

NOCTI OCCUPATIONAL COMPETENCY EXAMINATION  
SCORES AND THEIR RELATIONSHIP  
TO TEACHER EFFECTIVENESS

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## PREFACE

The purpose of the study was to determine the degree of relationship between NOCTI occupational examination scores and teaching effectiveness as rated by school administrators and Trade and Industrial state supervisors as to instructional productivity, proficiency and quality. The population consisted of 35 carpentry candidates who completed the NOCTI examination and were employed as teachers for one or more years. Six research questions were developed to assess the relationship between written and performance test scores and teacher classroom effectiveness. Pearson's Product-moment Correlation technique was used to test the relationship between the variables.

I wish to express my sincere appreciation to those who assisted me in this work. The cooperation of the school administrators and Trade and Industrial state supervisors was tremendous. A special thanks goes to Dr. Francis Tuttle for his support in the study. A special appreciation is extended to Dr. Craig Anderson and Dr. Clyde Knight, my major advisers, who were extremely helpful in guiding me through this endeavor. I am also thankful to the other committee members, Dr. Zed DeVaughan, Dr. Kenneth St. Clair, and Dr. Arch Alexander for their advisement in the course of this work. I also want to express appreciation to Mr. Todd Zdorkowski for his help with the development of the survey instrument and the computer analysis of the data. My wife Lois Sharpton, family and friends deserve my deepest appreciation for their constant support, moral encouragement, and understanding.

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## CHAPTER I

### INTRODUCTION

The national goals of Trade and Industrial education (T & I) remain as viable today as in the past. The national goals provide a general direction and focus attention on what T & I is trying to accomplish. The need to meet the demand for skilled workers in today's work force continually needs monitoring. There is a critical shortage of skilled workers. At the same time unemployment is considered a serious problem to the economy. According to Lewis and Fraser (1984) T & I must be cognizant of the changes that new technologies will have on the economy today and in the future. As industry develops and utilizes new technology to increase productivity T & I must be responsive to these changes. Previously accepted skills will become obsolete or need revision. The goal to continue to improve the quality of T & I programs is the root of survival for the challenges facing education today.

Pipho (1984) states that educational reform has acquired momentum at all levels of government and educational agencies. State plans are being formulated to attempt to improve the quality of standards of educational attainment in our schools. Most state reform efforts have several common goals. The two most frequent goals relating to student performance are the need for an effective teaching staff and strengthening of teacher certification.

In a recent Gallup poll (1984) 45 percent of the high school

teachers surveyed responded that the school where they taught has difficulty in getting good teachers and 55 percent of the schools have difficulty in keeping good teachers. A question with many answers is "What constitutes a good teacher?" Vocational supervisors and administrators of trade and industrial education programs in the state of Oklahoma continue to stress the importance of subject matter knowledge as a major criterion for teacher employability.

One of the certification requirements, set by the Oklahoma State Department of Vocational and Technical Education, for new T & I teachers is the satisfactory completion of a teacher occupational competency test (TOCT) in their area of specialty. An acceptable score on the examination is considered an indication they have acquired the ability to learn and have mastered subject knowledge in their field. This research paper will attempt to address whether occupational competency tests are an indication of teacher effectiveness.

Gage (1984) refers to teaching as an art; not a fine art but an instrumental or practical art. He concludes that as an instrumental art, teaching departs from recipes, formulas, and algorithms. Under this concept the expectations of teaching are:

It requires improvisation, spontaneity, the handling of a vast array of considerations of form, style, pace, rhythm, and appropriateness in ways so complex that even computers must lose the way, just as they cannot achieve what a mother does with a five-year old (p. 88).

Gage raised the questions (1) "Is teacher education possible?" (2) "Are master teachers born rather than developed through the educational process?" (3) "Are teaching skills something that can be taught and learned with a reasonable investment of effort and skill?"

In a study of characteristics of master teachers, Bloom (1982)

identified master teachers as those having superior knowledge of the subject, demonstrated skill in teaching, ability to work with students and colleagues, and the ability to obtain demonstrable results. Cline (1977) suggests that competency examinations are receiving renewed attention as a means to measure knowledge of subject matter and ability to teach. Soar, Medly, and Coker (1983) stated that National Teacher Examinations (NTE) are being utilized as a method of teacher evaluation by several states. McDaniel (1977) reported that the federal district court upheld the right of South Carolina to use the NTE for certifying and determining pay scales of public school teachers. In a study of teacher attitudes Simms (1983) reported 75 percent of Oklahoma teachers taking competency examinations felt that results of the competency examination would not provide a good measure of the potential success of an individual's classroom performance.

Barlow (1967) stated that vocational education continues to stand firm on the concept that you cannot teach what you do not know. Barlow further stated that trade and industrial teachers have been evaluated for occupational competencies to some extent since the passage of the 1917 Smith-Hughes Act.

Panitz (1974) reported that because of a continual need for a valid and reliable competency test the National Occupational Competency Testing Institute (NOCTI) was organized in June, 1973. NOCTI is a nonprofit educational corporation representing a consortium of states.

According to Whitener (1983) over 6,000 Teacher Occupational Competency Examinations (TOCT) have been administered nationally by NOCTI since 1973. Knight (1984) stated that the teacher occupational competency tests developed and administered by NOCTI have been the

standard used for testing the trade skill competencies of Trade and Industrial non-degreed teachers in Oklahoma since 1974.

#### Statement of the Problem

A review of the literature indicated that personnel changes occur not only from the normal eight to ten percent annual attrition of staff but also advanced technology continues to create new positions in area vocational and technical schools. Since 1980, a satisfactory score on the NOCTI occupational competency exams has been utilized as criterion for approval for a new trade and industrial teacher's temporary Oklahoma teaching certificate. The NOCTI examination was developed to measure teacher trade skill competencies and is not intended to be used as a predictor of teacher effectiveness. The problem then is identified as the lack of information relating to the usefulness of NOCTI examination test scores as predictors of teaching effectiveness.

#### Need for the Study

One must assume that, when a teacher is hired as a replacement or because of a new position, the school wants the best qualified applicant. To make this selection the administrator needs to know if the applicants are competent in their knowledge of their specific occupational trade area and also if they will be effective in promoting student achievement. In addition to school administrators, T & I supervisors of the State Department of Vocational and Technical Education need predictive criteria for teacher certification, counseling, and staff development needs.

## The Purpose of the Research

The purpose of the study was to determine the degree of relationship between NOCTI occupational examination scores and teaching effectiveness as rated by school administrators and state supervisors as to instructional productivity, proficiency and quality.

## Research Questions

In order to determine the degree of relationship between NOCTI occupational examination scores and teaching effectiveness, the study attempted to answer the following questions:

1. To what extent is instructional productivity reflected in written occupational competency examination scores?
2. To what extent is instructional productivity reflected in performance occupational competency examination scores?
3. To what extent is instructional proficiency reflected in written occupational competency examination scores?
4. To what extent is instructional proficiency reflected in performance occupational competency examination scores?
5. To what extent is instructional quality reflected in written occupational competency examination scores?
6. To what extent is instructional quality reflected in performance occupational competency examination scores?

## Limitations

Limitations of this study were the degree to which the respondents answered the questions in an honest and unbiased manner. A further limitation was that only school administrators and state supervisors

were surveyed and evaluations of peers and students were not examined. An additional limitation of the study was that only the carpentry trade candidates were used.

#### Assumptions

1. It is assumed that carpentry candidates' scores were representative of all candidates.
2. It is assumed that school administrators' and state supervisors' responses were honest and unbiased.
3. It is assumed that the instrument used was adequate for rating teacher effectiveness.
4. It is assumed that school administrators' and state supervisors' opinions were important factors in evaluating teacher effectiveness.

#### Terms and Definitions

Candidate--A person who has taken a NOCTI occupational competency examination.

Competency--Demonstrated ability (including knowledge, skills or attitudes) to perform a specific task successfully to meet a specified standard.

Master Teacher--A professional, skilled teacher who maintains subject matter proficiency and knowledge in a field, who demonstrates effective teaching skills, and who demonstrates willingness and ability to work with students and colleagues.

National Occupational Competency Testing Institute (NOCTI)--A national non-profit educational corporation established for the purpose of developing, revising, and scoring high-quality teacher and student

occupational competency examinations.

Occupation--A term referring to a person's regular work, business, or means of earning a living.

Supervisor--The professional person responsible for the promotion, development, maintenance, and improvement of instruction in a given field and over a given area. Supervisors may operate at the local, district, or state level, and much of their work is concerned with in-service training for vocational teachers.

Teacher Certification--Granted after the minimum academic, professional and other standards established by the State Departments of Education are met by those who wish to teach full or part-time in the public school system.

Vocational Trade and Industrial Teachers--Persons who teach in secondary or post-secondary programs designed to provide instruction for the development of the basic technical knowledge, employability skills, manipulative skills, and related occupational information for the purpose of equipping persons for useful employment in trade and industrial occupations.

## CHAPTER II

### REVIEW OF LITERATURE

#### Introduction

In order to further explain the role of NOCTI a review of literature concerning the background of this organization is included in this study. A review of literature is presented regarding Oklahoma's adoption of NOCTI, along with a discussion of studies relating to Trade and Industrial teachers' effectiveness. The topics in this chapter include Background of National Occupational Competency Testing Institution, Oklahoma Adopts NOCTI, and Studies and/or Publications Relating to Predicting Effectiveness of Trade and Industrial Teachers.

#### Background of National Occupational Competency Testing Institution

The need for instructional excellence in vocational education remains a requirement, therefore, the need for evaluative decisions continues as in the past. Olivo (1980) indicated that occupational competencies have long been used as a source of measurement in vocational education, and as a guide for hiring teachers and measuring student skills. Manipulative skills and the complementary related mathematics, science, drawing, etc. have been the hallmark of trade, industrial, and technical education in secondary and post-secondary schools since the



second half of the 1800s. Olivo further stated that occupational experience of prospective trade and industrial shop teachers was validated in the 1920s by their passing a written and performance competency test.

Panitz (1970) stated that with the continued expansion of trade and industrial education programs the demand for new teachers with demonstrated occupational competence became of greater concern. With this concern in mind two one-day institutions were held at Rutgers University in 1966. Representatives of 23 states were in attendance. The conclusion was that the development and implementation of an occupational competency examination program on a national scale would be of mutual benefit to the states, and improve the quality of competency examinations.

Panitz (1969) reported that as a result of the efforts of Carl Schaefer, Department Head of Vocational Technical Education at Rutgers University; Mel Barlow, Director of the Division of Vocational Education at UCLA; Richard Nelson, Chief of the Bureau of Industrial Education, California State Education Department; and C. Thomas Olivo, (Temple University) former Director of the Division of Industrial Education, New York State Education Department, the concept moved from the theory to action. Panitz (1970) further reported that in 1969 Rutgers University received a three-year grant from the U. S. Office of Education to implement a national occupational competency testing project. C. Thomas Olivo was named project director with Adolf Panitz as associate director. Facilities for the project and other assistance were provided in the Albany Regional Center offices through the cooperation of Gordon McMahon, chairman of the Department of Vocational Technical Education, State University, Oswego, New York. As outlined by Panitz (1974) the

goals of the project were to: establish a consortium of states; develop occupational competency examinations in major industrial occupations; and organize a permanent institution to administer the examinations, develop additional examinations, and carry on further research in occupational competency testing.

As reported by Panitz and Olivo (1970) phase one of the project was concerned with the inauguration of testing programs. The first order of business was to establish a baseline as to the existing status of competency testing and report the findings. The "State of the Art" report on occupational competency testing revealed:

That not a single professional testing agency, governmental organization, educational body, labor or management group was satisfied with either the qualitative or quantitative aspects of occupational competency testing;

That an exceedingly limited amount of data or experiences relating to occupational competency test development, administration, validation, or research results are recorded;

That each organization carrying on significant work in occupational testing recognizes that adequate measures require testing in both the theory (technology) and the skills (performance) of each occupation, that one without the other is not valid (p. 48).

Panitz and Olivo further found that limited numbers of competency tests in both skill and technological knowledge had been prepared. Therefore the need for refinement in both the tests and testing programs was evident. Occupational competency tests were based upon job analysis and a systematic breakdown of manipulative tasks but validity and reliability had not been established. This was attributed to the inability to pool test data. The report revealed that only limited numbers of qualified vocational industrial/technical education and training personnel were involved in competency testing. Evidence revealed that no single

unit would likely have the fiscal resources or the personnel available to perform the necessary development and administration of an appropriate large-scale competency testing program. The report showed there was much duplication of effort and a serious lack of data and research activity in occupational competency testing.

Additional findings of Panitz and Olivo (1970) in the State of the Art report were:

That there is need for national pooling of resources and experiences to establish reliability, and validity in economical and efficient ways;

That many forms of tests for a single occupational field are needed to serve many different measurement functions for different parts of the occupation and different combinations;

That there is no system of depositories or central store of occupational competency test data, test items, test banks;

That in vocational education a consortium of states effort to develop, administer and validate tests requires the investment of significant sums for, at least, twenty major industrial occupations, the employment of competent staff on a full-time basis, supportive 'software' and 'hardware,' and a cooperative arrangement for feedback upon which judgements may be made on the effectiveness of each instrument and the value of test results and testing programs (pp. 49-50).

Panitz and Olivo (1970) stated that utilizing the findings of the State of the Art study as justification, representatives from 21 of the original 23 states plus ten additional representatives met in Chicago in March, 1970, and unanimously endorsed the concept of a consortium of states. The concept of a National Occupational Competency Testing program was now a reality.

