. Previous Certificate: Standard
- E. Experience: 2 years
- F. Other Requirements: -
- G. Renewal: 2 years experience or 6 hours

NEVADA

I. Pre-certification Requirements

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 36
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Construction
 - Electricity/Electronics
 - Energy/Power
 - Drafting
 - Other: Visual Communications
- E. Professional Hours: 22
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Secondary License
- B. Certification Area: Industrial Arts
- C. Grade Level: 7-12
- D. Certification Fee: \$75.00
- E. Competency Test: NTE PK; PPST

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Continuing

IV. Second Level Certificate

- A. Certificate Title: Professional Endorsement
- B. Certificate Term: 6 years
- C. Degree Required: Masters
- D. Previous Certificate: Secondary
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: 6 hours

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

NEW HAMPSHIRE

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: University Discretion
 - D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Energy/Power
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching
- II. Certification Requirements
 - A. Certificate Title: Beginning Educator Certificate
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 5-12
 - D. Certification Fee: \$25.00
 - E. Competency Test: None
- III. First Level Renewal
 - A. Certificate Term: 3 years
 - B. Additional Degree: None
 - C. Requirements: Renewable with 50 clock hours staff development
- IV. Second Level Certificate
 - A. Certificate Title: Experienced Education Certificate
 - B. Certificate Term: 3 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Beginning Education Certificate
 - E. Experience: 3 years
 - F. Other Restrictions: -
 - G. Renewal: 50 clock hours of staff development
- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Requirements: -
 - G. Renewal: -

NEW JERSEY

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: University Discretion
 - D. Specified Areas: None
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching

- II. Certification Requirements
 - A. Certificate Title: Instructor
 - B. Certification Area: Industrial Arts
 - C. Grade Level: K-12
 - D. Certification Fee: \$50.00
 - E. Competency Test: NTE Specialty

- III. First Level Renewal
 - A. Certificate Term: Life
 - B. Additional Degree: None
 - C. Requirements: N/A

- IV. Second Level Certificate
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Restrictions: -
 - G. Renewal: -

- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Restrictions: -
 - G. Renewal: -

NEW MEXICO

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: 24
 - D. Specified Areas: None
 - E. Professional Hours: 24
 - F. Experience: Student Teaching
- II. Certification Requirements
 - A. Certificate Title: Level I
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 7-12
 - D. Certification Fee: None
 - E. Competency Test: NTE Core
- III. First Level Renewal
 - A. Certificate Term: 3 years
 - B. Additional Degree: None
 - C. Requirements: Non-renewable
- IV. Second Level Certificate
 - A. Certificate Title: Level II
 - B. Certificate Term: 9 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Level I
 - E. Experience: None
 - F. Other Restrictions: -
 - G. Renewal: Verified competencies
- V. Third Level
 - A. Certificate Title: Level III
 - B. Certificate Term: 9 years
 - C. Degree Required: Masters
 - D. Previous Certificate: Level II
 - E. Experience: None
 - F. Other Requirements: -
 - G. Renewal: Verified competencies

NEW YORK**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 36
- D. Specified Areas: None
- E. Professional Hours: 12
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Provisional
- B. Certification Area: Industrial Arts
- C. Grade Level: N-12
- D. Certification Fee: \$25.00
- E. Competency Test: NTE Core Battery

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable

IV. Second Level Certificate

- A. Certificate Title: Permanent
- B. Certificate Term: Life
- C. Degree Required: Masters
- D. Previous Certificate: Provisional
- E. Experience: 2 years
- F. Other Restrictions: -
- G. Renewal: Life

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

NORTH CAROLINA

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: University Discretion
 - D. Specified Areas: None
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching plus 2 year probation

- II. Certification Requirements
 - A. Certificate Title: Initial Certificate
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 9-12
 - D. Certification Fee: \$30.00
 - E. Competency Test: NTE PK & Speciality

- III. First Level Renewal
 - A. Certificate Term: 2 years
 - B. Additional Degree: None
 - C. Requirements: Non-renewable

- IV. Second Level Certificate
 - A. Certificate Title: Continuing Certificate
 - B. Certificate Term: 5 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Initial-must hold
 - E. Experience: 2 years
 - F. Other Restrictions: -
 - G. Renewal: 10 hours

- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Requirements: -
 - G. Renewal: -

NORTH DAKOTA

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: University Discretion
 - D. Specified Areas: None
 - E. Professional Hours: 26
 - F. Experience: Student Teaching