Panitz and Olivo further stated that phase one was completed with the establishment of the consortium. Phase two of the project led to the development of a Handbook for Developing and Administering Competency Testing. The handbook was described by Panitz and Olivo as:

. . . an outgrowth of extensive study of occupational competency testing on a national scale. It represents a summary of the best existing practices and procedures employed by the Civil Service, the military, various State Education Departments, labor, industry, vocational industrial-technical teacher education institutions, and the life-time experiences of the authors (p. iv).

Corman (1977) reported selected competency tests both written and performance were developed in 24 occupational areas using the handbook as a guide. The tests were written by individuals identified as occupationally competent in their respective specialty area. The tests were pilot tested in 21 state test centers.

In the seventh edition of the NOCTI Technical Supplement, McMahon (1982) reported each test was constructed in a consistent manner utilizing the methodology as outlined by Panitz and Olivo in the 1971 handbook:

Job Analysis: This process identified knowledge and skills considered necessary for an individual to perform at the top of his/her craft in specific occupational areas. This work was done with universities, secondary schools, and post-secondary institutions at various locations throughout the United States.

Peer Reviews: Panels of experts with prior occupational experience, together with skilled personnel from the area of test development, were organized to develop job and task analyses and to make recommendations for test item construction.

Test Item Writers: Selected industrial educators were asked to prepare test items and performance tasks based on the job analyses which included indicators of relative levels of importance and frequency of use. These preliminary test materials were then finalized and approved by a 'peer review' committee. Careful attention to each of these steps provided the necessary assurance that the examinations would be content valid (p. 1).

Olivo (1980) reported item analyses were performed on examinations which were field tested on journeymen in area test centers throughout the United States. Examinations were modified and field tested again to establish reliability, internal consistency, and validity. The

national scope of the project helped to set norms and establish standards to be used by each state in making its determinations.

Panitz (1974) reported that following completion of the four-year project the consortium was recognized in June, 1973, as a permanent non-profit educational corporation. The consortium was incorporated as The National Occupational Competency Testing Institute (NOCTI) and became an affiliate of the Educational Testing Service (ETS) of Princeton, New Jersey. Under the directorship of Panitz, NOCTI was to function in accordance with the policies and procedures set forth by the Consortium of States which assure the continuation of occupational testing services to meet the requirements of the participating states.

McMahon (1983) reported that after 18 months of operation through the Education Testing Service (ETS) the Board of Directors of NOCTI and ETS mutually agreed to operate the institute as an independent organization. The current NOCTI program has functioned as an independent organizational entity since Spring, 1975. McMahon also reported that after the separation NOCTI national headquarters was established in Albany, New York. Whitener (1983) reported that during July, 1983, the NOCTI national office headquarters was moved from Albany, New York to its present location at Farris State College, Big Rapids, Michigan. Following the move, Scott D. Whitener was appointed as the fifth NOCTI Executive Director.

Whitener (1983) stated that under the present system, each member state, through its State Director of Vocational Education, designates a state representative. Each state representative contributes, by vote, to the overall policy and standards of the program. On the operational level in each state, a test center and a coordinator are designated.

The representative and the coordinator may be the same person. The test center serves as the administrative entity for NOCTI testing. The test center may serve a statewide or specific geographic area. The coordinator is responsible for selecting test sites and qualified examiners.

Whitener also stated matters dealing with policy and procedures are carried out through a NOCTI national office which is headed by an Executive Director with support staff. The Executive Director of NOCTI is responsible to a Board of Trustees elected from the consortium membership. These elections are held each year during the national convention of the American Vocational Association (AVA).

Whitener further stated that since 1973, over 6,000 Teacher Occupational Competency Tests have been administered nationally through the NOCTI test centers located in 47 different states. The TOCTs consist of two parts: one concerning cognitive skills (a written examination); the other, psychomotor skills (a performance test). The written test consists of approximately 200 multiple-choice items and requires three hours to complete. It covers factual knowledge, technical information, understanding of principles, and problem solving abilities related to the occupation. The performance test is administered in a laboratory, industrial, or clinical setting and consists of work assignments that require four to five hours to complete. TOCTs are available in 48 different occupational areas.

McMahon (1982) stated interpretation of a candidate's test scores is accomplished by answering two questions. First, has a candidate demonstrated competence in a particular vocational field? This question must be determined by cutoff criteria established by each test center for each specific occupational examination. The second question, how

did a candidate do relative to others who took the test? This question is answered by comparing a candidate's raw score to a summary of standard scores, provided by NOCTI, to obtain the individual's percentile rank for both the written and performance tests. Additional information may be obtained by utilizing national norm tables for a comparison of an individual's score to the national average score received by all those who took a particular test.

As suggested by Cap (1975), NOCTI exams provide several uses.

These purposes are:

1. Criteria for admission to vocational teacher education programs.
2. Justification for granting academic credit by demonstrating occupational competency.
3. For use in selection, recruitment and employment of crafts- persons who are interested in teaching.
4. To verify occupational competencies as part of teacher certification requirements.
5. To establish evidence of occupational competence.
6. To identify weak or deficient content areas for further training and improvement.

#### Oklahoma Adopts NOCTI

Stewart (1982) reported the factor that contributed most significantly to the growth of the present vocational technical education delivery system in Oklahoma was the area school concept. The opening of the first Oklahoma area vocational technical school at Tulsa, in 1965, led to the building of a statewide network of area vocational schools. According to The Vo-Tech Personnel Directory 1984-85 (1984)

there were 24 independent vocational technical school districts with a total of 40 campuses. With this expansion of vocational education utilizing the area school concept the demand for additional T & I trade teachers became evident. Because of the lack of availability of teachers with both occupational training and a college degree the necessity of continuing to hire non-degree teachers was a reality. The Teacher Education, Certification and Assignment Handbook, (1971) states before beginning to teach, approved T & I non-degreed teachers were issued a one-year temporary state teaching certificate. One of the requirements to obtain another temporary certificate was evidence of having completed a minimum number of hours of college credit acceptable toward meeting requirements for a standard certificate and Bachelor of Science (B. S.) or Bachelor of Arts (B. A.) degree.

Part of the degree plan included course work in a student's occupational trade area. Knight (1974) reported that to facilitate teacher education for students with occupational work experience, in 1968, Oklahoma State University began offering 24 credit hours towards a Trade and Industrial Education B. S. degree for satisfactory completion of a written comprehensive examination covering a student's trade specialty area.

Knight (1984) noted that, because of the need for an improved test to measure a prospective teacher's trade skill competency for certification and college credit, Oklahoma was ready for NOCTI. Oklahoma was one of the original consortium states when NOCTI was incorporated in 1973. Doyle Butler was the representative for the Oklahoma State Department of Vocational and Technical Education and served as coordinator for the field testing activities. For implementation of the NOCTI teacher exams



Oklahoma State University was selected as the area test center. Knight accepted the position of test coordinator and presently continues to serve in this capacity. The first recorded examinations were administered in the Spring of 1975 with 13 candidates participating in eight occupational areas.

Because of the success of the program the Oklahoma State Department of Vocational and Technical Education, in 1980, stipulated as a matter of policy that a first-year non-degreed teacher teaching with a temporary certification must satisfactorily pass the NOCTI examination in their occupation area during the first year of teaching. An application for a new temporary or provisional certificate will only be approved upon proof of passing the examination and proof of the minimum hours required by the State Department of Education.

#### Studies and/or Publications Relating to Predicting Effectiveness of Trade and Industrial Teachers

Cline (1977) stated the difficulty of predicting teacher effectiveness has been pondered as long as there have been teachers. An accepted truism was that some teachers are more effective than others. The problem arises when one tries to differentiate between them. Cline further stated the prediction of teacher effectiveness in trade and industrial education must be based on both the teacher's knowledge of his trade and his ability to get that information across to students so they will understand it. Cline concluded that occupational experience and knowledge of the occupation are not synonymous. Just because someone has worked in an occupation, it cannot be assumed that they have the necessary knowledge to teach it to others.

Rumpf (1954) conducted a study which asked secondary vocational administrators to identify superior teachers on their staffs. One of the objectives was to determine what traits teachers had in common relating to teaching success. In his study Rumpf asked 236 respondents to identify these traits. His conclusions showed that years of occupational experience had little or no positive effect; in fact, greater amounts of occupational experience appeared to have a negative impact. Rumpf found no statistical evidence to conclude a negative relationship. In his study Rumpf did find two positive traits. A low correlation was obtained ( $r = .11$ ), but as the number of college credits increased there seemed to be a slight improvement of rated performance. A slight positive correlation ( $r = .16$ ) was found for teacher rated performance and teaching experience.

Storm (1965) utilized a self-designed survey instrument in an attempt to determine the characteristics of a successful technical instructor. Storm requested technical school administrators to evaluate each of their technical instructors. Thirty-eight states responded to the study involving a total of 138 instructors. This number represented 64.3 percent of the national population surveyed. The instructors were divided into two groups: low-success instructors and high-success instructors--based on the ratings they received from their administrators. To determine what the differentiating characteristics were, the characteristics of each group were examined and compared. Storm concluded that average high-success instructors had more advanced degrees in education, 1.5 less years of teaching experience, and 5.1 less years of occupational experience than the low-success instructors. Using the t-ratio, Storm reported these differences were not significant.

In a study of teachers of outstanding Olympic swimmers and concert pianists Bloom (1982) found master teachers were more skilled in dealing with young people than they were proficient in the talent field. One of the features of this study was that students selected their teachers and the decision to remain with the teacher was also their choice. The ultimate measure of success for both the students and the teachers in the study was student performance or skill improvement. Bloom reported that master teachers were selected because they have a superior knowledge of the subject, are skilled in teaching, command respect of the students, constantly nurture the student in the subject, and produce demonstrable results.

The National Commission on Excellence in Education, (1983) in their report "A Nation At Risk: The Imperative for Education Reform" stated that in order to foster student achievement, "salary, promotion, tenure and retention decisions should be tied to an effective evaluation system . . ." (p. 30). Since the commission's report, national attention has focused on student scholastic performance, merit pay and master teacher plans, all contingent upon evaluation of teacher effectiveness.

The following is a summary of a report by Haefele (1980) of 12 approaches to teacher evaluation.

Approach 1: Teacher competence is measured by performance of the teacher's classes on standardized tests given at the end of the year. Year-end performance is compared with established norms. A possible fallacy is that teachers of equal quality of instruction may obtain different student scores because of differences in socioeconomic neighborhoods, mobility or turnover rate of each school.

Approach 2: Standardized tests are administered to students to determine how much they increase their learning over time. The amount of desired gain is established in advance by school personnel, teachers, and an independent evaluator. Use of this approach involves comparisons of the gain in achievement test scores of this year's students with the baseline scores of previous years. If the beginning class average or achievement levels are exceptionally high or low the gain level when compared to the norm may be misleading.

Approach 3: Students in each grade or subject matter area are tested at the beginning and end of each semester or school year. Gain scores are computed to contrast class performance (gain or loss) with classes of comparable ability. Teacher effectiveness is measured by proportion of "gainers" to "losers." Although student body composition, socioeconomic status, physical facilities, and other typical matching characteristics are similar there is a high potential for error when such indices are used for assessment of teacher effectiveness.

Approach 4: Informal observations and ratings of the teachers are conducted by the principal and/or other supervisory personnel. "Informal observations" suggests absence of a structured format including empirically based characteristics of effective teaching. However, criteria may fluctuate with the personal biases of the observer and yield invalid and inconsistent results even when instruments are highly structured. Comments by students, peers, and colleagues, if incorporated into evaluation, usually amount to limited and often biased data regarding teacher effectiveness. Teaching behaviors are usually undefined and lack evidence of relationships to student outcomes.

Approach 5: Systematic observation of the teacher is conducted by the principal and/or supervisor, using a rating form that lists characteristics of good teachers. The teacher's evaluation score is compared to a school or district standard. Systematic observation does not necessarily guarantee reliable observation. Rater bias remains a constant problem. The establishment of a school or district standard of comparison not only implies a knowledge of characteristics of effective teachers but, in addition, a level of attainment that discriminates between more effective and less effective teachers.

Approach 6: The teacher is systematically observed and rated by peers on the extent to which he/she exhibits important characteristics of good teaching. A predetermined school or district standard is the criterion. The utilization of peers does not significantly change the subjectivity or bias problems encountered in ratings. Teachers are often opposed to peer evaluations.

Approach 7: The teacher's students use a rating form to judge the extent to which the teacher exhibits important characteristics of good teaching. A predetermined school or district standard of effectiveness is established. Student ratings have not been clearly linked with positive student achievement. This may be attributed to rating on popularity with individual achievement not considered.

Approach 8: Teachers are required to take the National Teacher Examination (NTE) and achieve at or above a predetermined standard composite score. The implication is that teachers who obtain high NTE scores will perform more effectively in classrooms than teachers who receive low scores. While the NTE has acquired popularity the degree of predictive validity is still questionable.

Approach 9: The teacher is provided with a specific set of instructional objectives to teach to a randomly selected group of students. After completion of the lesson(s) the students are tested over the objectives. Teacher effectiveness is determined by how well the students achieved the objectives. It must be assumed that the random group is representative of the instructor's total classes. The instructional content must be related to the instructor's area. Both instructor and students should experience a high level of compatibility. In a proficiency study Popham (1971) reported certified degree teachers were not able to perform significantly better than uncertified non-degree teachers. One of the unanswered questions is, "What brings about change?" Is it teacher effectiveness or instructional teaching materials?

Approach 10: The Teacher Perceiver Interview (TPI) is administered to teachers. Teacher effectiveness is based on how well the teacher meets predetermined criterion or norm-referenced score. The Teacher Perceiver Interview measures non-cognitive knowledge (personality characteristics) such as empathy for others, goal or mission strength, responsiveness to students, satisfaction through others' achievement, ability to stimulate students, innovative ideas and inner drive toward completeness (Selection Research Inc., 1977). Although teacher personality may be integrated into characteristics of effective teaching, it is questionable as a stand-alone predictive measurement of teaching effectiveness.

Approach 11: A continuation of TPI, the teacher is given written descriptions and/or shown films of typical classroom problems. The teacher's effectiveness is judged on the basis of the quality of their

response. The teacher is expected to present a solution to the simulated problem with a rationale for the solution.

Approach 12: The teacher and principal (supervisor) establish mutually agreed-upon (negotiated) instructional goals and objectives for the year. Progress is monitored and evaluated at regular intervals. Teachers favor goal-setting methods when feedback from reviews are used to reinforce classroom performance and teacher growth. If review information is used exclusively for administrative decisionmaking, then teachers are resentful. This approach requires quality planning and continual commitment by both teachers and supervisors if instructional improvement is achieved.

Haefele's report demonstrates that teacher evaluation is complicated and subject to much controversy. As stated by Popham (1971) "One of the most elusive targets in the history of educational research is a valid index of teacher effectiveness" (p. 105).

A report by Miller (1982) questioning the validity of certification concludes that of all the varied standards and regulations the requirements for valid work experience has been the cornerstone of vocational teacher certification in all fifty states. Miller further stated that "research has failed to establish a clear and consistent statistical link between vocational teacher work experience and student performance" (p. 27). A related study cited by Miller (Musgrove, 1965) found a positive relationship between teacher effectiveness and work experience when teachers rated themselves. But when supervisors and students did the rating they did not find a positive relationship between these variables.

A national survey of teacher certification requirements by Resnick and Gardner (1979) revealed the following findings for trade and

industrial education. A mean of 3.7 years of work experience was required. A mean of 52.4 semester hours or degree requirements was to be completed prior to first teaching assignment. A mean of 61.8 semester hours was required for permanent certification. Performance requirements were required by 11 states. The largest single category of performance examinations used were the NOCTI exams.

### Summary

School administrators and vocational student supervisors are continually called upon to arrive at a decision to recommend the hiring or not hiring of a candidate for a teaching position. The Oklahoma State Department of Education, Bulletin No. 113-Y (1984) states that Oklahoma's regulations for schools indicate "Teachers of vocational and technical education courses shall hold a teaching certificate in the field or subject taught" (p. 96). To insure that Trade and Industrial teachers possess minimum competency in their skill area the State Department of Vocational Technical Education requires the new teacher to pass a competency examination to renew their temporary certificate. Since 1975 the NOCTI examination has been utilized for competency testing when available.

NOCTI was created by a consortium of states because of the mutual need for reliable and valid competency examinations. Currently, there are 46 states and the District of Columbia in the program. Since the administration of the first national group examinations in the Spring of 1973, over 6,000 TOCTs have been provided to candidates through the 25 area test centers. There are currently 50 competency tests in 48 different occupations.



The studies cited in the review of literature have shown there are effective teachers in the schools. However, finding a common predictor of effectiveness has led to common disagreement among researchers in the education field. Some of the categories compared are years of occupational experience, number of college credits, number of years teaching, knowledge of trade, and student test scores. Research has not shown a consistent positive relationship between these categories and teacher effectiveness. A common belief held by vocational educators is that a teacher cannot teach what they do not know, therefore, of all the various categories knowledge of trade has been an essential criterion for employment in trade and industrial teaching positions.

This review of background information and related studies pertaining to trade and industrial education adds support for the need for additional studies in teacher effectiveness. Studies of the relationship of teacher effectiveness in terms of teaching skills and knowledge of trade as measured by competency examinations are specifically required.

## CHAPTER III

### METHODOLOGY

#### Introduction

The purpose of this research was to determine the degree of relationship between NOCTI occupational examination scores and teaching effectiveness as rated by school administrators and Trade and Industrial state supervisors as to instructional productivity, proficiency and quality. This chapter discusses (1) the population of the study, (2) the validity and reliability of the NOCTI examination, (3) the development of the instrument, (4) the method of data collection, and (5) analysis of data.

#### Population and Sample

The population for the study was obtained by searching the NOCTI area test coordinator's files of candidates who have taken the NOCTI examination in Oklahoma between the years 1976 to 1984. The carpentry trade was selected as the Trade and Industrial group most likely to provide an appropriate sample of 30 or more candidates.

The examination scores and employment data of those selected were manually retrieved from the files and coded. Forty candidates were found to have attempted the NOCTI examination. Four candidates completed the examination but never taught. One candidate failed the

examination and never taught. Thirty-five candidates completed the examination and worked in the teaching profession one or more years. The examination candidates were appropriately matched to their respective school administrators and Trade and Industrial program supervisors. Thirty-five administrators were asked to complete a survey questionnaire which rated the candidates' teaching effectiveness. In addition to the school administrators, seven Trade and Industrial program supervisors from the Oklahoma State Department of Vocational Technical Education were surveyed as to the teaching effectiveness rating of the same 35 candidates.

#### Validity and Reliability of the NOCTI Examination

The NOCTI carpentry examination was developed in 1974. Olivo and Klein (1979) reported that the written portion of the examination had a Kuder-Richardson internal consistency reliability coefficient (KR-20) of .90 and (KR-21) of .92. The performance portion of the examination had a Cronbach's Alpha measure of internal consistency of .958. The NOCTI Tenth Annual Report (1983) stated that the written and performance tests were revised during 1980 and reviewed during 1982. The written portion was reformatted and minor revisions were made. In 1983 some minor revisions were made to drawings in the test. The Kuder-Richardson internal consistency reliability coefficient (KR-20) was reported to be .81 on the written examination. The Alpha Reliability on the performance portion of the examination was reported to be .95.

### Development of the Instrument

The questionnaire used for this study was researcher developed. The first step was to review the literature for studies pertaining to teacher effectiveness (see Appendix A for a list of the studies reviewed). Descriptors were identified and categorized as to proficiency, quality and productivity. The last question in each of the three sections requested a response specifically addressing the title and concept of that section.

The system used to rate the candidates' on-the-job teaching effectiveness was a 1 -5 Likert-type scale. The scale ranged from 1 for "Is excellent" to a 5 for "Needs improvement."

The questionnaire was pilot tested by the Oklahoma State University fall semester class TIED 5223, Supervision of Instruction. Based upon the comments about length and complexity of the instrument, the questionnaire was rewritten reflecting the suggestions made by the persons who participated in the pilot test.

Following the pilot test the questionnaire was field tested in two different schools by surveying two school administrators from schools with four Trade and Industrial teachers, other than carpentry, who had completed the NOCTI examination. The instrument was reported as easy to complete, having good clarity, and seemingly appropriate. No suggestions for change were offered by the administrators participating in the field test.

The final draft of the survey instrument was reviewed for clarity, meaning, feasibility, and readability by the research study doctoral committee members. A copy of the survey questionnaire, in its final

form, can be found in Appendix B.

The instrument was designed to gather information concerning the following research questions:

1. To what extent is instructional productivity reflected in written occupational competency examination scores?
2. To what extent is instructional productivity reflected in performance occupational competency examination scores?
3. To what extent is instructional proficiency reflected in written occupational competency examination scores?
4. To what extent is instructional proficiency reflected in performance occupational competency examination scores?
5. To what extent is instructional quality reflected in written occupational competency examination scores?
6. To what extent is instructional quality reflected in performance occupational competency examination scores?

#### Data Collection

Teacher effectiveness was determined by surveying the corresponding school administrator for each candidate, and the Trade and Industrial program supervisor. The 33 participating administrators and seven state supervisors rated the teacher effectiveness of the 35 candidates by completing the instrument in Appendix B. The instrument was designed to measure productivity, quality, and proficiency of the candidate. A code for identification and follow-up of non-respondents was written on the questionnaire to facilitate tracing.

The study began in October, 1984, when the researcher met with Clyde Knight, NOCTI Area Coordinator, to identify NOCTI examination

candidates. The carpentry trade was selected as the Trade and Industrial group which provided an appropriate candidate population. The test scores and employment data of those selected was manually retrieved from the files and coded by the researcher. The test scores were found on the Report of Scores of the NOCTI Examination. The employment data of the candidates was found in the Oklahoma State Department of Vocational Education, Personnel Directories from 1976 through 1984.

Francis Tuttle, State Director, Oklahoma State Department of Vocational Technical Education, assisted with the study by writing a letter to the administrators, requesting that they cooperate with the study. A copy of Francis Tuttle's letter and the letter sent by the researcher can be found in Appendix C.

The letter from the researcher included the candidate's name, explanations, and directions about the survey instrument. The letters and questionnaires were mailed in May, 1985. Each questionnaire was self-addressed and stamped to facilitate ease of return. Follow-ups by telephone were utilized to insure the needed responses for the study. A second mailing was sent to three administrators in late May, 1985. A third mailing, in June, 1985, was required to obtain a 100 percent return rate.

#### Analysis of Data

Analysis of the data was begun in May, 1985, and was completed in August of the same year. The methods employed in this study were determined by its research questions and data. The research called for techniques that would assess the covariation between NOCTI test scores and instructors' on-the-job performance ratings. The NOCTI test produces

scores that have, traditionally, been treated as ratio or interval scale data. This would seem to suit them for such parametric techniques as Pearson's Product-moment Correlation technique. The on-the-job performance ratings employed by this study, however, have something of the quality of both ratio and ordinal scale data. The quality, productivity and proficiency ratings produced by occupational supervisors and school administrators were summed to produce composite scores. The quality index was the sum of 13 different scales, the productivity index was the sum of seven scales, and the proficiency index was the sum of 15. As a result, these indices both retain some of the ordinal characteristics of their individual scales, and begin to take on something of the additive qualities of ratio scale data. This would seem to suit them for either parametric analysis (i.e., using Pearson's Product-moment Correlation technique) or non-parametric treatment (i.e., using Spearman's Rank-Order Correlation or Kendall's Correlation). Of course, the specific survey questions probing an instructor's quality, productivity and proficiency must be treated as ordinal data. These are only suitable for non-parametric analysis.

Rather than allow abstract considerations to guide the analysis, however, the data were closely inspected. The Statistical Package for Social Sciences (SPSS-X) software package was used to generate frequency histograms for the NOCTI test scores, for the three composite on-the-job rating scores, and for the three specific rating scales. A normal curve was traced over the frequency histograms to inspect their data distributions visually, and the standard descriptive statistics were also generated (see Appendix D for the maximums, minimums, ranges, medians, modes, means, standard deviations and other descriptive statistics that were

examined). As can be seen, the data are not normally distributed, and several variables display oddly distorted distributions. These considerations would, in many instances, suggest the use of non-parametric statistics.

Again, however, rather than allow a single source of information to bias the data analysis, several analytic strategies were employed at the same time. Pearson's Product-moment Correlation technique was used to analyze the covariations among the NOCTI test scores, the three composite on-the-job performance ratings and the three specific performance scales. Afterwards, the same relationships were examined using Spearman's Rank Order Correlation and Kendall's Correlation techniques.

Interestingly enough, there was very little practical difference between the parametric and the non-parametric analyses. Nor was there much difference between the resulting NOCTI-supervisor and NOCTI-administrator analyses (although this is more of a 'content' than a 'method' observation). Both of these observations combine to suggest that the results of the analyses are quite reliable. The low correlation coefficients produced by the Pearson Product-moment Correlation technique are mirrored by the low correlation coefficients produced by Spearman's Rank-order and Kendall's techniques. The low correlation between NOCTI test scores and supervisors' ratings are mirrored in the low correlations between the NOCTI test scores and the school administrators' ratings. The fact that the supervisors' and administrators' ratings are highly intercorrelated only increases confidence in the analysis.

In conclusion, this study's research questions and data determined the statistical methodology that was employed. The data distributions



were charted, their descriptive statistics were generated, and their appropriate analytic treatment was determined. In order to cope with the curiously dual nature of the data, both parametric and non-parametric correlation techniques were employed to analyze the variables. As mentioned previously, the parametric and non-parametric analyses yielded very similar results, suggesting that the findings are tenable.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

#### Introduction

The analysis of the research questions to determine the degree of relationship between NOCTI occupational examination scores and teaching effectiveness as rated by school administrators and Trade and Industrial state supervisors as to instructional productivity, proficiency, and quality is presented in this chapter.

The data source for this study was two-fold. First the NOCTI examination scores were obtained by searching the files of the NOCTI area coordinator. The Carpentry trade was selected as the trade and industry group which provided a statistical appropriate candidate population of 30 or more. The test scores and employment data of those selected were manually retrieved from the files and coded. Secondly, information pertaining to teaching effectiveness was obtained by surveying school administrators and Trade and Industrial state supervisors for each candidate.

The survey instrument specifically addressed teacher proficiency, quality, and productivity. Non-respondents were identified and follow-ups by telephone were conducted. A second and third mailing was implemented until a 100 percent return was obtained.

The candidate's NOCTI test scores and survey rating numbers were

entered on a recording sheet by code. The NOCTI test scores were recorded by written score and performance scores. The performance score was further subdivided into the indices of product, process and total performance. The survey effectiveness rating questions were listed separately by classification and then summed.

A series of histograms was constructed, by computer, using the Statistical Package for Social Sciences. A normal distribution curve was superimposed over the histograms for visual observation. The histograms revealed the data was not normally distributed, and several variables displayed oddly distorted distributions. The histograms can be found in Appendix D.