- II. Certification Requirements
 - A. Certificate Title: Professional (2 year)
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 7-12
 - D. Certification Fee: \$5.00
 - E. Competency Test: None

- III. First Level Renewal
 - A. Certificate Term: 2 years
 - B. Additional Degree: None
 - C. Requirements: Renewable with 2 years in-state experience

- IV. Second Level Certificate
 - A. Certificate Title: Professional (5 year)
 - B. Certificate Term: 5 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Professional (2 year)-must hold
 - E. Experience: 2 years
 - F. Other Restrictions: -
 - G. Renewal: 4 hours and recent experience

- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Requirements: -
 - G. Renewal: -

OHIO

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: 30
 - C. Specialty Area Hours: 30
 - D. Specified Areas: None
 - E. Professional Hours: 24
 - F. Experience: Student Teaching

- II. Certification Requirements
 - A. Certificate Title: Provisional
 - B. Certification Area: Industrial Technology
 - C. Grade Level: 7-12
 - D. Certification Fee: \$2.00
 - E. Competency Test: NTE Core

- III. First Level Renewal
 - A. Certificate Term: 4 years
 - B. Additional Degree: None
 - C. Requirements: Renewable with 6 years

- IV. Second Level Certificate
 - A. Certificate Title: Professional Certificate
 - B. Certificate Term: 8 years
 - C. Degree Required: Masters
 - D. Previous Certificate: Provisional-must hold
 - E. Experience: 3 years
 - F. Other Restrictions: None
 - G. Renewal: 12 hours

- V. Third Level
 - A. Certificate Title: Permanent Certificate
 - B. Certificate Term: Continuing
 - C. Degree Required: Masters
 - D. Previous Certificate: Professional-must hold
 - E. Experience: 5 years
 - F. Other Requirements: Full time employment
 - G. Renewal: Continuing

OKLAHOMA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 50
- C. Specialty Area Hours: 40
- D. Specified Areas:
 - Communication
 - Energy/Power
 - Material/Processes
 - Other: General IA/TE & Student Organization
- E. Professional Hours: 30
- F. Experience: Student Teaching + First year with committee

II. Certification Requirements

- A. Certificate Title: License
- B. Certification Area: Industrial Arts/Technology Education
- C. Grade Level: 7-12
- D. Certification Fee: \$3.00
- E. Competency Test: Oklahoma Teacher Certification Exam

III. First Level Renewal

- A. Certificate Term: 1 years
- B. Additional Degree: None
- C. Requirements: Renewable one time

IV. Second Level Certificate

- A. Certificate Title: Standard Certificate
- B. Certificate Term: 5 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: License-must hold
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: Renewable

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

OREGON**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 30
- D. Specified Areas:
 - Graphics
 - Electricity/Electronics/
Material/Processes
 - Other: Mechanical Power
- E. Professional Hours: 24
- F. Experience: Student Teaching or one year experience

II. Certification Requirements

- A. Certificate Title: Basic Teaching Certificate
- B. Certification Area: Industrial Arts
- C. Grade Level: 5-12
- D. Certification Fee: \$35.00
- E. Competency Test: CBEST

III. First Level Renewal

- A. Certificate Term: 3 years
- B. Additional Degree: None
- C. Requirements: Renewable one time with 16 hours

IV. Second Level Certificate

- A. Certificate Title: Standard
- B. Certificate Term: 5 years
- C. Degree Required: Masters or Baccalaureate
- D. Previous Certificate: Basic
- E. Experience: 2 years
- F. Other Restrictions: Include 10 hours in endorsement
- G. Renewal: One year experience or 120 clock hours in professional development

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

PENNSYLVANIA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: University Discretion
- D. Specified Areas: None
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching + Mentorship

II. Certification Requirements

- A. Certificate Title: Instructional I
- B. Certification Area: Technology Education
- C. Grade Level: K-12
- D. Certification Fee: \$15.00
- E. Competency Test: NTE Core & Specialty

III. First Level Renewal

- A. Certificate Term: 6 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 years experience

IV. Second Level Certificate

- A. Certificate Title: Instructional II
- B. Certificate Term: Life
- C. Degree Required: Baccalaureate + 24 hours
- D. Previous Certificate: Instructional I -must hold
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: Permanent