The SPSS-X program was utilized to perform the Pearson product-moment correlation technique to correlate the indices of the NOCTI examination scores with the teacher effectiveness rating for each of the six research questions. The resulting descriptive analysis is reported in the Presentation of Findings section of this chapter.

To further substantiate the findings and to offer an alternative to the parametric test, two non-parametric tests were conducted, the Kendall's Correlation and Spearman's Rank-Order Correlation. The resulting correlations are very similar to those produced by the Pearson's product-moment correlation technique. They were largely negative and their significance levels were too high to provide much faith in the relationships revealed between NOCTI examination scores and rated teacher effectiveness. The tables illustrating the non-parametric tests are found in Appendix E.

The following six questions will be the guide for describing the survey results.

1. To what extent is instructional productivity reflected in written occupational competency examination scores?
2. To what extent is instructional productivity reflected in performance occupational competency examination scores?
3. To what extent is instructional proficiency reflected in written occupational competency examination scores?
4. To what extent is instructional proficiency reflected in performance occupational competency examination scores?
5. To what extent is instructional quality reflected in written occupational competency examination scores?
6. To what extent is instructional quality reflected in performance occupational competency examination scores?

#### Presentation of Findings

##### Question 1

To what extent is instructional productivity reflected in written occupational competency examination scores?

To test the relationship between the written examination scores, the supervisors' rating of total productivity and the administrators' rating of total productivity, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table I.

The correlation between the written test and supervisors' total productivity rating ( $r = -.1964$ ) indicates no relationship at the 0.05 level. The correlation between the written test and the administrators' total productivity rating ( $r = -.1176$ ) indicates no relationship at the

0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional productivity and the NOCTI written occupational competency examination scores.

TABLE I  
NOCTI WRITTEN TEST CORRELATION  
WITH PRODUCTIVITY RATING

	NOCTI Written Test		
	n	r	P
Supervisors' Total Productivity Rating	35	-.1964	.258
Administrators' Total Productivity Rating	35	-.1176	.507

### Question 2

To what extent is instructional productivity reflected in performance occupational competency examination scores?

Since individual NOCTI performance test scores were reported in indices of process, product and total performance it was decided to calculate three separate Pearson's Product-moment Correlation Coefficients for each subdivision.

Process. To test the relationship between performance process, the supervisors' rating of total productivity and the administrators' rating of total productivity, the Pearson's Product-moment Correlation

Coefficient was calculated. The results of this analysis are reported in Table II.

TABLE II  
NOCTI PERFORMANCE PROCESS SCORE CORRELATION  
WITH PRODUCTIVITY RATING

	Performance Process Score		
	n	r	P
Supervisors' Total Productivity Rating	35	-.2834	.099
Administrators' Total Productivity Rating	35	-.1179	.500

The correlation between performance process and supervisors' total productivity rating ( $r = -.2834$ ) indicates no relationship at the 0.05 level. The correlation between performance process and administrators' total productivity rating ( $r = -.1179$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional productivity and the NOCTI performance process occupational competency examination scores.

Product. To test the relationship between performance product, the supervisors' rating of total productivity and the administrators' rating of total productivity, the Pearson's Product-moment Correlation

Coefficient was calculated. The results of this analyses are reported in Table III.

TABLE III  
NOCTI PERFORMANCE PRODUCT SCORE CORRELATION  
WITH PRODUCTIVITY RATING

	Performance Product Score		
	n	r	P
Supervisors' Total Productivity Rating	35	-.3119	.068
Administrators' Total Productivity Rating	35	-.1023	.559

The correlation between performance process and supervisors' total productivity rating ( $r = -.3119$ ) indicates no relationship at the 0.05 level. The correlation between the performance product and the administrators' total productivity rating ( $r = -.1023$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional productivity and the NOCTI performance product occupational competency examination scores.

Total Performance. To test the relationship between the total performance scores, the supervisors' rating of total productivity and the administrators' rating of total productivity, the Pearson's

Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table IV.

TABLE IV  
NOCTI TOTAL PERFORMANCE SCORE CORRELATION  
WITH PRODUCTIVITY RATING

	Total Performance Score		
	n	r	P
Supervisors' Total Productivity Rating	35	-.3134	.067
Administrators' Total Productivity Rating	35	-.1128	.519

The correlation between the total performance scores and supervisors' total productivity rating ( $r = -.3134$ ) indicates no relationship at the 0.05 level. The correlation between the total performance scores and the administrators' total productivity rating ( $r = -.1128$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional productivity and the NOCTI total performance occupational competency examination scores.

### Question 3

To what extent is instructional proficiency reflected in written occupational competency examination scores?



To test the relationship between the written examination scores, the supervisors' rating of total proficiency and the administrators' rating of total proficiency the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table V.

TABLE V  
NOCTI WRITTEN TEST CORRELATION  
WITH PROFICIENCY RATING

	NOCTI Written Test		
	n	r	P
Supervisors' Total Proficiency Rating	35	-.1955	.260
Administrators' Total Proficiency Rating	35	-.1027	.557

The correlation between the written test and supervisors' total proficiency rating ( $r = -.1955$ ) indicates no relationship at the 0.05 level. The correlation between the written test and the administrators' total proficiency rating ( $r = -.1027$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional productivity and the NOCTI written occupational competency examination scores.

Question 4

To what extent is instructional proficiency reflected in performance occupational competency examination scores?

Since individual NOCTI performance test scores were reported in process, product, and total performance it was decided to calculate three separate Pearson's Product-moment Correlation Coefficients for each subdivision.

Process. To test the relationship between the performance process scores, the supervisors' rating of total proficiency and the administrators' rating of total proficiency, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table VI.

TABLE VI  
NOCTI PERFORMANCE PROCESS SCORES CORRELATION  
WITH PROFICIENCY RATING

	<u>Performance Process Scores</u>		
	n	r	P
Supervisors' Total Proficiency Rating	35	-.2099	.226
Administrators' Total Proficiency Rating	35	-.0705	.687

The correlation between the performance process and supervisors' total proficiency rating ( $r = -.2099$ ) indicates no relationship at the 0.05 level. The correlation between the performance process and the administrators' total proficiency rating ( $r = -.0705$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional proficiency and the NOCTI performance process occupational competency examination scores.

Product. To test the relationship between the performance product scores, the supervisors' rating of total proficiency, and the administrators' rating of total proficiency, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table VII.

TABLE VII  
NOCTI PERFORMANCE PRODUCT SCORES CORRELATION  
WITH PROFICIENCY RATING

	Performance Product Scores		
	n	r	P
Supervisors' Total Proficiency Rating	35	-.2935	.087
Administrators' Total Proficiency Rating	35	-.0457	.794

The correlation between the performance product scores and supervisors' total proficiency rating ( $r = -.2935$ ) indicates no relationship at the 0.05 level. The correlation between the performance product scores and the administrators' total proficiency rating ( $r = -.0457$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional proficiency and the NOCTI performance product occupational competency examination scores.

Total Performance. To test the relationship between the total performance scores, the supervisors' rating of total proficiency, and the administrators' rating of total proficiency, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table VIII.

TABLE VIII  
NOCTI TOTAL PERFORMANCE SCORES CORRELATION  
WITH PROFICIENCY RATING

	<u>Total Performance Scores</u>		
	n	r	P
Supervisors' Total Proficiency Rating	35	-.2635	.126
Administrators' Total Proficiency Rating	35	-.0612	.727

The correlation between the total performance scores and supervisors' total proficiency rating ( $r = -.2635$ ) indicates no relationship at the 0.05 level. The correlation between the total performance scores and the administrators' total proficiency rating ( $r = -.0612$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional proficiency and the NOCTI total performance occupational competency examination scores.

#### Question 5

To what extent is instructional quality reflected in written occupational competency examination scores?

To test the relationship between the written examination scores, the supervisors' rating of total instructional quality, and the administrators' rating of total instructional quality, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table IX.

The correlation between the written test and supervisors' total quality rating ( $r = -.2270$ ) indicates no relationship at the 0.05 level. The correlation between the written test and the administrators' total quality rating ( $r = -.1160$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional quality and the NOCTI written occupational competency examination scores.

TABLE IX  
NOCTI WRITTEN TEST CORRELATION WITH  
INSTRUCTIONAL QUALITY RATING

	NOCTI Written Test		
	n	r	P
Supervisors' Total Quality Rating	35	-.2270	.190
Administrators' Total Quality Rating	35	-.1160	.507

#### Question 6

To what extent is instructional quality reflected in performance occupational competency examination scores?

Since individual NOCTI performance test scores were reported in indices of process, product, and total performance it was decided to calculate three separate Pearson's Product-moment Correlation Coefficients for each subdivision.

Process. To test the relationship between the performance process scores, the supervisors' rating of total instructional quality and the administrators' rating of total instructional quality, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table X.

The correlation between the performance process scores and supervisors' total instructional quality rating ( $r = -.2634$ ) indicates no relationship at the 0.05 level. The correlation between the process

performance scores and the administrators' total instructional quality rating ( $r = -.0910$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional quality and the NOCTI process performance occupational competency examination scores.

TABLE X  
NOCTI PERFORMANCE PROCESS SCORES CORRELATION  
WITH INSTRUCTIONAL QUALITY RATING

	Performance Process Scores		
	n	r	P
Supervisors' Total Quality Rating	35	-.2634	.126
Administrators' Total Quality Rating	35	-.0910	.607

Product. To test the relationship between the performance product scores, the supervisors' rating of total instructional quality and the administrators' rating of total instructional quality, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table XI.

The correlation between the performance product scores and supervisors' total instructional quality rating ( $r = -.3375$ ) indicates significance at the 0.05 level. Accordingly, there is a significant, negative

relationship between them. The conclusion can be drawn that there is a significant negative relationship between NOCTI performance product scores and supervisors' instructional quality rating.

TABLE XI  
NOCTI PERFORMANCE PRODUCT SCORES CORRELATION  
WITH INSTRUCTIONAL QUALITY RATING

	Performance Product Scores		
	n	r	P
Supervisors' Total Quality Rating	35	-.3375*	.047
Administrators' Total Quality Rating	35	-.0749	.669

\*Significant at 0.05.

The correlation between the performance product scores and the administrators' total instructional quality rating ( $r = -.0749$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between the administrators' rated instructional quality and the NOCTI performance product occupational competency examination scores.

Total Performance. To test the relationship between the total performance scores, the supervisors' rating of total instructional quality, and the administrators' rating of total instructional quality,



the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table XII.

TABLE XII  
NOCTI TOTAL PERFORMANCE SCORES CORRELATION  
WITH INSTRUCTIONAL QUALITY RATING

	Total Performance Scores		
	n	r	P
Supervisors' Total Quality Rating	35	-.3110	.069
Administrators' Total Quality Rating	35	-.0875	.617

The correlation between the total performance scores and the supervisors' total instructional quality rating ( $r = -.3110$ ) indicates no relationship at the 0.05 level. The correlation between the total performance scores and the administrators' total instructional quality rating ( $r = -.0875$ ) indicates no relationship at the 0.05 level. The conclusion can be drawn that there is no significant relationship between rated instructional quality and the NOCTI total performance occupational competency examination scores.

#### Additional Findings

In addition to the six research questions other analyses were

performed using the researcher's instrument. One such analysis was performed on question 7 of the productivity section of the instrument. Question 7 asked specifically for the administrators' and supervisors' rating of the teacher's productivity in the classroom. To test the relationship between the teacher's productivity in the classroom as rated by the administrator and the state supervisor and the NOCTI written occupational competency examination test, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table XIII.

TABLE XIII  
NOCTI WRITTEN TEST CORRELATION WITH  
QUESTION 7\* OF THE PRODUCTIVITY  
SECTION OF THE INSTRUMENT

	NOCTI Written Test		
	n	r	P
Supervisors' Productivity Rating	35	-.1746	.316
Administrators' Productivity Rating	35	-.1151	.510

\*Question 7 reads, "A master teacher must be productive in the classroom. This teacher's productivity . . . ?"

The correlation between the NOCTI written test and the supervisors' rating for question 7 of the productivity section ( $r = -.1746$ ) indicates

no relationship at the 0.05 level. The correlation between the NOCTI written test and the administrators' rating for question 7 of the productivity section ( $r = -.1151$ ) indicates no relationship at the 0.05 level. The conclusion must be that there is no significant relationship between rated individual teacher productivity in the classroom and the NOCTI written occupational competency examination scores.

An analysis was also done on question 13 of the quality section of the instrument. Question 13 of the instrument asked specifically for the administrators' and supervisors' rating of the quality of the teacher's work. To test the relationship between the written examination scores, the supervisors' rating of the quality of the teacher's work and the administrators' rating of the quality of the teacher's work, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table XIV.

TABLE XIV  
NOCTI WRITTEN TEST CORRELATION WITH QUESTION 13\*  
OF THE QUALITY SECTION OF THE INSTRUMENT

	NOCTI Written Test		
	n	r	P
Supervisors' Quality Rating	35	-.2775	.107
Administrators' Quality Rating	35	-.1181	.499

\*Question 13 reads, "A master teacher must meet very high standards. The quality of this teacher's work . . . ?"

The correlation between the NOCTI written examination and the supervisor's rating of the quality of the teacher's work ( $r = -.2775$ ) indicates no relationship at the 0.05 level. The correlation between the NOCTI written examination and the administrator's rating of the quality of the teacher's work ( $r = -.1181$ ) indicates no relationship at the 0.05 level. The conclusion must be that there is no significant relationship between rated quality of teacher's work and the NOCTI written occupational competency examination scores.

An analysis of question 15 of the proficiency section of the instrument was also done. Question 15 of the instrument asked specifically for the administrators and supervisors to rate the proficiency of the teacher in the classroom. To test the relationship between the written examination scores, the supervisors' rating of the proficiency of the teacher in the classroom and the administrators' rating of the proficiency of the teacher in the classroom the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table XV.

The correlation between the NOCTI written test and the supervisors' rating of the teacher's proficiency in the classroom ( $r = -.0991$ ) indicates no relationship at the 0.05 level. The correlation between the NOCTI written test and the administrators' rating of the teacher's proficiency in the classroom ( $r = -.1355$ ) indicates no relationship at the 0.05 level. The conclusion must be that there is no significant relationship between the rated teacher's proficiency in the classroom and the NOCTI written occupational competency examination scores.

TABLE XV  
 NOCTI WRITTEN TEST CORRELATION WITH QUESTION 15\*  
 OF THE PROFICIENCY SECTION OF THE INSTRUMENT

	NOCTI Written Test		
	n	r	P
Supervisors' Proficiency Rating	35	-.0991	.571
Administrators' Proficiency Rating	35	-.1355	.438

\*Question 15 reads, "A master teacher must be proficient in the classroom. This teacher's proficiency . . . ?"

A second analysis of question 7 of the productivity section of the instrument was performed. To test the relationship between the teacher's productivity in the classroom and the NOCTI total performance score, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table XVI.

The correlation between the NOCTI total performance score and the supervisors' rating of the teacher's productivity in the classroom ( $r = -.2672$ ) indicates no relationship at the 0.05 level. The correlation between the NOCTI total performance scores and the administrators' rating of the teacher's productivity in the classroom ( $r = .0154$ ) indicates no relationship at the 0.05 level. The conclusion must be that there is no significant relationship between the rated teacher's productivity in the classroom and the NOCTI total performance occupational competency examination scores.

TABLE XVI  
 NOCTI TOTAL PERFORMANCE SCORES CORRELATION WITH  
 QUESTION 7\* OF THE PRODUCTIVITY SECTION  
 OF THE INSTRUMENT

	NOCTI Total Performance Scores		
	n	r	P
Supervisors' Productivity Rating	35	-.2672	.121
Administrators' Productivity Rating	35	.0154	.930

\* Question 7 reads, "A master teacher must be productive in the classroom. This teacher's productivity . . . ?"

A second analysis of question 13 of the quality section of the instrument was performed. To test the relationship between the quality of the teacher's work and the NOCTI total performance scores, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table XVII.

The correlation between the NOCTI total performance score and the supervisors' rating of the teacher's quality of work ( $r = -.2756$ ) indicates no relationship at the 0.05 level. The correlation between the NOCTI total performance score and administrators' rating of the teacher's quality of work ( $r = -.0785$ ) indicates no relationship at the 0.05 level. The conclusion must be that there is no significant relationship between the quality of the teacher's work and the NOCTI total performance occupational competency examination scores.

TABLE XVII  
 NOCTI TOTAL PERFORMANCE SCORES CORRELATION WITH  
 QUESTION 13\* OF THE QUALITY SECTION  
 OF THE INSTRUMENT

	NOCTI Total Performance Scores		
	n	r	P
Supervisors' Quality Rating	35	-.2756	.109
Administrators' Quality Rating	35	-.0785	.654

\*Question 13 reads, "A master teacher must meet very high standards. The quality of this teacher's work . . . ?"

A second analysis was done on question 15 of the proficiency section of the instrument. To test the relationship between the NOCTI total performance scores, the supervisors' rating of the teacher's proficiency in the classroom and the administrators' rating of the teacher's proficiency in the classroom, the Pearson's Product-moment Correlation Coefficient was calculated. The results of this analysis are reported in Table XVIII.

The correlation between the NOCTI total performance score and the supervisors' rating of the teacher's proficiency in the classroom ( $r = -.2454$ ) indicates no relationship at the 0.05 level. The correlation between the NOCTI total performance score and administrators' rating of the teacher's proficiency in the classroom ( $r = -.0991$ ) indicates no relationship at the 0.05 level. The conclusion must be that there is no significant relationship between the teacher's proficiency in the

classroom and the NOCTI total performance occupational competency examination scores.

TABLE XVIII  
NOCTI TOTAL PERFORMANCE SCORES CORRELATION WITH  
QUESTION 15\* OF THE PROFICIENCY SECTION  
OF THE INSTRUMENT

	NOCTI Total Performance Scores		
	n	r	P
Supervisors' Proficiency Rating	35	-.2454	.155
Administrators' Proficiency Rating	35	-.0991	.571

\*Question 15 reads, "A master teacher must be proficient in the classroom. This teacher's proficiency . . . ?"

To test the relationship between how supervisors rated teacher effectiveness and how administrators rated teacher effectiveness the Pearson's Product-moment Correlation Coefficient was calculated using the reported rating scores of each. The results of this analysis are reported in Table XIX. High correlations were obtained from each of the cells. The correlations were all significant at the 0.05 level. This analysis reveals that supervisors and administrators rated the candidates in the study with equal objectivity as to teaching effectiveness.



TABLE XIX  
 SUPERVISORS' CANDIDATE EFFECTIVENESS RATINGS  
 CORRELATED WITH ADMINISTRATORS' CANDIDATE  
 EFFECTIVENESS RATINGS

	STP	STQ	STPR	ATP	ATQ	ATPR
STP		.9275 P=.000	.9170 P=.000	.5712 P=.000	.6119 P=.000	.5542 P=.001
STQ	.9275 P=.000		.9676 P=.000	.5662 P=.000	.5957 P=.000	.5260 P=.001
STPR	.9170 P=.000	.9676 P=.000		.5057 P=.002	.5652 P=.000	.4894 P=.003
ATP	.5712 P=.000	.5662 P=.000	.5057 P=.002		.9480 P=.000	.9446 P=.000
ATQ	.6119 P=.000	.5957 P=.000	.5652 P=.000	.9480 P=.000		.9580 P=.000
ATPR	.5542 P=.001	.5260 P=.001	.4894 P=.003	.9466 P=.000	.9580 P=.000	

n = 35. All are significant at the 0.05 level.

STP = Supervisors' Total Productivity Rating

STQ = Supervisors' Total Quality Rating

STPR= Supervisors' Total Proficiency Rating

ATP = Administrators' Total Productivity Rating

ATQ = Administrators' Total Quality Rating

ATPR= Administrators' Total Proficiency Rating

### Summary

The findings presented in this chapter include the statistical analysis as it relates to the six research questions. The research questions were developed to test the relationship between the NOCTI occupational competency written and performance test scores and teacher effectiveness as rated by productivity, quality, and proficiency.

Thirty-five candidates were identified and the survey questionnaire was mailed to their school administrators. The State Trade and Industrial program supervisors rated the candidates' classroom effectiveness using the same instrument. A 100 percent return rate was obtained from both groups.

The computer generated histograms revealed the data was not normally distributed. When a normal distribution curve was superimposed over the histograms several variables displayed oddly distorted distributions.

The Pearson's Product-moment Correlation technique was utilized to correlate the examination scores and the on-the-job ratings. The resulting analysis showed low correlations or  $r$  values. This study found only one significant relationship. This was a negative relationship between the total NOCTI performance product scores and the supervisors' total instructional quality rating. The conclusion can be drawn that there is no significant relationship between all of the other rated teacher effectiveness and NOCTI occupational competency examination scores discussed in this study.

Additional analyses were calculated using three specific questions rating the candidates' productivity, quality and proficiency in the

classroom. The Pearson's Product-moment Correlation technique was used to correlate the NOCTI examination scores and the ratings. The resulting analyses showed no significant relationship between rated productivity, quality, and proficiency and the NOCTI written and performance examination scores.

A comparison of administrators' ratings and supervisors' ratings was made to determine if a pattern of similarity in rating procedure existed. The Pearson's Product-moment Correlation technique was used to correlate the rating of the two groups. The resulting analysis showed high positive correlation or  $r$  values. The conclusion can be drawn that there is a significant relationship between how administrators rated teacher effectiveness and how supervisors rated teacher effectiveness in this study.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Summary

The purpose of this study was to determine the degree of relationship between NOCTI occupational examination scores and teaching effectiveness as rated by school administrators and Trade and Industrial state supervisors. Six research questions were formulated to address NOCTI candidate classroom productivity, quality, and proficiency as a teacher.

To obtain the necessary NOCTI scores for the study the area coordinators' files were manually searched, identifying candidates and their examination scores. The NOCTI examination scores are recorded in two divisions--written scores and performance scores. The performance scores were subdivided, for comparison, into three sections--product, process, and total performance scores.

A researcher-developed survey questionnaire was developed to obtain teacher effectiveness ratings. Thirty-five candidates were identified and their school administrator and Trade and Industrial state supervisor completed the questionnaire, rating the candidates' classroom effectiveness.

A statistical correlation analysis was calculated using the examination scores and the survey ratings. The resulting analysis yielded

low correlation values for the six research question variables. The analysis of the data showed only one significant relationship. This negative significance ( $r = -.3375$ ) was found to exist between the NOCTI performance product scores and supervisors' instructional quality rating. With one exception, the analysis of the other data showed there were no significant relationships between NOCTI examination scores and candidate instructional productivity, quality, and proficiency.

Utilizing three specific questions from the rating instrument, relating to productivity, quality, and proficiency, additional correlation analysis was calculated. The three questions were correlated with the NOCTI written and performance examination scores. Again the results were low correlation values and no significant relationship between variables was found.

When administrators' ratings and supervisors' ratings were correlated against each other high correlations values were obtained indicating a significant relationship. This significant relationship revealed that administrators and supervisors rated candidates' instructional effectiveness in a similar manner.

### Conclusions

Based on the findings that there were no significant relationships between the NOCTI written examination scores and the ratings of the supervisors and/or administrators, the researcher concludes that this examination is not a predictor of teacher effectiveness in the classroom. This conclusion is further substantiated by the fact that the NOCTI written examination was compared with three different areas of teacher classroom performance and none was significant.

The fact that there were no significant relationships found between the total NOCTI performance examination scores and the ratings of the supervisors and administrators would also suggest that this examination is not a predictor of teacher effectiveness in the classroom. These findings were further substantiated by subdividing the NOCTI performance examination for correlation with the three areas of teacher classroom performance, only one significant relationship was found in this area.

These findings would appear to correlate with Cap's (1975) and McMahon's (1982) descriptions that the NOCTI examination is a test to measure a teacher's trade competencies and not a predictor of teacher effectiveness. A passing score on the NOCTI examination is not criterion enough for an administrator to assume a new teacher will be effective in promoting student achievement.

When the administrators' and supervisors' ratings were correlated it was found that they were significant. This finding would indicate that school administrators and Trade and Industrial state supervisors share a common perception of what constitutes effective teaching.

#### Recommendations

It is recommended that the NOCTI examination not be used as the only criterion for teacher employability or predictor of classroom success. Administrators and/or supervisors should remember the NOCTI examination is only a test to measure a person's trade competency. Consideration should be given to administering the NOCTI examination in association with other examinations to determine employability of prospective teachers. Other examinations which could be used are the National Teacher Examination or the Teacher Perceiver Interview.

This study was limited to the carpentry trade area. It is recommended that similar studies be conducted in other trade areas to determine if comparative results are found.

It is recommended that if this study were replicated that in addition to administrator and supervisor ratings the variables of student rating and teacher self-evaluation be included.

Based upon the findings of this study the NOCTI occupational competency examination is not considered useful as a predictor of success in the classroom. It is recommended that a study be conducted to determine what measures would predict classroom success. Areas of research to determine teacher effectiveness and/or success in the classroom could include: college course work and number of credit hours teachers have accomplished in their respective fields; whether a college degree is an indicator, i.e., a comparative study of first-year non-degree teachers in relation to first-year degreed teachers; and a follow-up study on the same teachers five years later.

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APPENDIXES

APPENDIX A

SURVEY BIBLIOGRAPHY

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APPENDIX B

SURVEY QUESTIONNAIRE

## TEACHER EFFECTIVENESS RATING

Instructions: Each question below is concerned with an area of teacher effectiveness. Circle the number, on the scale, that most appropriately indicates your evaluation of \_\_\_\_\_'s teaching effectiveness.