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

RHODE ISLAND**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 36
- D. Specified Areas:
 - Construction
 - Graphics
 - Electricity/Electronics
 - Drafting
 - Woodworking
 - Metalworking
 - Other: Power Mechanics
- E. Professional Hours: 18
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Professional
- B. Certification Area: Industrial Arts
- C. Grade Level: K-12
- D. Certification Fee: \$25.00
- E. Competency Test: NTE Core

III. First Level Renewal

- A. Certificate Term: 3 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 years

IV. Second Level Certificate

- A. Certificate Title: 5 Year Professional
- B. Certificate Term: 5 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: Provisional
- E. Experience: 3 years in Rhode Island
- F. Other Restrictions: -
- G. Renewal: 9 hours

V. Third Level

- A. Certificate Title: Life Professional
- B. Certificate Term: Continuing
- C. Degree Required: Masters
- D. Previous Certificate: Professional 5
- E. Experience: 6 years with 3 years in Rhode Island
- F. Other Requirements: -
- G. Renewal: Continuing

SOUTH CAROLINA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 36
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Other: Computer Applications
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching + evaluation year

II. Certification Requirements

- A. Certificate Title: Professional
- B. Certification Area: Industrial Technology Education
- C. Grade Level: 9-12
- D. Certification Fee: None
- E. Competency Test: NTE PK

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 years

IV. Second Level Certificate

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Restrictions: -
- G. Renewal: -

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

SOUTH DAKOTA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 18
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Electricity/Electronics
 - Energy/Power
 - Other: Technology
- E. Professional Hours: 24
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Secondary Certification
- B. Certification Area: Industrial Arts/Technology
- C. Grade Level: 6-12
- D. Certification Fee: \$20.00
- E. Competency Test: None

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 years

IV. Second Level Certificate

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Restrictions: -
- G. Renewal: -

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

TENNESSEE

I. Pre-certification Requirements

- A. Degree: Baccalaureate
- B. General Education Hours: 45 quarter hours
- C. Specialty Area Hours: 45 quarter hours
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Graphics
 - Energy/Power
- E. Professional Hours: 18 quarter hours
- F. Experience: Student Teaching + 1st year probation

II. Certification Requirements

- A. Certificate Title: Probationary license
- B. Certification Area: Industrial Arts
- C. Grade Level: 7-12
- D. Certification Fee: None
- E. Competency Test: NTE Core & Specialty

III. First Level Renewal

- A. Certificate Term: 1 years
- B. Additional Degree: None
- C. Requirements: Non-renewable

IV. Second Level Certificate

- A. Certificate Title: Apprentice License
- B. Certificate Term: 3 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: Probationary-must hold
- E. Experience: 3 years
- F. Other Restrictions: Probation
- G. Renewal: Non-renewable

V. Third Level

- A. Certificate Title: Professional Life
- B. Certificate Term: 10 years
- C. Degree Required: Masters
- D. Previous Certificate: Probationary-must hold
- E. Experience: 3 years
- F. Other Requirements: -
- G. Renewal: Renewable with 8 quarter hours

TEXAS**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 60
- C. Specialty Area Hours: 48
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Energy/Power
 - Production
 - Visual Technology
- E. Professional Hours: 18
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Provisional
- B. Certification Area: Industrial Technology Education
- C. Grade Level: 6-12
- D. Certification Fee: \$20.00
- E. Competency Test: Exam for Certification of Educators in Texas (EXCET)

III. First Level Renewal

- A. Certificate Term: Life
- B. Additional Degree: None
- C. Requirements: N/A

IV. Second Level Certificate

- A. Certificate Title: Professional
- B. Certificate Term: Life
- C. Degree Required: Baccalaureate + 30 hours
- D. Previous Certificate: Provisional
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: Life

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

UTAH

- I. Pre-certification Requirements
 - A. Degree: Baccalaureate
 - B. General Education Hours: University Discretion
 - C. Specialty Area Hours: 69 quarter hours
 - D. Specified Areas: None
 - E. Professional Hours: University Discretion
 - F. Experience: Student Teaching
- II. Certification Requirements
 - A. Certificate Title: Basic Certificate
 - B. Certification Area: Industrial Arts
 - C. Grade Level: 6-12
 - D. Certification Fee: \$10.00
 - E. Competency Test: None
- III. First Level Renewal
 - A. Certificate Term: 4 years
 - B. Additional Degree: None
 - C. Requirements: Non-renewable
- IV. Second Level Certificate
 - A. Certificate Title: Standard
 - B. Certificate Term: 5 years
 - C. Degree Required: Baccalaureate
 - D. Previous Certificate: Basic-must hold
 - E. Experience: 2 years
 - F. Other Restrictions: Successful Experience
 - G. Renewal: 3 years experience or 6 hours
- V. Third Level
 - A. Certificate Title: None
 - B. Certificate Term: -
 - C. Degree Required: -
 - D. Previous Certificate: -
 - E. Experience: -
 - F. Other Requirements: -
 - G. Renewal: -