## A. Part I - A master teacher:

1. expertly diagnoses student needs and learning problems. This teacher's ability to identify needs and problems

Is Exceptional			Needs Improvement	
1	2	3	4	5

2. motivates students. This teacher's ability to motivate students

Is Exceptional			Needs Improvement	
1	2	3	4	5

3. produces successful students. This teacher's ability to produce successful students

Is Exceptional			Needs Improvement	
1	2	3	4	5

4. maintains careful records of student progress. This teacher's maintenance of records

Is Exceptional			Needs Improvement	
1	2	3	4	5

5. is constantly looking for ways to improve student performance. This teacher's ability to improve student performance

Is Exceptional			Needs Improvement	
1	2	3	4	5

6. must be helpful to his/her students. This teacher's helpfulness

Is Exceptional			Needs Improvement	
1	2	3	4	5

7. must be productive in the classroom. This teacher's productivity

Is Exceptional			Needs Improvement	
1	2	3	4	5

B. Part 2 - A master teacher:

1. is in full command of his/her occupational speciality's knowledge. This teacher's knowledge

Is Exceptional			Needs Improvement	
1	2	3	4	5

2. is extremely proficient exercising the manual skills his/her occupational speciality demands. This teacher's manual skills

Is Exceptional			Needs Improvement	
1	2	3	4	5

3. understands the habits, attitudes, values and standards of people employed in his/her occupational speciality. This teacher's knowledge of worker's habits

Is Exceptional			Needs Improvement	
1	2	3	4	5

4. knows the occupational/industrial classification system used in his/her occupational speciality. This teacher's knowledge of industrial classification

Is Exceptional			Needs Improvement	
1	2	3	4	5

5. generates student respect. This teacher's ability to generate respect

Is Exceptional			Needs Improvement	
1	2	3	4	5

6. conveys a strong expectation of excellence to students. This teacher's ability to demand excellence

Is Exceptional			Needs Improvement	
1	2	3	4	5



7. has the ability to analyze, synthesize and communicate new ideas. This teacher's ability to analyze, synthesize and communicate new ideas

Is Exceptional			Needs Improvement	
1	2	3	4	5

8. is a self-directed individual. This teacher's self-direction

Is Exceptional			Needs Improvement	
1	2	3	4	5

9. possesses better than average knowledge of math, communications and the sciences. This teacher's basic skills

Is Exceptional			Needs Improvement	
1	2	3	4	5

10. must possess a mature self-image. This teacher's self-concept

Is Exceptional			Needs Improvement	
1	2	3	4	5

11. must treat his/her students as individuals. This teacher's attention to individuals

Is Exceptional			Needs Improvement	
1	2	3	4	5

12. must be interesting and enthusiastic. This teacher's interest and enthusiasm

Is Exceptional			Needs Improvement	
1	2	3	4	5

13. must meet very high standards. The quality of this teacher's work

Is Exceptional			Needs Improvement	
1	2	3	4	5

## C. Part 3 - A master teacher:

1. communicates effectively with parents and others in the wider community. This teacher's ability to communicate with parents and others

Is Exceptional			Needs Improvement	
1	2	3	4	5

2. functions well as part of the teaching team. This teacher's ability to cooperate with others

Is Exceptional			Needs Improvement	
1	2	3	4	5

3. must manage his lab/shop effectively and safely. This teacher's management of the shop

Is Exceptional			Needs Improvement	
1	2	3	4	5

4. knows the organizational structure of his/her local school system and works within it. This teacher's knowledge of the school and his/her place within it

Is Exceptional			Needs Improvement	
1	2	3	4	5

5. must be well-prepared for class. This teacher's preparations

Is Exceptional			Needs Improvement	
1	2	3	4	5

6. must make his/her course objectives very clear. This teacher's objectives

Is Exceptional			Needs Improvement	
1	2	3	4	5

7. must be attentive to his/her students' views and answer their questions clearly. This teacher's ability to respond to students

Is Exceptional			Needs Improvement	
1	2	3	4	5

8. must keep order equitably. This teacher's ability to keep order

Is Exceptional Needs Improvement

1 2 3 4 5

9. must observe his/her students to see that they "follow" a demonstration. This teacher's monitoring and feedback

Is Exceptional Needs Improvement

1 2 3 4 5

10. must possess good verbal skills and above average verbal intelligence. This teacher's verbal skills

Is Exceptional Needs Improvement

1 2 3 4 5

11. knows how to acquire new occupational information. This teacher's ability to acquire new vocational information

Is Exceptional Needs Improvement

1 2 3 4 5

12. varies his/her style of teaching and teaching materials according to student needs and problems. This teacher's ability to vary his/her teaching materials

Is Exceptional Needs Improvement

1 2 3 4 5

13. communicates effectively with students. This teacher's ability to communicate with students

Is Exceptional Needs Improvement

1 2 3 4 5

14. must be flexible under stress. This teacher's flexibility

Is Exceptional Needs Improvement

1 2 3 4 5

15. must be proficient in the classroom. This teacher's proficiency

Is Exceptional Needs Improvement

1 2 3 4 5

APPENDIX C

LETTERS TO SELECTED ADMINISTRATORS



OKLAHOMA STATE DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

FRANCIS TUTTLE, DIRECTOR • 1818 WEST SIXTH AVE., • STILLWATER, OKLAHOMA 74074 • A.C. (406) 377-2000

May 3, 1985

Dear Selected Administrator:

Your cooperation is requested in completion of the enclosed teacher effectiveness rating form. The rating form is part of a doctoral study being conducted by James L. Sharpton, a graduate student at Oklahoma State University and an employee of the Oklahoma State Department of Vocational Technical Education.

Your consideration to assist in this study will be gratefully appreciated.

Sincerely,

A handwritten signature in cursive script that reads "Francis Tuttle".

Francis Tuttle  
State Director

Enclosures



*Oklahoma State University*

SCHOOL OF OCCUPATIONAL AND ADULT EDUCATION

STILLWATER, OKLAHOMA 74078  
CLASSROOM BUILDING 406  
(405) 624-6275

May 3, 1985

Dear :

The selection and certification of new T & I teachers continues to be an important issue in vocational education. At the present time the National Occupational Competency Testing Institute (NOCTI) examination is a criteria for teacher certification renewal. A doctoral study is currently being done to determine the relationship between the NOCTI examination scores and teacher effectiveness. A description of a master teacher, as defined by the literature, has been established to provide you a reference criteria on each response in the enclosed rating instrument.

The carpentry trade program has been selected to represent the T & I occupational trades in this study. One of your instructors, Mr. \_\_\_\_\_, has been identified as a NOCTI test completer. Will you, or one of your supervisory staff, please complete the enclosed rating instrument regarding the effectiveness of Mr. \_\_\_\_\_ as an instructor. Please complete the instrument even if Mr. \_\_\_\_\_ is no longer employed with your school system.

Please be assured that no individual or school name will be identified in the report. The rating form is coded only for statistical computation and upon receipt of the completed form all association to names will be eliminated. The rating form is self-addressed and stamped for your convenience. Please staple before returning.

I want to take this opportunity to thank you in advance for your cooperation and willingness to participate in this study.

Sincerely,

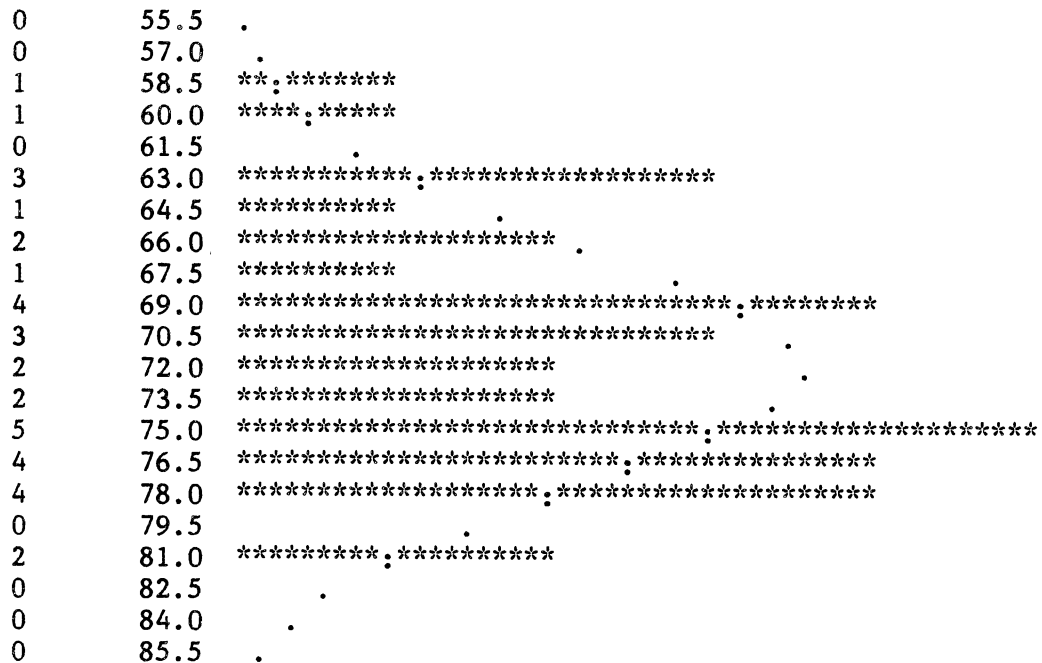
James Sharpton  
(405) 377-2000 X397  
or (405) 377-2160

APPENDIX D  
STATISTICAL TABLES

TABLE XX  
 NOCTI WRITTEN TEST SCORES  
 FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
59	1	3	3	69	3	9	37	76	1	3	71
60	1	3	6	71	3	9	46	76	1	3	74
63	1	3	9	72	1	3	49	77	3	9	83
64	2	6	14	72	1	3	51	77	2	6	89
64	1	3	17	74	1	3	54	79	2	6	94
65	2	6	23	74	1	3	57	81	1	3	97
68	1	3	26	75	3	9	66	82	1	3	100
69	1	3	29	75	1	3	69				

COUNT      MIDPOINT      ONE SYMBOL EQUALS APPROXIMATELY      .10 OCCURRENCES



I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I  
 0                      1                      2                      3                      4                      5

HISTOGRAM FREQUENCY

MEAN	71.677	STD ERR	1.002	MEDIAN	72.300
MODE	69.100	STD DEV	5.930	VARIANCE	35.166
KURTOSIS	-.630	S E KURT	.778	SKEWNESS	-.429
S E SKEW	.398	RANGE	22.600	MINIMUM	59.100
MAXIMUM	81.700	SUM	2508.700		

VALID CASES      35      MISSING CASES      0

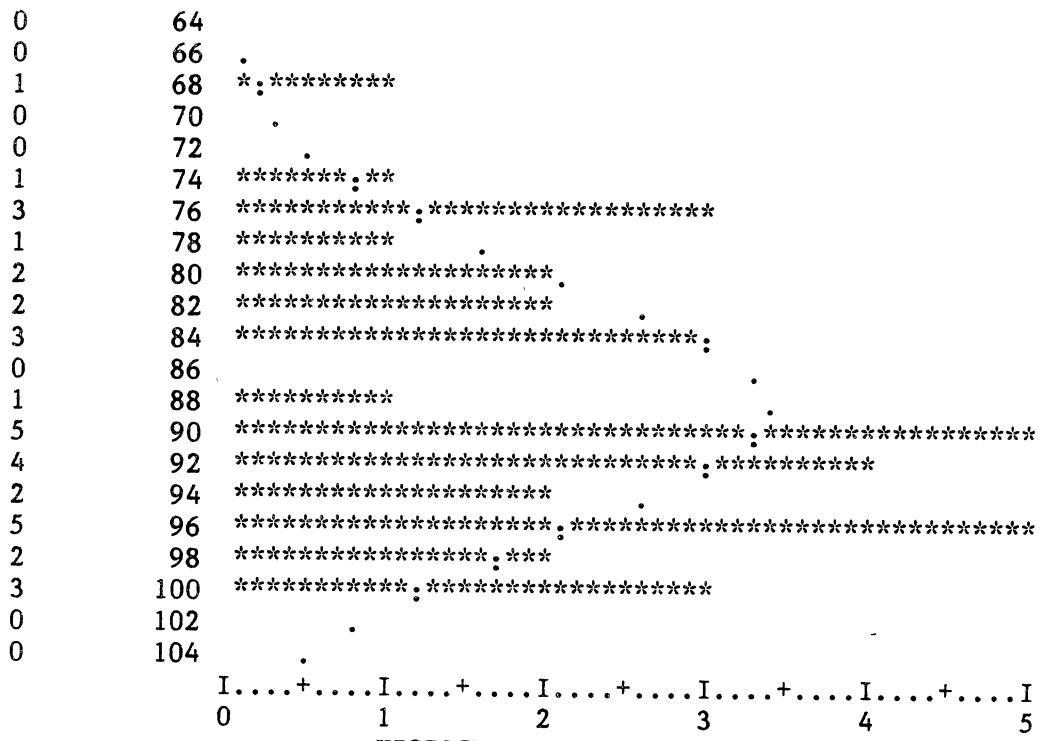


TABLE XXI

NOCTI PERFORMANCE PROCESS SCORES FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
68	1	3	3	85	1	3	34	94	1	3	71
74	1	3	6	85	1	3	37	95	2	6	77
75	1	3	9	88	1	3	40	95	1	3	80
76	1	3	11	90	2	6	46	96	1	3	83
76	1	3	14	90	2	6	51	96	1	3	86
78	1	3	17	91	1	3	54	97	1	3	89
79	1	3	20	91	1	3	57	98	1	3	91
80	1	3	23	91	1	3	60	99	2	6	97
82	1	3	26	92	1	3	63	100	1	3	100
83	1	3	29	92	1	3	66				
83	1	3	31	93	1	3	69				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY .10 OCCURRENCES



MEAN	88.111	STD ERR	1.417	MEDIAN	90.300
MODE	90.000	STD DEV	8.381	VARIANCE	70.242
KURTOSIS	-.533	S E KURT	.778	SKEWNESS	-.614
S E SKEW	.398	RANGE	32.200	MINIMUM	67.800
MAXIMUM	100.000	SUM	3083.900		

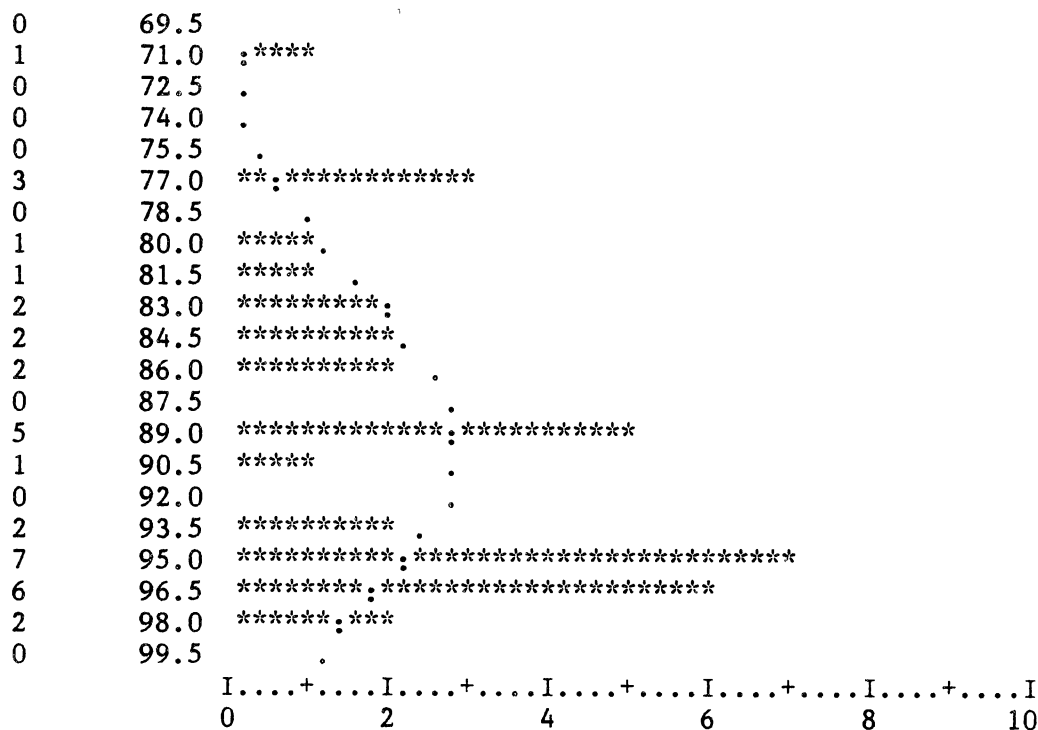
VALID CASES 35 MISSING CASES 0

TABLE XXII

## NOCTI PERFORMANCE PRODUCT SCORES FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
72	1	3	3	85	1	3	31	95	1	3	60
76	2	6	9	86	1	3	34	95	4	11	71
78	1	3	11	89	1	3	37	95	1	3	74
79	1	3	14	89	1	3	40	96	1	3	77
82	1	3	17	89	1	3	43	96	1	3	80
83	1	3	20	89	2	6	49	97	1	3	83
83	1	3	23	90	1	3	51	97	2	6	89
84	1	3	26	93	1	3	54	97	2	6	94
85	1	3	29	93	1	3	57	98	2	6	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY .20 OCCURRENCES



MEAN	89.497	STD ERR	1.247	MEDIAN	90.000
MODE	95.000	STD DEV	7.375	VARIANCE	54.394
KURTOSIS	-.505	S E KURT	.778	SKEWNESS	-.731
S E SKEW	.398	RANGE	26.100	MINIMUM	71.700
MAXIMUM	97.800	SUM	3132.400		

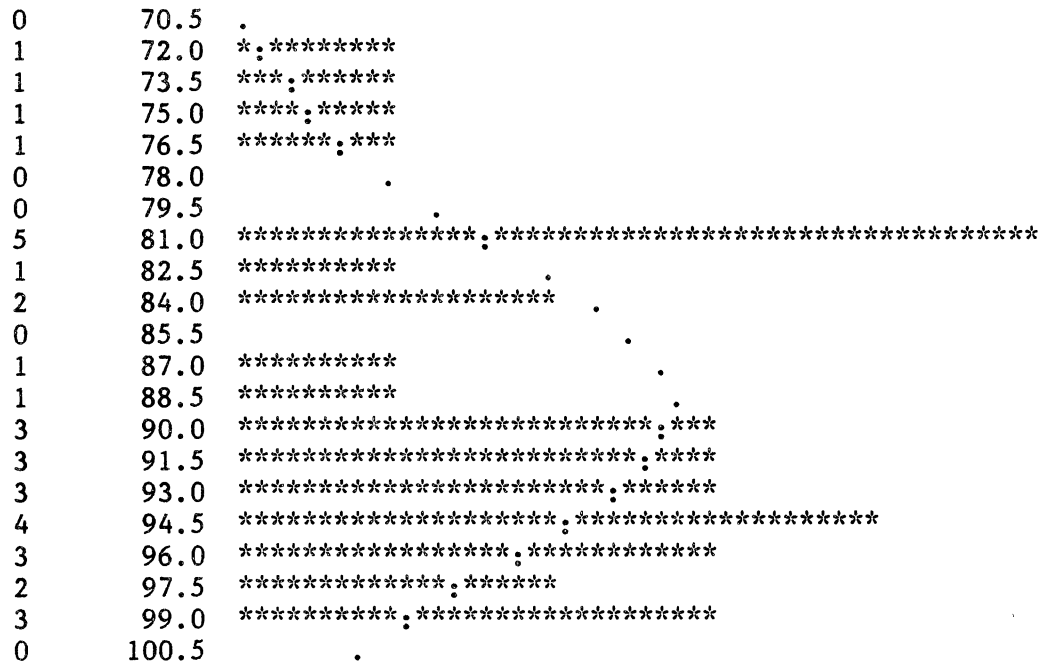
VALID CASES 35 MISSING CASES 0

TABLE XXIII

NOCTI TOTAL PERFORMANCE SCORES FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
72	1	3	3	84	1	3	34	95	1	3	71
73	1	3	6	87	1	3	37	95	1	3	74
75	1	3	9	88	1	3	40	95	1	3	77
77	1	3	11	90	2	6	46	95	1	3	80
81	1	3	14	90	1	3	49	96	1	3	83
81	1	3	17	91	1	3	51	96	1	3	86
81	1	3	20	92	2	6	57	97	1	3	89
82	1	3	23	92	1	3	60	97	1	3	91
82	1	3	26	93	1	3	63	99	3	9	100
83	1	3	29	93	1	3	66				
84	1	3	31	94	1	3	69				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY .10 OCCURRENCES



I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I

HISTOGRAM FREQUENCY

MEAN	88.800	STD ERR	1.295	MEDIAN	91.100
MODE	98.500	STD DEV	7.660	VARIANCE	58.679
KURTOSIS	-.671	S E KURT	.778	SKEWNESS	-.633
S E SKEW	.398	RANGE	26.400	MINIMUM	72.100
MAXIMUM	98.500	SUM	3108.000		

VALID CASES 35 MISSING CASES 0

TABLE XXIV

SUPERVISORS' TOTAL PRODUCTIVITY  
RATINGS FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
7	2	6	6	14	4	11	54	23	1	3	89
8	1	3	9	15	1	3	57	25	1	3	91
9	1	3	11	16	1	3	60	26	1	3	94
10	2	6	17	17	2	6	66	30	1	3	97
11	2	6	23	18	1	3	69	35	1	3	100
12	3	9	31	19	2	6	74				
13	4	11	43	21	4	11	86				

COUNT      MIDPOINT      ONE SYMBOL EQUALS APPROXIMATELY .20 OCCURRENCES

0	6.0	.
3	7.5	*****.*****
1	9.0	*****
4	10.5	*****.*****
3	12.0	*****.***
8	13.5	*****.*****
1	15.0	*****
3	16.5	*****.
1	18.0	*****
2	19.5	*****
4	21.0	*****.*****
1	22.5	*****
0	24.0	.
2	25.5	*****.*****
0	27.0	.
0	28.5	.
1	30.0	:*****
0	31.5	.
0	33.0	.
1	34.5	*****
0	36.0	.

I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I  
0                    2                    4                    6                    8                    10

HISTOGRAM FREQUENCY

MEAN	16.029	STD ERR	1.088	MEDIAN	14.000
MODE	13.000	STD DEV	6.437	VARIANCE	41.440
KURTOSIS	1.089	S E KURT	.778	SKEWNESS	1.028
S E SKEW	.398	RANGE	28.000	MINIMUM	7.000
MAXIMUM	35.000	SUM	561.000		

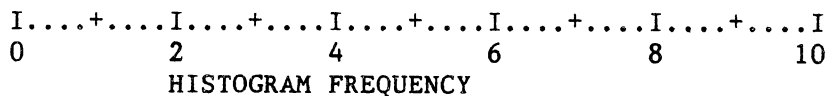
VALID CASES      35      MISSING CASES      0

TABLE XXV  
 SUPERVISORS' TOTAL QUALITY RATINGS  
 FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
13	2	6	6	26	3	9	57	41	1	3	83
15	2	6	11	27	1	3	60	45	1	3	86
18	3	9	20	30	1	3	63	46	2	6	91
20	3	9	29	31	1	3	66	52	1	3	94
21	2	6	34	32	1	3	69	57	1	3	97
22	3	9	43	33	1	3	71	64	1	3	100
23	1	3	46	35	1	3	74				
25	1	3	49	38	2	6	80				

COUNT      MIDPOINT      ONE SYMBOL EQUALS APPROXIMATELY      .20 OCCURRENCES

2	13.5	*****.****
2	16.0	*****.**
3	18.5	*****.*****
8	21.0	*****.*****
1	23.5	*****
5	26.0	*****.*****
0	28.5	.
3	31.0	*****.*
1	33.5	*****
1	36.0	*****
2	38.5	*****.
1	41.0	*****
0	43.5	.
3	46.0	*****.*****
0	48.5	.
1	51.0	**.**
0	53.5	.
1	56.0	:*****
0	58.5	.
0	61.0	.
1	63.5	*****



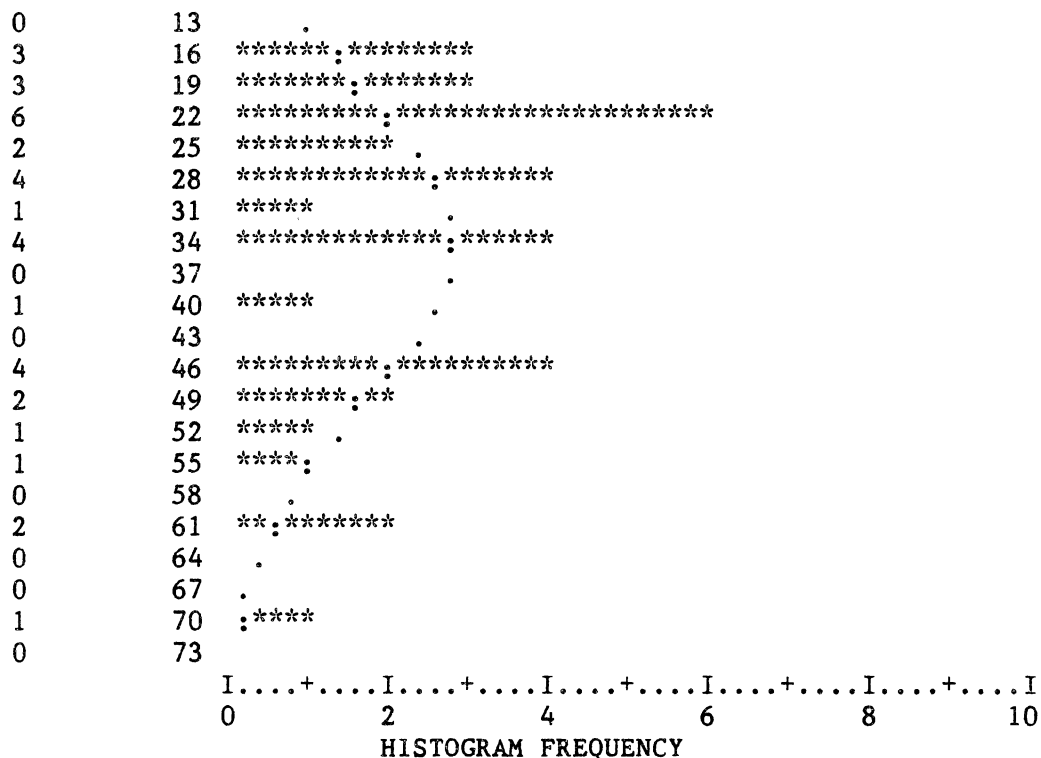
MEAN	29.114	STD ERR	2.172	MEDIAN	26.000
MODE	18.000	STD DEV	12.847	VARIANCE	165.045
KURTOSIS	.477	S E KURT	.778	SKEWNESS	1.033
S E SKEW	.398	RANGE	51.000	MINIMUM	13.000
MAXIMUM	64.000	SUM	1019.000		

VALID CASES      35      MISSING CASES      0

TABLE XXVI  
 SUPERVISORS' TOTAL PROFICIENCY  
 RATINGS FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
15	1	3	3	27	4	11	51	48	1	3	83
17	2	6	9	32	1	3	54	50	1	3	86
18	2	6	14	33	2	6	60	52	1	3	89
19	1	3	17	35	2	6	66	54	1	3	91
22	2	6	23	41	1	3	69	61	2	6	97
23	4	11	34	45	1	3	71	71	1	3	100
24	1	3	37	46	2	6	77				
26	1	3	40	47	1	3	80				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY .20 OCCURRENCES