VERMONT**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: University Discretion
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Other: Safety
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Level I
- B. Certification Area: Technology Education
- C. Grade Level: 7-12
- D. Certification Fee: \$45.00
- E. Competency Test: None

III. First Level Renewal

- A. Certificate Term: 2 years
- B. Additional Degree: None
- C. Requirements: Continuing

IV. Second Level Certificate

- A. Certificate Title: Level II
- B. Certificate Term: 7 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: Level I
- E. Experience: 2 years
- F. Other Restrictions: -
- G. Renewal: Professional Development Plan progress

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

VIRGINIA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 48
- C. Specialty Area Hours: 42
- D. Specified Areas:
 - Transportation
 - Communication
 - Energy/Power
 - Other: Production
- E. Professional Hours: 12
- F. Experience: Student Teaching + Beginning Teacher Assistance Program

II. Certification Requirements

- A. Certificate Title: Provisional
- B. Certification Area: Industrial Technology Education
- C. Grade Level: 8-12
- D. Certification Fee: \$35.00
- E. Competency Test: NTE Core & Specialty

III. First Level Renewal

- A. Certificate Term: 2 years
- B. Additional Degree: None
- C. Requirements: Non-renewable

IV. Second Level Certificate

- A. Certificate Title: Collegiate Professional
- B. Certificate Term: 5 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: Provisional
- E. Experience: 2 years
- F. Other Restrictions: -
- G. Renewal: 6 hours

V. Third Level

- A. Certificate Title: Postgraduate Professional
- B. Certificate Term: 5 years
- C. Degree Required: Masters
- D. Previous Certificate: Collegiate Professional
- E. Experience: 3 years
- F. Other Requirement: -
- G. Renewal: 6 years

WASHINGTON**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: 30
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Other: Safety & Technology Education
- E. Professional Hours: 16
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Initial Certificate
- B. Certification Area: Industrial Arts
- C. Grade Level: 4-12
- D. Certification Fee: \$20.00
- E. Competency Test: None

III. First Level Renewal

- A. Certificate Term: 4 years
- B. Additional Degree: None
- C. Requirements: Renewable for 3 years with 10 hours

IV. Second Level Certificate

- A. Certificate Title: Continuing Certificate
- B. Certificate Term: 5 years
- C. Degree Required: Baccalaureate + 30 hours
- D. Previous Certificate: Initial
- E. Experience: 2 years
- F. Other Restrictions: Additional Endorsement Area
- G. Renewal: 150 clock hours inservice

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

WEST VIRGINIA**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: University Discretion
- C. Specialty Area Hours: University Discretion
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Energy/Power
- E. Professional Hours: University Discretion
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Provisional
- B. Certification Area: Industrial Arts/Technology Education
- C. Grade Level: 5-12
- D. Certification Fee: \$5.00
- E. Competency Test: W.V. Content Specialty Exam

III. First Level Renewal

- A. Certificate Term: 3 years
- B. Additional Degree: None
- C. Requirements: Renewable one time with 6 hours

IV. Second Level Certificate

- A. Certificate Title: Professional
- B. Certificate Term: 5 years
- C. Degree Required: Baccalaureate
- D. Previous Certificate: Provisional
- E. Experience: 3 years
- F. Other Restrictions: -
- G. Renewal: Masters or 30 above Baccalaureate

V. Third Level

- A. Certificate Title: Permanent
- B. Certificate Term: Continuing
- C. Degree Required: Masters
- D. Previous Certificate: Professional
- E. Experience: 3 years
- F. Other Requirements: -
- G. Renewal: Continuing

WISCONSIN

I. Pre-certification Requirements

- A. Degree: Baccalaureate
- B. General Education Hours: 1/3 program
- C. Specialty Area Hours: 34
- D. Specified Areas:
 - Manufacturing
 - Transportation
 - Communication
 - Construction
 - Energy/Power
- E. Professional Hours: 18
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Regular License
- B. Certification Area: Technology Education
- C. Grade Level: 6-12
- D. Certification Fee: \$75.00
- E. Competency Test: None

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with 6 years

IV. Second Level Certificate

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Restrictions: -
- G. Renewal: -

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

WYOMING**I. Pre-certification Requirements**

- A. Degree: Baccalaureate
- B. General Education Hours: 40
- C. Specialty Area Hours: 30
- D. Specified Areas:
 - Graphics
 - Electricity/Electronics
 - Energy/Power
 - Drafting
 - Woodworking
 - Metalworking
 - Other: Plastics
- E. Professional Hours: 24
- F. Experience: Student Teaching

II. Certification Requirements

- A. Certificate Title: Standard
- B. Certification Area: Industrial Technology Education
- C. Grade Level: 7-12
- D. Certification Fee: \$20.00
- E. Competency Test: None

III. First Level Renewal

- A. Certificate Term: 5 years
- B. Additional Degree: None
- C. Requirements: Renewable with 5 years

IV. Second Level Certificate

- A. Certificate Title: Professional
- B. Certificate Term: 10 years
- C. Degree Required: Masters
- D. Previous Certificate: Standard
- E. Experience: 5 years
- F. Other Restrictions: -
- G. Renewal: 10 years

V. Third Level

- A. Certificate Title: None
- B. Certificate Term: -
- C. Degree Required: -
- D. Previous Certificate: -
- E. Experience: -
- F. Other Requirements: -
- G. Renewal: -

VITA

Gary L. Bell

Candidate for the Degree of

Doctor of Education

Thesis: TEACHER CERTIFICATION REQUIREMENTS FOR TECHNOLOGY EDUCATION IN
THE UNITED STATES

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Duncan, Oklahoma, April 6, 1951, the son of
Homer C. and Shirley Bell; Married to Cheryl Nikkel, December
21, 1973; two sons, Ryan and Christopher.

Education: Graduated from Duncan High School, Duncan, Oklahoma,
May 16, 1969; received Bachelor of Science in Education degree
with a major/minor in Industrial Arts and a minor in Spanish
from Southwestern State College, Weatherford, Oklahoma, May,
1973; received Master of Education degree with an emphasis in
Industrial Arts from Southwestern Oklahoma State University,
Weatherford, Oklahoma, July, 1975; completed requirements for
Doctor of Education degree at Oklahoma State University in
Stillwater, Oklahoma, July, 1990.

Professional Experience: Instructor, Hobart Public Schools,
Hobart, Oklahoma, 1973-1983; Instructor, Southwestern Oklahoma
State University, Weatherford, Oklahoma, 1983-1989; Graduate
Teaching Associate, School of Occupational and Adult
Education, Oklahoma State University, Stillwater, Oklahoma,
1989-1990.

Professional Organizations: American Vocational Association,
Oklahoma Vocational Association, International Technology
Education Association, Oklahoma Technology Education
Association, Council for Technology Teacher Education,
Technology Education Collegiate Association, Oklahoma
Vocational Educators Professional Development Association,
Phi Delta Kappa.

Name: Gary L. Bell

Date of Degree: July, 1990

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: TEACHER CERTIFICATION REQUIREMENTS FOR TECHNOLOGY
EDUCATION IN THE UNITED STATES

Pages in Study: 144 Candidate for the Degree of Doctor of Education

Major Field: Occupational and Adult Education

Scope and Method of Study: The purpose of this study was to determine state requirements for technology education teacher certification and to identify the minimum criteria for certifying and recertifying technology education teachers in the United States. Specific research questions were: (1) What were the minimum requirements for a standard (or equivalent) certificate in technology education in each state? (2) What were the minimum requirements for recertification of a standard (or equivalent) certificate in technology education in each state? (3) Were there different certification requirements for industrial arts and technology education in the same state? Certification documentation was collected from each state department of education and certification requirements were determined based on those state regulations. A telephone interview with each state department certification director confirmed the requirements for each state.

Findings and Conclusions: An analysis of the data revealed that no two states were exactly alike concerning technology education teacher certification and recertification. The only universal requirement for certification was a baccalaureate degree. It was concluded that there was no nationally accepted model for technology education teacher certification nor was there a nationally accepted curriculum model for technology education. Nineteen states have changed the name from industrial arts to a title that includes the word technology. Three states use technology in the certificate title but do not require study in the Jackson's Mill content organizers. There was no evidence that dual certification for industrial arts and technology education exists in the same state.

ADVISER'S APPROVAL _____