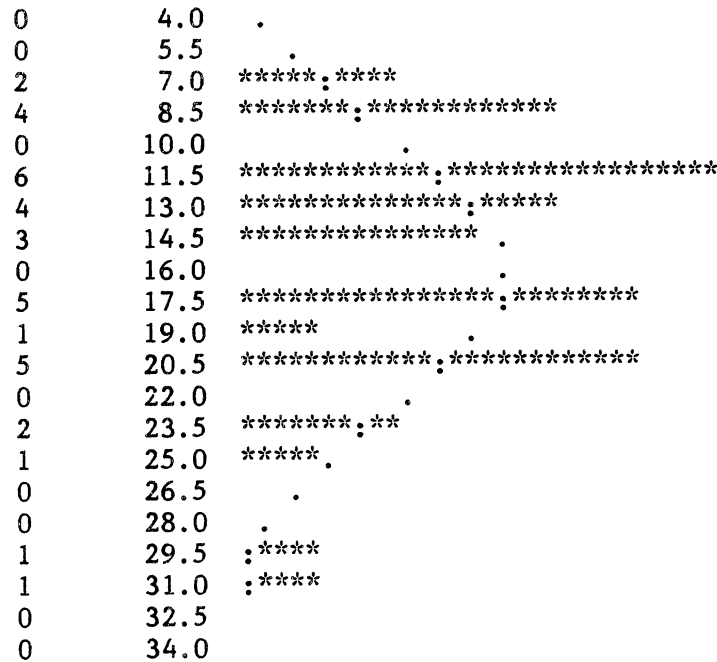


MEAN	33.943	STD ERR	2.501	MEDIAN	27.000
MODE	23.000	STD DEV	14.799	VARIANCE	218.997
KURTOSIS	-.347	S E KURT	.778	SKEWNESS	.764
S E SKEW	.398	RANGE	56.000	MINIMUM	15.000
MAXIMUM	71.000	SUM	1188.000		
VALID CASES	35	MISSING CASES	0		

TABLE XXVII  
 ADMINISTRATORS' TOTAL PRODUCTIVITY  
 RATINGS FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
7	2	6	6	14	2	6	51	23	1	3	89
8	1	3	9	15	1	3	54	24	1	3	91
9	3	9	17	18	5	14	69	25	1	3	94
11	2	6	23	19	1	3	71	30	1	3	97
12	4	11	34	20	2	6	77	31	1	3	100
13	4	11	46	21	3	9	86				

COUNT      MIDPOINT      ONE SYMBOL EQUALS APPROXIMATELY .20 OCCURRENCES



I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I  
 0                    2                    4                    6                    8                    10  
 HISTOGRAM FREQUENCY

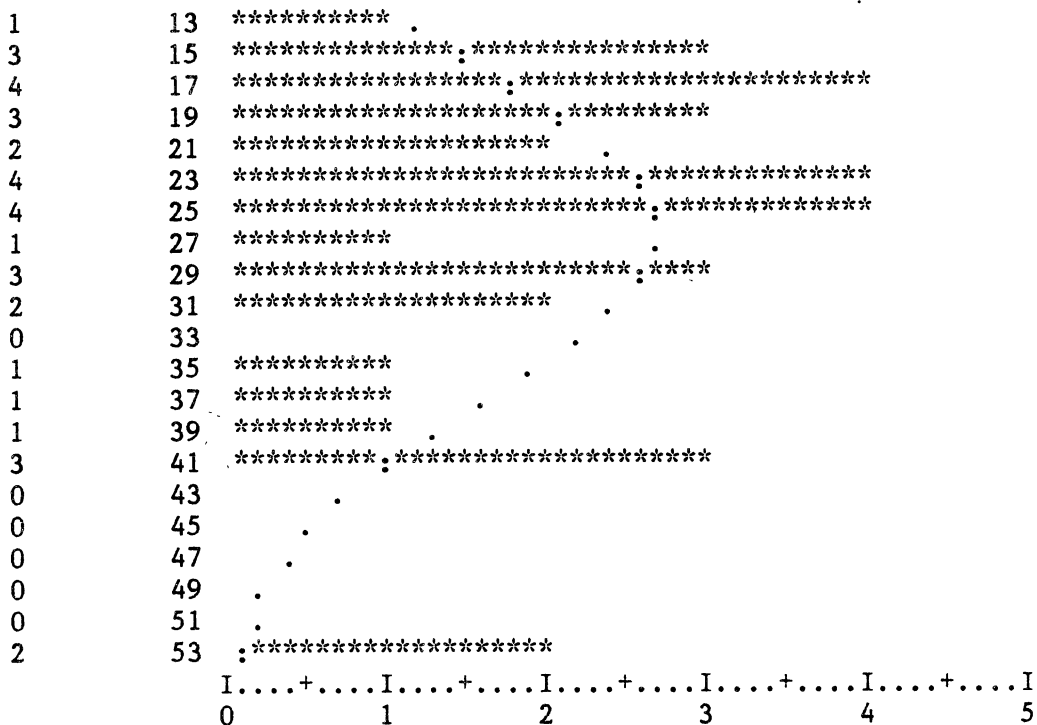
MEAN	15.971	STD ERR	1.038	MEDIAN	14.000
MODE	18.000	STD DEV	6.143	VARIANCE	37.734
KURTOSIS	-.025	S E KURT	.778	SKEWNESS	.640
S E SKEW	.398	RANGE	24.000	MINIMUM	7.000
MAXIMUM	31.000	SUM	559.000		

VALID CASES      35      MISSING CASES      0

TABLE XXVIII  
 ADMINISTRATORS' TOTAL QUALITY  
 RATINGS FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
13	1	3	3	22	1	3	40	36	1	3	83
14	1	3	6	23	3	9	49	39	1	3	86
15	2	6	11	25	4	11	60	40	1	3	89
16	2	6	17	26	1	3	63	41	2	6	94
17	2	6	23	28	1	3	66	53	1	3	97
18	2	6	29	29	2	6	71	54	1	3	100
19	1	3	31	30	2	6	77				
20	2	6	37	34	1	3	80				

COUNT      MIDPOINT      ONE SYMBOL EQUALS APPROXIMATELY .10 OCCURRENCES



HISTOGRAM FREQUENCY

MEAN	26.257	STD ERR	1.777	MEDIAN	25.000
MODE	25.000	STD DEV	10.511	VARIANCE	110.491
KURTOSIS	.774	S E KURT	.778	SKEWNESS	1.078
S E SKEW	.398	RANGE	41.000	MINIMUM	13.000
MAXIMUM	54.000	SUM	919.000		

VALID CASES      35      MISSING CASES      0

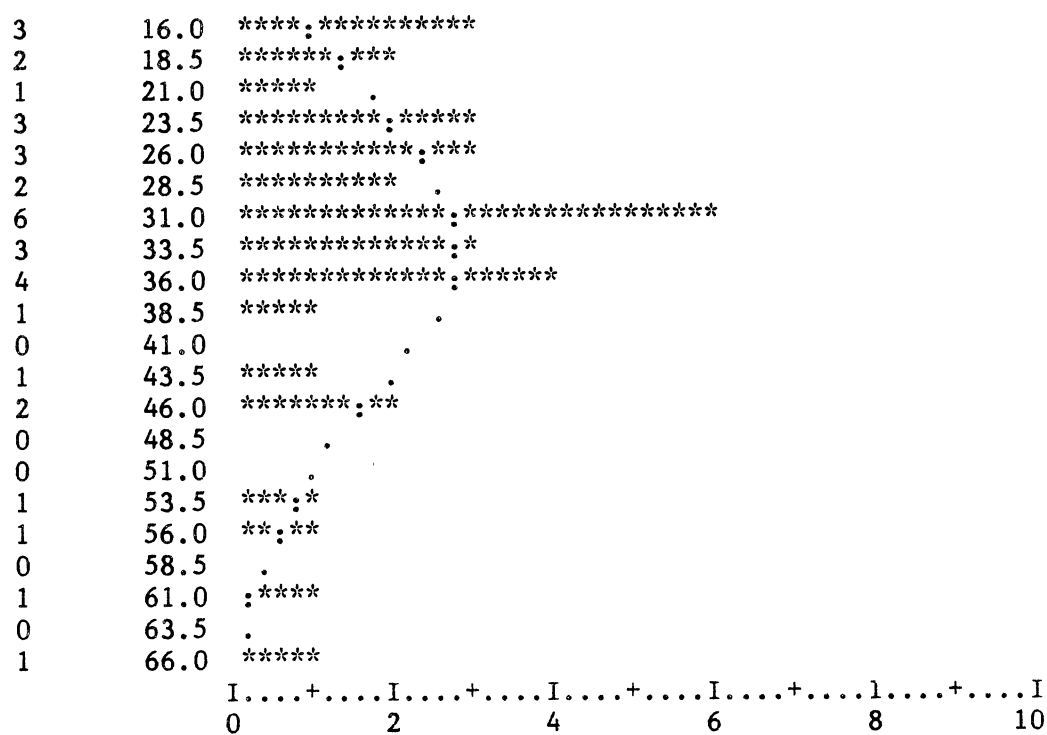


TABLE XXIX

ADMINISTRATORS' TOTAL PROFICIENCY  
RATINGS FREQUENCY DIAGRAM

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
15	2	6	6	28	1	3	37	43	1	3	83
17	1	3	9	29	1	3	40	45	1	3	86
18	1	3	11	30	2	6	46	46	1	3	89
19	1	3	14	31	2	6	51	53	1	3	91
20	1	3	17	32	2	6	57	56	1	3	94
23	1	3	20	34	3	9	66	61	1	3	97
24	2	6	26	36	2	6	71	67	1	3	100
26	1	3	29	37	2	6	77				
27	2	6	34	39	1	3	80				

COUNT      MIDPOINT      ONE SYMBOL EQUALS APPROXIMATELY      .20 OCCURRENCES



HISTOGRAM FREQUENCY

MEAN	33.029	STD ERR	2.114	MEDIAN	31.000
MODE	34.000	STD DEV	12.505	VARIANCE	156.382
KURTOSIS	.831	S E KURT	.778	SKEWNESS	.937
S E SKEW	.398	RANGE	52.000	MINIMUM	15.000
MAXIMUM	67.000	SUM	1156.000		
VALID CASES	35	MISSING CASES	0		

APPENDIX E

NON-PARAMETRIC TESTS

TABLE XXX

KENDALL CORRELATION COEFFICIENTS

P	.1504									
	N( 35)									
	SIG .210									
PR	.1668	.7677								
	N( 35)	N( 35)								
	SIG .167	SIG .000								
TP	.1762	.9026	.8654							
	N( 35)	N( 35)	N( 35)							
	SIG .143	SIG .000	SIG .000							
STP	-.1533	-.2466	-.3175	-.2882						
	N( 35)	N( 35)	N( 35)	N( 35)						
	SIG .209	SIG .041	SIG .009	SIG .017						
STQ	-.2351	-.2669	-.3219	-.3099	.7777					
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)					
	SIG .053	SIG .026	SIG .008	SIG .010	SIG .000					
STPR	-.1939	-.1680	-.2379	-.2144	.7825	.8128				
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)				
	SIG .110	SIG .163	SIG .049	SIG .075	SIG .000	SIG .000				
ATP	-.0525	-.0815	-.1482	-.1058	.3198	.3401	.2880			
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)			
	SIG .668	SIG .502	SIG .225	SIG .384	SIG .010	SIG .006	SIG .019			
ATQ	-.0761	-.0650	-.1050	-.0805	.3139	.3270	.2790	.8292		
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)		
	SIG .530	SIG .589	SIG .385	SIG .503	SIG .010	SIG .007	SIG .022	SIG .000		
ATPR	-.0516	-.0204	-.0805	-.0460	.2828	.2840	.2535	.8162	.8090	
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	
	SIG .669	SIG .864	SIG .503	SIG .701	SIG .020	SIG .019	SIG .036	SIG .000	SIG .000	
	WT	P	PR	TP	STP	STQ	STPR	ATP	ATQ	

TABLE XXXI  
SPEARMAN CORRELATION COEFFICIENTS

P	.2634									
	N( 35)									
	SIG .126									
PR	.2556	.9163								
	N( 35)	N( 35)								
	SIG .138	SIG .000								
TP	.2859	.9789	.9685							
	N( 35)	N( 35)	N( 35)							
	SIG .096	SIG .000	SIG .000							
STP	-.2235	-.3567	-.4209	-.4073						
	N( 35)	N( 35)	N( 35)	N( 35)						
	SIG .197	SIG .035	SIG .012	SIG .015						
STQ	-.3162	-.3780	-.4415	-.4329	.8996					
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)					
	SIG .064	SIG .025	SIG .008	SIG .009	SIG .000					
STPR	-.2441	-.2585	-.3264	-.3179	.9039	.9403				
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)				
	SIG .158	SIG .134	SIG .056	SIG .063	SIG .000	SIG .000				
ATP	-.0842	-.1154	-.1783	-.1488	.4568	.4739	.3965			
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)			
	SIG .630	SIG .509	SIG .306	SIG .394	SIG .006	SIG .004	SIG .018			
ATQ	-.1013	-.0887	-.1269	-.1116	.4612	.4690	.4033	.9314		
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)		
	SIG .562	SIG .612	SIG .468	SIG .523	SIG .005	SIG .004	SIG .016	SIG .000		
ATPR	-.0769	-.0291	-.1066	-.0672	.4208	.4351	.3709	.9258	.9299	
	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	N( 35)	
	SIG .661	SIG .868	SIG .542	SIG .701	SIG .012	SIG .009	SIG .028	SIG .000	SIG .000	
	WT	P	PR	TP	STP	STQ	STPR	ATP	ATQ	

2  
VITA

James Leroy Sharpton

Candidate for the Degree of

Doctor of Education

Thesis: NOCTI OCCUPATIONAL COMPETENCY EXAMINATION SCORES AND THEIR  
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Oklahoma City, Oklahoma, August, 1967 to February, 1971.

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Exchange Club.